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Message from the Editor-in-Chief

Dear Colleagues,

We are very pleased to publish Special Issue for IETC, ITEC, IDEC, ITICAM 2016 conference. This issue covers the papers presented at International Educational Technology Conference, International Teacher Education Conference, International Distance Education Conference and International Trends and Issues in Communication & Media Conference which were held in Duabi, UAE. These papers are about different research scopes and approaches of new developments and innovation in educational.

Call for Papers

TOJET invites you article contributions. Submitted articles should be about all aspects of educational technology. The articles should be original, unpublished, and not in consideration for publication elsewhere at the time of submission to TOJET. Manuscripts must be submitted in English.

TOJET is guided by its editors, guest editors and advisory boards. If you are interested in contributing to TOJET as an author, guest editor or reviewer, please send your CV to tojet.editor@gmail.com.

July 2016

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21st Century Skills In The Teaching Of Foreign Languages At Primary And Secondary Schools

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ABSTRACT

Taking an experiential communicative approach (Fernández-Corbacho, 2014) into account, enriched by gamification strategies (Foncubierta & Rodríguez, 2015), in this paper we intend to disseminate teaching practices in English and Spanish as Foreign Languages at primary/secondary schools, which account for the development of 21st Century Skills, namely: collaboration and communication, creativity and innovation, critical thinking and problem solving. Therefore, we will present practices, developed within a Master's Degree practical training, which illustrate the work of these skills in the classroom using: a) Web 2.0 applications in collaborative learning; b) creative and (hyper)sensory tasks which develop critical reflection; c) cross-cultural activities.

INTRODUCTION

In present-day interconnected society communication plays an increasingly important role due to the prominent digital and multimedia technology, which make part of our daily tasks and life. Indeed, this technology makes the whole process of communication and peer-to-peer collaboration easier, by which pupils are able to critically interpret messages, convey their own points of view and show their creativity in solving problems (cf. Cruz, 2011).

The P21 Framework (see Figure 1) includes both 21st century student outcomes (represented by the arches) and support systems (represented by the pools). The first ones, the pupils outcomes, are related to the skills, knowledge and expertise pupils should master to succeed in work and life, namely: a) key and core subjects such as reading, writing and arithmetic; b) learning and innovation skills, such as creativity, critical thinking, communication and collaboration; c) information media and technology skills, which are related to information literacy both digital and analogical ones; d) life and career skills, which include flexibility, self-direction- cross-cultural skills, productivity and leadership. The latter are necessary to ensure pupils' mastery of 21st century skills. In fact, standards, assessments, curriculum, instruction, professional development and learning environments must all be aligned to produce a support system that enhances the above stated skills.

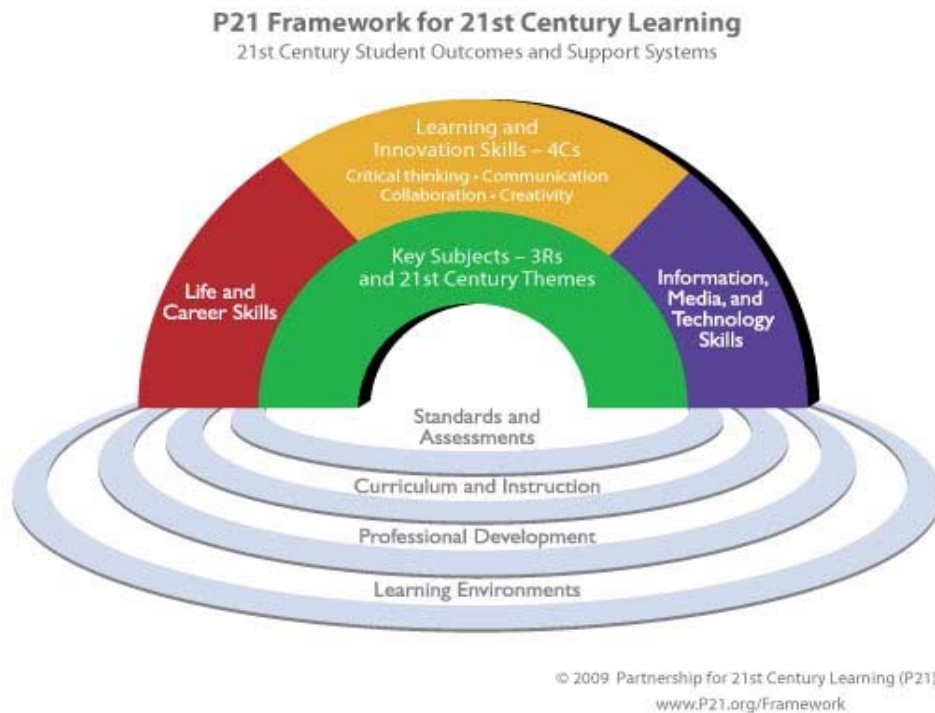


Figure 1: P21 Framework for 21st Century Learning (cf. P21, 2010, 2015)

Taking into consideration that pupils may create and express themselves through languages, we may consider that languages learning is the basis for professional success in the 21st century. Therefore, we believe that language education and cultural understanding may be at the heart of developing critical cultural awareness, i.e., global awareness for pupils. In this way, by learning languages, pupils shall develop skills which allow them: on the one hand, to interact with pupils from the target language and cultures, discussing issues and finding possible solutions towards them; on the other hand, they may develop respect towards their points of view and values, which can be different from their own.

Through languages pupils are able to achieve the following 21st century framework goals, namely: a) pupils will be able to use various types of reasoning to think and reflect critically and solve problems in both conventional and unconventional ways; b) pupils may communicate in diverse contexts through a great variety of means, including technologies (both Web 2.0 and 3.0 tools), sharing their own ideas and interpreting and assessing others' own points of view; c) they are also able to work together in an effective way, accepting responsibility and compromising within the achievement of team's goals; d) pupils are able to use technology effectively to research, access, create, and communicate information in a creative way; e) they will become motivated, self-directed and reflective pupils, who are able to manage their goals and time autonomously; f) they are also able to work respectfully within socially and culturally diverse teams (P21, 2010, 2015).

In this article we will discuss how 21st century skills, learning and innovation skills or the 4Cs in figure 1, can be put into practice in the languages classroom. Firstly, we will focus on what the 21st Century Skills framework conveys, by analyzing reports which deal with its definition and core concepts which are related to it. Secondly, we will present some new approaches which according to our opinion may facilitate the implementation of the 21st Century Skills in the languages classroom, namely: the experiential communicative and the (hyper)sensory approaches. Last but not least, we will present some activities related to the teaching of those skills in languages learning.

1. 21ST CENTURY SKILLS IN THE LANGUAGES CLASSROOM

Learning another language and understanding the culture(s) of the people(s) who speak them is seen as a key skill in the global society in which our pupils will live and work. In fact, language education is quite critical to the pupils success in the world of the future, and language arts is regarded as one of the key subjects which pupils have to master, including "English" and other "World languages" (P21, 2015, p. 2). At the same time language education approaches shall promote understanding of academic content at much higher levels by dealing with 21st century interdisciplinary themes as key subjects, namely global awareness which encourages pupils' "understanding other nations and cultures, including the use of non-English languages" (idem).

During the search we have conducted we have identified different studies which try to portray the kind of knowledge which we should develop within the upcoming years. Some of these studies focus on the fact that technology is responsible for changing the world through globalization and in this way the following skills are highly needed: a) expert thinking, i.e. "the ability to solve unexpected problems for which there are no predictable and programmable rule-based solutions"; b) and complex communication which "involves interacting with other people to acquire information, to explain it, or to persuade others of its importance" (cf. Jerald, 2009, p. 3). This technological and digital world is changing rapidly and presently

"technological literacy is an essential component of job readiness. It is important that students become competent in the use of technology and associated applications. More importantly, they must be able to apply their skills to practical situations. Thus, students should learn technological skills in the context of learning and solving problems (...). Students must be able to build on what they already know as they learn new languages, adapt to new systems, and weigh the benefits and applications of technological development. (...)" (Metiri Group, 2002, p. 13).

Other studies tend to connect the language and technology skills because they see digital interaction in heterogeneous groups as necessary for effective collaboration. OECD (2005, p. 4) focus on this on its report, seeing a competency as more than just pure knowledge: "it involves the ability to meet complex demands, by drawing on and mobilizing psychosocial resources (including skills and attitudes) in a particular context. For example, the ability to communicate effectively is a competency that may draw on an individual's knowledge of language, practical IT skills and attitudes towards those with whom he or she is communicating". According to OECD (idem), pupils will need these skills due to globalization which is creating a even highly interconnected world.

This assumption is stated in Gardner's *5 minds for the future*. This author considers that "most of our students are already way ahead of us digitally whether we are teachers or parents" and this requires new teaching approaches to develop specific skills which he describes as "minds": the disciplined mind, the synthesizing mind, the creative mind, the respectful mind and the ethical mind. The first type of mind is related to discipline, i.e., "work regularly and steadily on things" (Gardner, 2008, p. 5) and seeking for expertise in a specific field but

at the same time being ready for interdisciplinary ways of working (Gardner, 2008, p. 6-8). The second type of mind is all about training pupils on “looking for the current best synthesis, deciding what our ultimate synthesis should look like, picking a method, deciding what are we going to look at, listen to and why, examining what are we going to ignore and why, and importantly, how are we going to record information, using equations, mind maps, stories, formulas, taxonomies (...)” (Gardner, 2008, p. 9). The third type of mind, the creative mind”, implies “thinking out of the box” and it can be fostered by letting pupils take chances and risks while they are undertaking projects. This is the kind of feature computers are not able to perform but once again technology may help pupils achieve it. *Differences* is the key word in the following type of mind. The respectful mind is about “recognizing that the world is composed of people who look different, think differently, have different belief and value systems” (Gardner, 2008, p. 12). The last one, the ethical mind, is related to the interrelationship between oneself’s interests and the ones from the community, bearing in mind that we should expose pupils to ethical dilemmas and having them think about them.

All the reports we have read have in common the following features: pupils must engage in activities that let them learn the essential skills for success in present-day world, such as critical thinking, problem solving, communication and collaboration. These reports emphasize that language learning may contribute to make pupils take on a new view of the world, as they are able to understand the world better because of the knowledge they have of the cultures of the languages they are learning. While pupils are learning a language they are developing: a) communication, i.e. the ability to understand and interpret messages, to present information, etc.; b) cultures, because they learn about the cultural views, practices and products of the people who speak the target-language; c) connections, as pupils are able to access knowledge from other subjects through the target language; d) comparisons, as pupils are able to identify similarities and differences between their own culture and the ones of the target language, reflecting upon their views of the world, practices and cultural products (cf. P21, 2010).

Taking this into consideration, we believe that by undertaking the experiential communicative approach enriched by (hyper)sensory strategies, teachers are able to develop skills such as critical thinking, problem solving, communication and collaboration within language classrooms. Let us now focus on these approaches in the following chapter.

2. THE EXPERIENTIAL COMMUNICATIVE APPROACH AND (HYPER)SENSORY STRATEGIES IN LANGUAGES TEACHING

Experiential learning seeks to introduce a change from an experience or some experiences that are relevant and valid for the student, connected with real life. It is a holistic approach that aims at improving the potential, self-esteem and self-concept of the pupil. According to this approach each student is unique and learning is seen as a cyclical process which is made out of significant and lasting experiences.

In this context interaction and communication play an interesting role, but so our needs and interests. In fact, the experiential communicative approach invites each pupils to develop interest in exploring. Creativity, flexibility, the need to take risks and take the lead characterize this learning approach. If we draw a comparison between the communicative approach and the experiential approach, we may see that the latter seeks the personal growth of pupils, enhances their self-esteem, motivation, and respect for diversity, and at the same time fosters their ability to take risks.

Fernández-Corbacho (2014) sums up the features of this type of learning a teacher shall bear in mind, namely: a) classroom tasks shall engage students in cooperative strategies, making them responsible for their learning; b) authentic use of language with meaningful and stimulating activities shall also be advised; c) each task shall pose challenges and therefore generate interest.; d) there are different learning styles in each classroom group and in this way the type of activities shall be varied; e) affection and security are of utmost importance as pupils need to feel both safe and part of a community, but also rewarded for their achievements. Regarding the use of ICT as a tool for class, Fernández-Corbacho (idem) proposes several activities: webquests (a trip, for example), wikis and blogs with multimedia material), social networks, etc.

As stated by Fernández-Corbacho (idem), our students are primarily people who enjoy experiences and are full of expectations regarding what life has to offer. For this reason, learning based on mechanical and abstract tasks, or with little relation to the real world, makes them disconnect from learning itself. That is why the emotional dimension fosters their connection to their own identity, their previous experiences, and with the world of sensations.

By ignoring these issues, some foreign language course books fail to provide authentic communication activities. In order to learn in an effective and lasting way learners must feel, experiment, observe and reflect on the language and on the learning experience itself. Indeed, we can not forget what Mora (2015:WEB) calls “encendido emocional”, i.e., the affective component that, in turn, develops in each pupils “personal input, initiative, and self-direction in the learning process” (Knutson, 2003).

Moreover, we should not neglect that our pupils bring to the teaching-learning process their own “internal syllabus” (Jiménez Raya, et al, 2007), which may influence their own learning. Therefore, it is relevant to create situations and materials which are significant for students in order to respect their knowledge, which has already

been socially constructed in the community to which they belong (Freire, 2007: 30) or often created in communities of speakers of the target language.

In order to encourage the sharing of knowledge and the questioning among students, it is necessary to develop activities which provide training opportunities for learners, so that they are able to succeed in true intercultural encounters and develop their critical cultural awareness. This critical pedagogy is the commitment to the act of teaching to read the world in a critical way and to transform the dominant conventional educational relations (Cruz, 2011: 83). However, we should not confine the learners only to the sphere of interaction offered by the physical / face-to-face world. We should give them the opportunity to (re)create knowledge in the virtual world by letting them use blogs, glogs, webquests and social networks, in the era of connectivism (Siemens, 2004; Downes, 2006), developing a critical hyper pedagogy, according to Dwight & Garrison (2003) model. As Mora (2015:WEB) states, these digital tools are excellent facilitators of learning per se, but in the same way as with other forms of support analog learning, they must be well designed and well adapted to the context in which learning occurs.

We see language learning as a commitment to citizenship, an environment in which pupils should be engaged in activities in which they train and develop their intercultural communicative competence (Cruz, Araújo e Sá & Moreira, 2009). The higher the number of opportunities pupils have to train these skills, the better they will be prepared, as future citizens, for intercultural encounters and the requirements they entail. In fact, we believe that multisensory practices, which are used mainly in special education environments, can cope with this effective preparation of our students, based on experience and fostering multimodal learning.

Together with the experiential communicative approach, multisensory learning transforms the senses in perception channels that activate the brain connections (Shams & Seitz, 2008). Multisensory learning offers the pupils the opportunity to gain something through experience. In fact, reading how to make an orange cake is not as productive or as effectively as creating a real one. When making a cake, the pupils learn what ingredients are part of the recipe, by touching them and smelling them. They are able to stir the cake, see how long it takes to bake and even smell once its done. Finally, they also taste it.

We agree with Arslan (2009: WEB) when the author refers that

“every lesson should include a hands-on experience. If the lesson is about fractions, let the children play with plastic pies with slices to understand. If the lesson is on writing, play games that allow students to identify better writing techniques. Use the computer and online resources to take learning to a new level where they can see and hear and interact. Consider the potential of touch screens in education, where a child can easily slide objects back and forth on the screen and learn in the process.”

Looking back in time, we see the roots of multimodal learning in approaches such as Total Physical Response (cf. Richards & Rodgers, 1986:87) or Bloom's Taxonomy (cf. Anderson & Sosniak, 1994). However, it is with the Theory of Multiple Intelligences of Gardner (1993:60-61) that the multisensory approach gains its greatest expression.

In our opinion, approaches, methodologies and resources to be taken into account should be based on the social realities that we have in a *glocal* society (Cruz, 2011). Therefore, learning a foreign language should be an area of communication intervention, intercultural dialogue, maximizing the multiple skills of our students, according to the perspective of García (2010) and of an affective relationship with the languages (Marques, 2004).

In this context, we may say that experiences provided by learning through holistic and hypermedia resources are relevant, but not enough. It is therefore necessary to integrate the experiences which learners have the opportunity to carry out, including reflection activities and stimulating critical analysis, so that pupils are able to assimilate and create proactive knowledge which they may use in other contexts (Fernández-Corbacho, 2014).

Taking this into account, we believe that the gamification pedagogy serves this purpose. In fact, the game assumptions are taken into the classroom, stimulating the integration of experience and critical analysis and reflection on the teaching-learning process. According to Foncubierta & Rodríguez (2015), the use of gamification is seen as the technology which the teacher uses in the design of a learning activity (either analog or digital) introducing game elements (logos, time limit, punctuations, dice, etc.) and thinking (challenges, competition, etc.) in order to enrich the learning experience, direct and / or modify the behavior of students in the classroom. In fact, gamification aims at influencing the behavior of students at a given task, creating and producing experience, domain feelings of a given content and, at the same time, autonomy for their achievement (cf. Hamari & Koivisto, 2013).

Particular important in this type of pedagogy is the affection or the so-called “*encendido emocional*” (Mora, 2013), which we have discussed before, i.e., the motivation and the emotional involvement of the students on the task. It is the emotion that “calls” the pupils to actively participate in gamified tasks. We can tell if a pupil is engaged in a specific task if they are quite cooperative and curious for what comes next and quite dependent on immediate feedback.

Let us now focus on activities in which pupils are able to develop collaboration, creativity and cross-cultural awareness skills.

3. COLLABORATION, CREATIVITY AND CRITICAL THINKING: 21ST CENTURY SKILLS INTO PR@CTICE

Bearing in mind that the experiential communicative approach is about letting pupils engage in present-day and real tasks, developing a sort of emotional involvement, we will now give examples of practices we consider that represent this sort of activities. These activities were developed by students of the Master Degree in Teaching English and Spanish at the School of Education of Oporto Polytechnic Institute, who were under our supervision. The following activities were developed during their practical training at local schools, being rigorously planned and taking into consideration both the Common European Framework of Reference for Languages and National Programs for English and Spanish as Foreign Languages.

3.1 COLLABORATION

One of the activities we would like to draw your attention upon is related to the use of a *WebQuest* and *Glogster* in the Spanish classroom. This activity can be undertaken during a set of lessons related to traveling aimed at A2 level Secondary School pupils (according to the European Common European Framework of Reference for Languages). The teacher has to explain that the pupils will have an adventure themselves, a *WebQuest* called “La ruta Azteca”, which can be found at <http://zunal.com/webquest.php?w=268782>. The *WebQuest* presentation shall be done in plenary. It is advised that the teacher explain the purpose of a *WebQuest*, its features, work tasks, processes and even assessment. Pupils also need headphones for the activities as they have to listen to audio and watch some videos.

According to Dias (2010), *WebQuests* increase pupils motivation, being often cooperative in nature, requiring students to take on roles where they are part of a team that must accomplish a specific task. In fact, they have to become experts on a certain topic and share this information with their group. The *WebQuests* may offer opportunities of knowledge (re)construction through: a) a vision of learning as a social practice; b) the development of multiple intelligences; c) the reading and writing production based on peers collaboration; d) the development of the learners’ electronic competence; e) and also the creation of interdisciplinary practices based on the use contents from other curricula subjects.



Figure 2: Introduction Page of *WebQuest* “La Ruta Azteca”

In Figure 2 we are able to see the organization of *La ruta Azteca* itself. Pupils have to follow specific stages: a) introduction, which consists of a short paragraph that presents the activity to the students. It often has a role or scenario involved; b) the task informs the learners of what the outcomes will be; c) the process identifies the steps the students should go through to accomplish the task. It also includes the online resources they will need, providing scaffolding for the information organization; d) evaluation sections which describes to the students how their performance will be evaluated; e) the conclusion summarizes what the learners will have accomplished by completing the *WebQuest*, and often provides additional opportunities to extend their thinking.

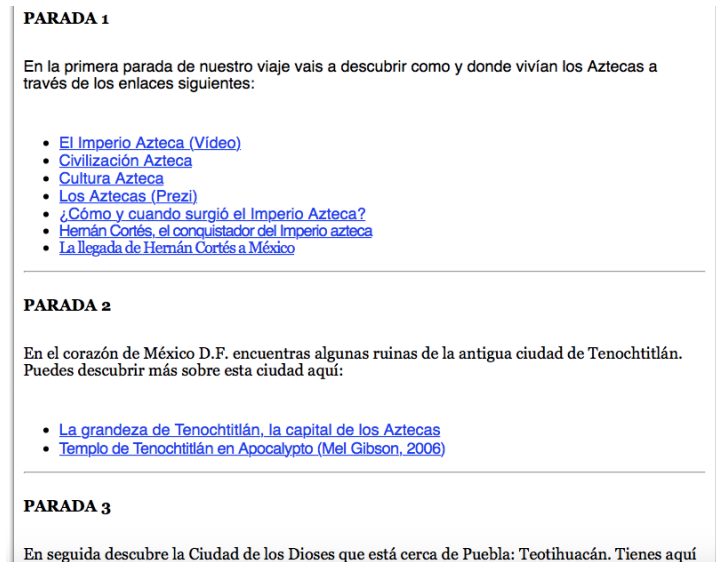


Figure 3: Process Page of *WebQuest* “La Ruta Azteca”

In our opinion one of the most important stages of the *WebQuest* is the Process stage (see Figure 3). In this stage pupils have the opportunity to simulate a bus trip around México, making three stops, in which they discover the wonders about history, geography and culture of the Aztecs. In the Task Page pupils also have the chance to find out what the final outcome is and some tutorials on how to undertake it. The aim of this specific *WebQuest* is to create a digital poster (see Figure 4), by using *Glogster Web 2.0* tool. *Glogster*¹ is a cloud-based platform for digital storytelling and interactive learning; It allows users to mix all kinds of media on a virtual board to create multimedia posters and it encourages interactive, collaborative education and digital literacy.

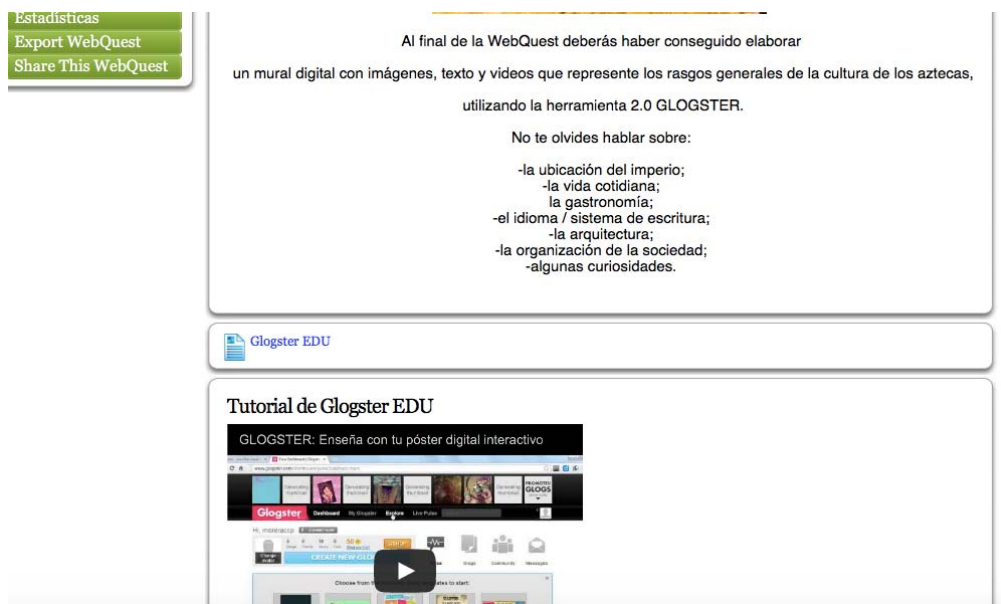


Figure 4: Task Page of *WebQuest* “La Ruta Azteca”

As stated by Wistrom (2012:WEB),

“Glogster is a great technology tool to use in the classroom because it is so flexible. You can use it for biographies, time lines, math formulas, instructional writing, experiment results, spelling plural verbs, country or state profiles, and much more. Many EFL teachers love it for its visual impact, and teachers

¹ *Glogster* for education can be accessed here: <http://edu.glogster.com>.

from elementary all the way up to high school can find a use for this classroom technology. Basically, any poster you can do on paper, can be done better as a *glog*. You can share them on interactive whiteboards on LCD projectors, or embed them in class websites or student blogs. *Glogs* can be worked on in school and out of school. Best of all, students love to create *glogs*. When you integrate technology into an area of education where it is not traditionally used, it instantly becomes a great motivator for students. So, why not sign up today and see what everyone else is talking about! Glogster EDU is free, so you have nothing to lose.”

Particular important in the *WebQuest* is the Evaluation Page because pupils have got the chance to autonomously assess their own piece of work, taking into consideration a table with the description of each performance level and punctuation. Therefore, failing is almost impossible. In the following figure you may see one of the groups’ outcomes:



Figure 5: Sample of a poster one of the group of pupils built

The multimedia poster building allows them to develop creativity skills. Let us now focus on other activities which may stimulate this skill.

3.2. CREATIVITY

The following activity can be undertaken by pupils of A2 level of English at Primary School. It involves the use of another Web 2.0 tool, namely: *Kahoot!*. *Kahoot!* is a classroom response system which creates an engaging learning space, through a game-based digital pedagogy based on quizzes. Its quick pace, suspenseful music, and instant scoreboards keep competition lively and learners get engaged. The quizzes can be built by teachers beforehand, as in the example below (Figure 6) which can be accessed at <https://play.kahoot.it/#/k/26c94b5a-ef39-4821-9c3e-233a7b5331e1>, or by the pupils themselves during the classroom.

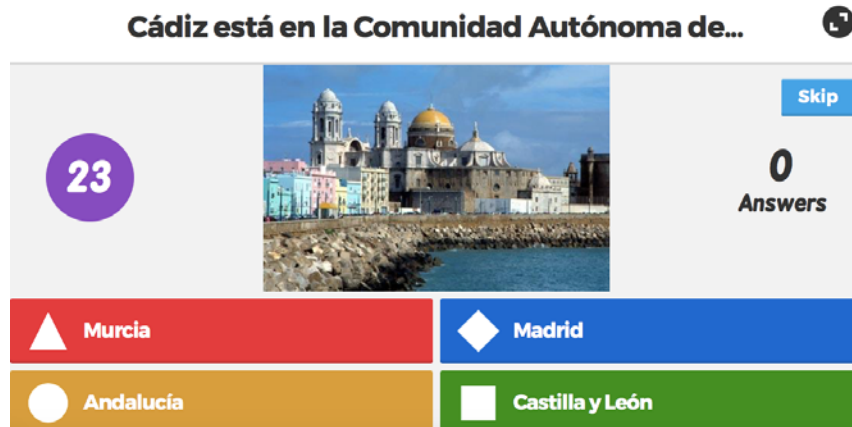


Figure 6: Sample of a Kahoot! built by teachers

As stated by Valle (2015:WEB), *Kahoot!* incorporates the gamification model in a clear way, by having the following features:

“1) fast feedback- Students get immediate feedback on their devices as they answer the questions; 2) transparency- Students are informed instantly of their position on the leaderboard, which is projected on the screen; 3) goals- The goal of course is to win the game. My prize is usually exemption from the quiz containing the vocabulary or grammar items featured in the game. My goal as a teacher is to motivate the students to master and to become excited about my content; 4) badges- The winner receives a trophy badge projected on the board; 5) leveling up within the community- Students are able to move up on the leaderboard as they play the game; 6) onboarding (learn the game as you play)- Students learn to play as they begin the game. They go on <http://kahoot.it>, enter the code that is projected on the screen, type in their name, and begin playing. There are no lengthy explanations; 7) competition- All of the students in the class play against each other; 8) collaboration- Students help each other to get ahead when they notice classmates falling behind; 9) community- The game gives recognition to the winners in the community, pointing to their achievement within the group. The smile it puts on the winner’s face is priceless; 10) points- The winner is the one who earns the highest amount of points, based on correct answers as well as speed.”

Apart from these features, *Kahoot!* is also interesting because it provides real time results that can be downloaded for use, in order to keep track of pupils’ learning outcomes and success.

However, as stated above, our interest in *Kahoot!* deals with the possibility to stimulate creativity in pupils. At the end of a didactic unit you may ask pupils to create their own quizzes to test other pupil’s knowledge. In the picture below (Figure 7) you may see an example of the type of *Kahoots* primary school pupils may develop. The topic of this *Kahoot* is *Animals*. Pupils were asked to create their own *Kahoot!*, using language structures and vocabulary they have learned during the lessons.

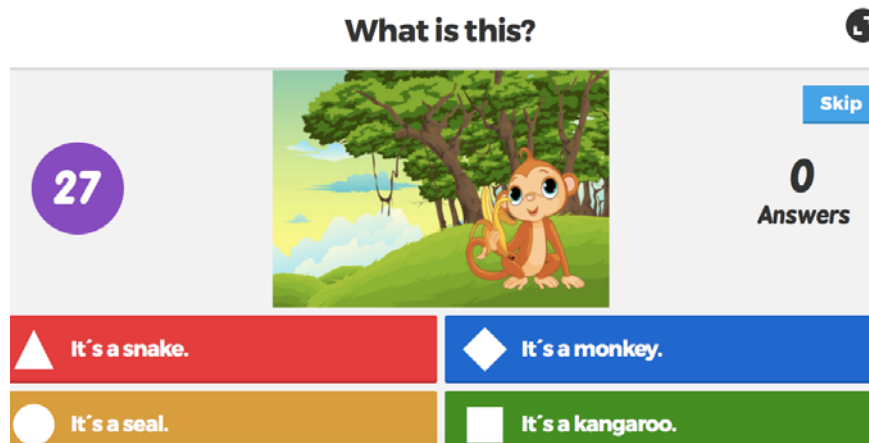


Figure 7: Questionnaire Sample of the “Wild Animals” Kahoot!

Other ways of getting pupils involved in stimulating their creativity is making them develop either the so-called *fotonovelas* or small comic videos. The first ones are small stories pupils create having the format of comic books. They are particularly interesting because pupils have to: a) write a script, collaborating in writing and sharing ideas for dialogues and actions; b) they make a story board with the necessary pictures and dialogue they would use per frame; c) they take the pictures, by using their mobile phones; d) after uploading the pictures onto computers or iPads pupils work with *Comic Life* to create their stories by adding the pictures and copying and pasting the dialogue from their documents. *Comic Life* can be accessed at <https://plasq.com/apps/comiclife/macwin/>.

The same idea can be done with videos by using any video editing tool, such as *iMovie* or *Windows Movie Maker*. In Figure 8 one can see a project work about the *daily routine* topic in Spanish language. This was created by a pupil studying Spanish for the first time. This girl was able to express herself in an imaginative way and at the same time she trained some language vocabulary and structures related to the daily routine, content which is taught in Spanish A1 level (*Yo me despierto a las 7 de la mañana, Me cepillo los dientes después de desayunar*, for example). She used her mobile phone camera and *Windows Movie Maker*.



Figure 8: Video frames created by a pupil at Spanish A1 level about daily routine

In the following sub-chapter we will focus our attention on activities which promote critical thinking through activities which allow pupils to reflect upon things and make them solve specific problems.

3.3. CRITICAL THINKING

In this sub-chapter we will present some activities which may be seen as critical thinking tasks. We believe that this skill can be fostered by using authentic material which may pose and induce pupils into questioning and solving problem-situations.

The basis of the following activities are the understanding of picture or story books. We have opted for authentic ones, rather than graded versions. According to Mourão (2003), real books are intended for native readers and entail authentic language used in natural contexts. In order to prepare pupils to be “full participants in a literate, democratic and multicultural society we need to focus on the ways of thinking that are involved in many uses of literacy in school and in the community. These uses require abilities of reflection, of critical thinking, investigation and problem solving” (Fisher, 1998:16).

As stated by Erkaya (2005), using real books with pupils in order to develop critical thinking skills can be an engaging, natural, familiar and fun task. According to Fisher’s research (1998), one may find strong didactic reasons to use real books to make pupils develop critical cultural awareness and thinking skills, namely: a) pupils become able to transfer what they learn to other specific contexts; b) they develop some strategies which help understand any kind of text, by being able to question and discuss topics and even language styles, i.e., meta-linguistic knowledge.

There are some picture books that instantaneously pose pupils some questioning. This is the case of titles such as *Molly’s Magic*, *A Story of Affirmation*, and *La Ciudad de Arusabnarg*. We will focus on the latter for the Spanish language classroom at primary school level. This story can be found here: <http://www.aragon.es/estaticos/ImportFiles/06/docs/Areas/EducaSensib/MedioAmbienteNiños/Leer/ARUSABNARG.pdf>.

This authentic picture book can be introduced by making pupils aware of the 3Rs policy: reduce, recycle and reutilize. We can use some web resources, such as the ones offered by *Los Colorados*, a musical band from

Panama which produces didactic resources for stimulating pupils' consciousness of the climate changes and the need to save energy and recycle things.

Therefore, to warm up and prepare pupils for reading, we may use some comic strips from this band (see Figure 9). A video about the policy of the 3Rs may also be watched. This music video which is performed by animated endangered and wild animals can be accessed at https://www.youtube.com/watch?v=gKB_7MUPxT4. After this, pupils may have the chance to solve a quick quiz in order to see if they understand the differences between reduce, recycle and reutilize. These materials can be found here: <http://www.panamarock.com/loscolorados/>.

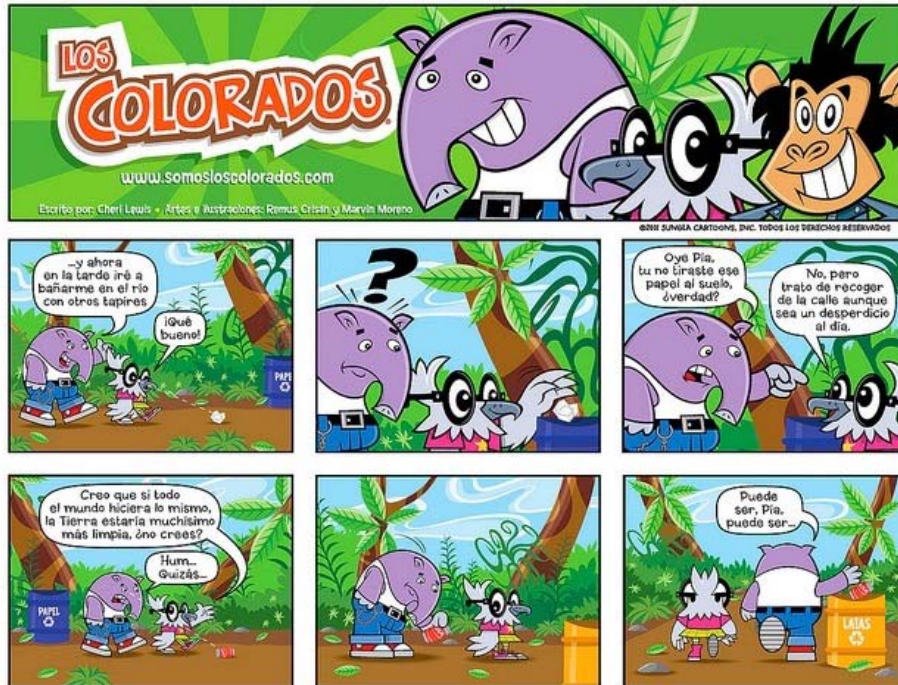


Figure 9: Comic Strip from Los Colorados

Then pupils they learn the fact there is a Spanish city whose inhabitants still do not know how to recycle. This story is read aloud in an interactive and engaging way and pupils easily find out that the inhabitants of the city speak a different language (*séver*), which is written backwards. By using a reading guide (Figure 10), pupils are able to analyze the story and at the same time help the *Arusabnarg* inhabitants learn how to recycle.

GUIÓN DE LECTURA	
Nombre: _____ Grupo: _____ Número: _____	
Lee el cuento "La ciudad de Arusabnarg" y contesta a las cuestiones.	
1. ¿Qué peculiaridad tiene la lengua que hablan en Arusabnarg?	
Se habla y se escribe al _____.	
2. Traduce algunos significados de palabras escritas en la lengua "séver".	
séver=	Nomodóc =
Ocinú=	Arusabnarg=
3. ¿Cómo es la ciudad de Arusabnarg?	
La ciudad es _____.	
4. ¿Cuáles son los personajes principales del texto?	
Los personajes principales del texto son _____ y _____.	
5. ¿Qué hay en el centro de la ciudad?	
En el centro de la ciudad hay _____.	
6. Un día la bolsa de basura reventó y todo se quedó muy sucio. ¿Quién ayudó la ciudad con un plan? ¿Cuál era el plan?	
_____ ayudó la ciudad con un plan: _____.	
7. ¿Sabes qué tipo de basura se debe echar en estos contenedores de color azul?	
	Se debe echar _____ y _____.
8. Cita dos tipos de materiales que podemos echar en los contenedores amarillos para que sean reciclados. El texto del cuento te ayudará. Es la que recogieron los habitantes del barrio Ollinoma.	
	Podemos echar _____ y _____.

Figure 10: La ciudad de Arusabnarg's reading guide

In the following picture you may see some of our primary pupils teaching how to properly recycle by removing authentic waste (with some words in Spanish, such as *leche desnatada*, *galletas*, etc.) and throwing it in the corresponding yellow, green and blue dustbins:



Figure 11: Pupils teaching Arusabnang inhabitants how to recycle

As we have seen before, motivation, engagement and pro-activity are the key words for an effective teaching approach based on 21st Century Skills in languages learning.

CONCLUSIONS

The 21st Century Skills are a set of competences that pupils need to develop in order to succeed in the information age. The collaboration and communication, creativity and innovation, critical thinking and problem solving skills shall be trained at schools as earlier as possible.

According to literature, studies show that pupils shall be able to think deeply about problems, solve issues in a creative manners, work in groups, communicate clearly using analogue and digital tools and at the same time deal with information. In fact, the rapid changes which occur in our economy and information driven world require pupils to get flexible, take initiatives, lead if necessary and create something new.

In this context, technology may open up huge opportunities for us, language teachers. We have presented some activities and tasks which deal with Web 2.0 tools, such as *Kahoot!* or *Glogster*, which enhance languages learning by offering pupils chances of portraying their work and train some skills, namely: collaboration, creativity, information analysis and writing.

However, we must also be aware that technology does not substitute some in-classroom analogue approaches and strategies which contribute and are highly effective in the development of these skills. Authentic story books may be quite adequate in the training of critical thinking skill, as they pose pupils questions and invite them to solve some problem-based situations. They are a means which offers cross-cultural approaches by making pupils contact with authentic and cultural products of the target-language.

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A Comparative Analysis Of Emoticon Functions And Forms In First And Second Language

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ABSTRACT

Defined as graphic representations of facial expressions that are embedded in electronic messages, emoticons can be utilized to present the emotional content and the contextual information in online communication. Previous studies investigated how emoticons differ across region, culture or gender. To our knowledge there is no study which explores the use of emoticons in first language (L1) and second language (L2) comparatively with a focus on functions and forms. The present study investigated whether language learners use emoticons with different functions and forms in L1 (Turkish) and L2 (English). Data collected from 36 pre-service English language teachers' WhatsApp posts over the course of 4 months in Turkey, were analysed to characterize the functions and forms of emoticons in L1 and L2. With an aim to triangulate the research findings, semi- structured focused group interviews were conducted with the participants. The results indicated that the participants used emoticons mostly to enhance verbal part of the message in L1 and L2. Whereas the use of emoticons with the function of expressing emotion largely appeared in L1, emoticons with the function of substituting a lexical item were found primarily in L2. Additionally, smileys & people emoticons were the most frequently used forms in both L1 and L2. The results of the present study underlines the importance of contextual factors in defining the functions and forms of emoticons in online discourse.

Key words: emoticon; computer-mediated communication; WhatsApp; first language; second language.

INTRODUCTION

Text messaging (Short Messaging Service; SMS) is a mass communication medium used by billions of people around the globe. Recently, however a new wave of mobile communications services called mobile instant messaging (MIM) applications like WhatsApp, Viber and Line have gained considerable attention among users. WhatsApp, especially, as the most downloaded application among 127 countries has become very popular and gained over 350 million users (Cohavi, 2013).

In the present study we aim at investigating the use of emoticons via WhatsApp. Similar to other types of computer-mediated communication (CMC), users can enhance the socioemotional context of their messages in WhatsApp through emoticons. Defined as graphic representations of facial expressions that are embedded in electronic messages (Walther & D'Addario, 2001), emoticons have been noted as the fundamental means of expressing emotion in CMC (Riva, 2002) and a substitute for non-verbal communication (Walther & D'Addario, 2001).

Nonverbal cues are crucial to understanding the meaning and nature of the message during face to face interaction (Argyle, 1988). However, online texts, which lack contextual information may result in misinterpretation of the nature of the message and the senders' stance (Lo, 2008). More recent work has shown that emoticons and emojis can provide a remedy for this gap (Derks, Fischer, & Bos, 2008). A great deal of studies have indicated that the use of emoticons and emojis enhance written communication similar to paralinguistic cues used in verbal communication (Derks et al., 2008; Rezabek & Cochenour, 1998).

"Emoticons", a blend of "emotion" and "icons", can be defined as graphic signs used in textual computer-mediated communication (CMC). Rezabek and Cochenour (1998) describe emoticons as "visual cues formed from ordinary typographical symbols that when read sideways represent feelings or emotions" (p. 371). Thompson and Foulger (1996), on the other hand, describe emoticons as "pictographs" that are used "to express emotion or as surrogates for nonverbal communication" (p. 226). The use of graphic signs in the written text was indeed first proposed by Scott Fahlman, a computer scientist at Carnegie Mellon University, with an aim to clarify the intended message posted to a discussion forum (Krohn, 2004). Since then, plenty of emoticons appeared with different forms and meanings. In addition to the original emoticons that use only ASCII symbols,

a growing number of graphical emoticons, or emojis, that represent different objects (such as a handbag or a rose), or mimic facial expressions (such as a frowning face or a grinning face) were developed. Dictionaries and (e.g., Godin, 1993; Raymond, 1996) Websites (e.g., Netlingo, n.d.; Wikipedia, 2009) were created to catalogue hundreds of new emoticons and emojis, that continue to increase in number each day. With the adoption of smartphones supporting advanced graphics in the late 1990s, emoticons, especially emojis, gained more popularity in CMC (Pavalanathan & Eisenstein, 2015), and became a crucial part of online discourse.

The Social Presence Theory proposed by Short and his colleagues (1976) and Social Information Processing Theory put forward by Walther (1992) shed light on the role of emoticon in online discourse. The Social Presence Theory describes social presence as the extent to which the communication medium conveys the communicators' actual physical presence. In addition to actual physical presence itself, social presence also includes the words used in the communication and other nonverbal cues such as physical distance, posture, gestures, and intonation. Thus, from the perspective of Social Presence Theory, social presence is expected to be limited in CMC environments. Rice and Love (1987) compare CMC and face to face interaction in their research, and conclude that CMC yields to less social presence due to the "less friendly, emotional or personal and more serious, businesslike, or task oriented" nature of CMC (p. 88).

Social Information Processing Theory notes that individuals feel the same need for elimination of ambiguity during CMC as in face to face communication. In this context, individuals will tend to modify their linguistic and textual behaviours with an aim to meet these needs in CMC. According to Walther and D'Addario (2001) in the absence of nonverbal cues individuals adapt their behaviours in CMC based on the available cues such as content and linguistic strategies or emoticons and typographic cues. The authors argue that emoticons enhance the social meaning of the online messages. Derks et al. (2008) also argue that emoticons can add a "paralinguistic component to a message and "serve as nonverbal surrogates, suggestive of facial expression" (p. 2). Thus, although definitions attributed to emoticons or categorizations found in dictionaries and Websites suggest that emoticons are almost universally perceived as nonverbal indicators of emotion mostly (Dresner & Herring, 2010), recent studies note that the function of emoticons in CMC is not limited to expressing emotion merely.

Several researchers have proposed various functions of emoticons employing different criteria. Dresner and Herring (2010) listed the functions of emoticons as (a) emotion indicators, mapped directly onto facial expression; (b) indicators of non-emotional meanings, mapped conventionally onto facial expressions; and (c) illocutionary force indicators that do not map conventionally onto a facial expression (p. 62). Luor, Wu, Lu & Tao (2010) noted that emoticons served as (a) expressing emotion; (b) enhancing the verbal part of the message; and (c) expressing humour (p. 890). Derks et al. (2008a) summarized the role of in CMC as (a) expressing emotion; (b) strengthening the message; (c) regulating the interaction; and (d) putting into perspective (p. 386). Although limited in number, the function of graphical emoticons in CMC has also been questioned in literature. Kelly and Watts (2015) interviewed 20 participants and concluded that beyond expressing emotions, emojis are employed for other purposes such as sustaining a conversational network, developing a spirited interaction, and creating a common and private uniqueness within a particular relationship. Given the several different taxonomies on the categorization of emoticon functions in literature, it is possible to conclude that investigation of the parameters that affect the distribution of different emoticon functions gain importance.

In addition the functions of emoticons, emoticon forms have also been a point of concern for the investigation of emoticon use in literature. As regards the distribution of emoticon forms, Wolf (2000) analysed Usenet newsgroups and found that the basic smiley was the most common emoticon in her data. Similarly, Huffaker and Calvert (2005) reported that 53% of emoticons used in adolescent blogs were "happy". In the same way, Provine, Spencer & Mandell (2007) and Baron (2004) concluded that a great proportion of emoticons in their corpus consisted of smiles. Although previous studies underline the use of certain emoticons such as smileys, factors which have an influence on users' choice of different emoticon forms remain relatively unexplored.

To better explain emoticon use in online platforms, several studies focused on the factors that have an influence on the use of emoticons such as communication type (Rezabek & Cochenour, 1998), context (Derks, Bos & Grumbkow 2007), culture (Markman & Oshima, 2007), gender (Tossell, Kortum, Shepard, Barg-Walkow, Rahmati & Zhong, 2012) and linguistic setting (Aragon, Chen, Kroll & Feldman, 2014). Rezabek and Cochenour (1998) analyzed emails on lists in terms of emoticon content and frequency of use and concluded that emoticons were used in 1–25% of the emails in various listservs. Derks, Bos, and Grumbkow (2007) found that emoticons were used more frequently in socio-emotional contexts than in task-oriented contexts. Lo (2008) suggested that positive emoticons were more popular than negative emoticons. Markman and Oshima (2007), on the other hand, compared Japanese and American emoticons based on e-mail data and concluded that the functions of emoticons varied across different cultures. Tossell et al. (2012) studied the difference between

genders in the frequency and variety of emoticons through the analysis of real portions of private communications data from individuals' smartphones. The researchers found out that there were differences between genders in the amount and variety of emoticons used. Aragon, Chen, Kroll and Feldman (2014) examined a group of adult scientists as they chat about their work. The authors concluded that while English L1 speakers used more lines of text per message, English L2 (French L1) speakers used more emoticons per message. Finally, Vandergriff (2014) analyzed data from college classroom text chats and investigated how nonnative and native speaker participants used emoticons. The results yielded that nonnative speaker participants used emoticons more frequently than their native speaker peers. Additionally, although native speaker corpora of emoticons consisted of smileys and winkies exclusively, the nonnative speaker data showed more emoticon variation. Overall, these studies indicate that the variety, function and amount of emoticons may vary depending on several parameters.

Despite various studies that investigate emoticon use across different contexts, cultures and genders, to our knowledge, there is hardly any study which focuses on the use of emoticons in terms of form and function across different language settings. Further support for the need to study emoticon use across different languages comes from a review of literature concerning the role of language in the use of emotion words. Previous studies suggest that emotion words are used less by L2 users compared to native speakers (Dewaele & Pavlenko, 2002). Dewaele and Pavlenko (2002) investigated a corpora of film retellings in English L1, English L2, Russian L1, and French L2 and reported that the type of linguistic material, level of proficiency, degree of extraversion, and gender influenced the proportion of emotion vocabulary. The authors explained the underuse of emotion vocabulary in L2 through the detachment effects, and noted that L1 is regarded to be more suitable for the expression of emotional involvement while L2 is considered to be more isolated from the L2 user (Kinginger, 2004; Pavlenko, 1998). However, the use of emoticons, alternative means of expressing emotions in today's mobile world, remains to be investigated across different languages. The present study aims to fill this gap in literature and investigates whether English language learners use emoticons differently in L1 (Turkish) and L2 (English).





THE STUDY

This study applied a descriptive research approach using coding to describe characteristics of emoticons in terms of function and form. Data were collected from WhatsApp messages sent by 36 second grade English language teaching students (25 Female-11 Male) in Turkey in the context of "Oral Communication Skills I" course. Participants' age ranged from 20 to 22 (mean= 21). As a course requirement, the students were expected to read the assigned parts from "Of Love and Other Demons" by Gabriel Garcia Marquez at home and discuss the novel in the classroom. Additionally, the students were also required to answer the questions related to the context of the novel, as proposed by the selected students each week in their WhatsApp group. A WhatsApp group was created for the course and all students and a research assistant were assigned to it. The course instructor, who is the researcher at the same time, was not included in the group to ensure that the students can text each other in a relaxed environment. Students answered a different question each week and they received an extra grade for their participation as an incentive. There was no word limit for the text messages. However, the students were asked to use at least 3 emoticons of their choice to answer the proposed question on WhatsApp. Students texted messages and shared ideas on WhatsApp for 8 weeks using L1 Turkish and English L2 interchangeably each week. Thus, the data consisted of 4 weeks of text messages in Turkish and 4 weeks of text messages in English.

For data analysis, all emoticons used by the students were classified based on language setting, and they were categorized in terms of their functions and forms. Regarding their functions, emoticons were coded as enhancing verbal part of the message, expressing emotions, expressing humor and substituting lexical items based on the taxonomies suggested by Luor et al. (2010) and Kavanagh (2010), as shown in Table 1. Pertaining to forms, emoticons were classified as smileys & people, animals & nature, food & drink, activity, travel & places, objects, symbols and flags in accordance with Emojipedia (2015). Two researchers specialized in English Language Teaching analyzed the data individually and coded emoticons according to their functions and forms. The interrater reliability of classification of the categories was .85.

Table 1.

Examples for different functional categories

Functional Category	Example
Expressing emotion	I don't expect such a selfish mother to be loyal to her daughter  (angry face).
Enhancing verbal part of the message	I also think  (thought cloud) that it's magical realism.
Expressing humor	His time came, and he died  (electric plug).
Substituting a lexical item	In the  (end with left arrows above) it made everybody think that Sierva was really possessed.

In addition to the analysis of the WhatsApp messages sent and received by the participants, we conducted interviews with 14 participants to better explain the functions and forms of emoticons in L1 and L2, and triangulate the findings. Interview data were analyzed using content analysis to identify the general use of emoticons in online messages and functions and forms of emoticons in L1 and L2 comparatively.

FINDINGS

A total of 288 text messages sent by 36 participants over 4 months study period included 1281 graphical emoticons (emojis). There were no ASCII symbols in the data. With regards to function, emoticons used by the participants could be placed into four categories: enhancing verbal part of the message (N=1078), expressing emotions (N=188), expressing humour (N=10) and substituting lexical items (N=12); of which the first two clearly dominate (see Table 2). Participants used emoticons mostly to enhance verbal part of the message in L1 (86%) and L2 (82%). There were also a great deal of emoticons used to express emotion in both L1 (16%) and L2 (12%). However, the participants used emoticons rarely to express humour (1% vs. 1%) and to substitute a lexical item (1% vs. 1%) in L1 and L2.

With regards to emoticon functions in L1 and L2 based on the defined categories, we found that a majority of emoticons with the purpose of expressing emotion were used in L1 (73%). The distribution of emoticons with the function of enhancing verbal part of the message (55% vs. 45%) and the function of expressing humour (40% vs. 60%) were not radically different in L1 and L2. However, emoticons with the function of substituting a lexical item were mostly found in L2 (67%) data.

Table 2.

Number of emoticons with different functions in L1 Turkish and L2 English

Language Type	Functional Category			
	Enhancing verbal part of the message	Expressing emotions	Expressing humour	Substituting a lexical item
L1	588	118	4	4
L2	490	70	6	8

An analysis of emoticons in terms of form indicated that the participants employed numerous different emoticons in both languages. Emoticons used by the participants belonged to five different categories in terms of form: smiles & people (N=900), animals & nature (N=44) travel & places (N=45), objects (N=130) and symbols (N=162). An investigation of emoticon use in terms of form in L1 (Turkish) and L2 (English) reveals that emoticons with similar forms were preferred by the participants in L1 and L2. As shown in Table 3, the majority of emoticons were sent in the category of smiles & people in L1 (71%) and L2 (74%). The second frequent emoticon form was the category of objects in L1 (11%) and the category of symbols (17%) in L2. However, there were only a small number of emoticons in the categories of animals & nature (6% vs 1%) and travel & places (5% vs 3%) both in L1 and L2. We couldn't identify any emoticons in the category of food & drink, activity and flags.

A more detailed analysis of each emoticon form in L1 and L2 indicates that the participants employed a majority of the emoticons in the symbols category in L2(81%), while they used a smaller number of emoticons in the symbols category in L1 (19%). The distribution of emoticons in the categories of smiles & people (L1=48%, L2=52%), travel & places (L1=51%, L2=49%) and objects (L1=54%, L2=46%) were nearly similar in L1 and L2. With regards to the emoticons in the category of animals & nature, the participants used a great

proportion of the emoticons in L1 (93%), while they used a limited number of emoticons that belong to animals & nature category in L2 (7%).

Table 3.

Number of emoticons with different forms in L1 Turkish and L2 English

Language Type	Form Category				
	Smiles & People	Symbols	Animals & Nature	Objects	Travel & Places
L1	435	31	41	70	23
L2	465	131	3	40	22

In addition to the analysis of participants' text messages, interviews with the participants underlined four major functions of emoticons: to express emotion, to make the meaning more clear, to add fun and to substitute lexical items. These categories comply with the taxonomy used for the functional categorization of the emoticons in this study. First, in parallel with the functional category of "expressing emotion" an interviewee explained that emoticons helped to express emotion in the following words:

"I believe emoticons are the expression of feelings through symbols. Emoticons add sincerity to the message. If the person I'm talking to online answers my emoticons with mere writing and do not use any emoticons, I start thinking that something must be wrong"

Second, in line with the functional category of "enhancing verbal part of the message" another participant underlined that emoticons can be used to make the meaning more clear, and stated:

"As we speak online, sometimes it is not clear whether we're crying or smiling, and emoticons help to make the feeling more clear. When I'm happy about something, using a smiley indicates the density of my feelings."

Third, similar to the functional category of "expressing humour" another participant reported that emoticons added fun to the text, and said:

"Thanks to emoticons, writing and reading messages is less scary! When we use emoticons, the text becomes livelier, more attractive and more entertaining."

Finally, in correspondence with the functional category of "substituting a lexical item" a participant explained that emoticons can be employed to substitute lexical items, and said:

"I'm too lazy to write sometimes, but emoticons can substitute a sentence. I can say too many things with a few symbols."

With regards to the comparison of emoticon use in L1 and L2, the participants placed more emphasis on some functions in separate language settings. The participants reported that they did not prefer to use emoticons to substitute lexical items in L1 (Turkish). Instead, they emphasized the use of emoticons to express emotions in L1 as stated in the following comment:

"I never used emoticons to replace a word in Turkish. In addition, I used emoticons in Turkish to express emotions. I believe I express myself better in Turkish. Writing in Turkish sound more sincere and clear to me."

In L2 (English), on the other hand, the compensatory use of emoticons was emphasized by the participants. They stated that emoticons helped to substitute unknown words for the writer, and made the text easier to follow for the reader in L2. A participant made the following comment:

"One or two emoticons can be enough to express myself in English rather than writing complex sentences. Emoticons support the meaning visually."

Pertaining to the forms of emoticons, interviews with the participants yielded that emoticons in the category of smileys & people were the most popular emoticons among the participants. When asked to identify the emoticons they used most frequently, the participants listed "grinning face", "grinning face with smiling eyes" "face with tears of joy", "winking face" and "smiling face with sunglasses". The participants did not mention any difference between the forms of emoticons they used in L1 and L2.

DISCUSSION

The present study investigated emoticon use in terms of form and function in L1 and L2 corpus, which consisted of pre-service English teachers' messages on WhatsApp. The results yielded that the participants used emoticons mostly to enhance verbal part of the message both in L1 and L2. These results provide further support for the recent perspective on emoticons in literature, which suggest that the function of emoticons in CMC is not limited to expressing emotion merely. In line with Social Information Processing Theory, emoticons enabled the participants to enhance the social meaning of their online messages and added a paralinguistic component (Derks et al, 2003; Dresner & Herring, 2010) in L1 and L2 corpus in the present study. We believe that participants' preference of emoticons with the function of enhancing verbal part of the message rather than the emoticons with the function of expressing emotions could result from the task based nature of the study. As also underlined by Herring (2007), situational factors such as user demographics, topic of discussion, and communication setting have the potential to influence emoticon use.

An intriguing finding of this study is that a majority of emoticons with the function of expressing emotion were found in L1, while most of the emoticons with the function of substituting a lexical item were found in L2, as also triangulated with interviews. The participants' use of emoticons to express emotion in L1 rather than L2 shows incongruence with Aragon et al.'s study (2014), who found that English L1speakers used more lines of text per message, while English L2 (French L1) speakers used more emoticons per message. The discrepancy between the two studies could be attributed to the focus of investigation in the studies. Whereas Aragon et al. (2014) examined the frequency of emoticons in L1 and L2, our study investigated the functions and forms of emoticons in L1 and L2. On the other hand, more frequent use of emoticons with the function of expressing emotion in L1 than in L2 data in the present study is not surprising considering the previous studies, which found that emotion words are used less by L2 users compared to native speakers (Dewaele & Pavlenko, 2002; Kinginger, 2004; Pavlenko, 1998). The authors explained the underuse of emotion vocabulary in L2 through the detachment effects, and noted that L1 is regarded to be more suitable for the expression of emotional involvement while L2 is considered to be more isolated from the L2 user. Similarly, detachment effects can explain the intensity of emoticons with the purpose of expressing emotion in L1 in the present study. Additionally, the dominance of emoticons used as lexical substitutes in L2 corresponds with the finding of Vandergriff (2014), who reported that nonnative speaker participants showed more frequent emoticon use than their native speaker peers in order to compensate for any shortcomings in their use of English.

As regards the distribution of emoticon forms, we found that the emoticons in the category of smileys and people were the most frequently used emoticon form irrespective of language type. This finding is consistent with Wolf (2000), who reported that the basic smiley was the most common emoticon in the Usenet newsgroups she analysed. More recent studies (Huffaker & Calvert, 2005; Provine et al., 2007; Baron, 2004) have also reported similar findings on the distribution of emoticons, and concluded that a majority of emoticons in their corpus consisted of smileys. On the other hand, small number of emoticons that belong to the category of travel & places, objects and animals & nature, and the absence of emoticon forms in the category of food & drink, activity and flags in our corpus could be attributed to the context of the study, which required the participants to talk about the assigned novel. As the text messages would be limited with the context of the assigned novel, underuse of specific emoticons which belong to the category of food & drink, activity & flags do not seem surprising in line with Herring (2007).

CONCLUSION

Although our study demonstrated interesting findings concerning the functions and forms of emoticons in L1 and L2, it has some limitations. The main limitations of our study are related to its methodology. First, we believe that the context of the study, which required the participants to ask and answer questions related to the assigned novel, could have limited the emoticon use. Furthermore, to ensure that the participants use emoticons in their text messages we asked them to employ at least three emoticons in their messages. The obligation to use at least three emoticons could have increased the number of redundant emoticons. Collecting data in a less restricted context would undoubtedly result in more robust findings. However, as we did not focus on the frequency of emoticon use, we believe this limitation did not lead to a radical change in the results of the present study.

The second limitation is related to the method of data analysis. Although two researchers analysed the data using discourse analysis independently, the analysis was limited to the researchers' interpretation of how the emoticons contributed to the meaning in the text. The motivations behind the writers' choice and the recipients'

interpretation of the message were not taken into consideration. Further studies can combine discourse analysis with interviews with the writers and recipients of the messages.

Despite these limitations, we believe our study is the first to investigate the functions and forms of emoticons in L1 and L2 comparatively. Today, emoticons have become a critical part of nonverbal communication, which substitute body language and facial expressions in online text-based media. In a rapidly globalizing world, increasing number of people will communicate online in their native or foreign language. A more thorough understanding of emoticons and their use in different language settings promises to advance research on online nonverbal communication.

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A Comparision Between Solar And Wind Energy According To Different Locations

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ABSTRACT

In last year's one of the most investigated issue is meeting electrical energy need from renewable energy sources. But sometimes it is difficult to decide which renewable energy source will be used. In this study two different renewable energy sources (solar and wind) are used in different areas. Than these sources are compared according to electrical production. So an idea is tried to give which source must be choosed in which area.

1. SOLAR ENERGY

Energy density of the sunbeam in space is 1.353kW/m². However the power density out of the earth decreases because of various effects such as some reflections and scatterings of sunbeams, some gases and water vapors in the earth atmosphere having some part of the energy absorbed, and the zenith angle which is known as zenith angle of sunbeams. Solar energy density p_{ir} on earth which is also known as solar radiation is expressed through a mathematical model that is developed by Arwater and Ball. [1]

$$p_{ir} = p_o \cos(\Theta) (\alpha_{dt} - \beta_{wa}) \alpha_p$$

Whereas following symbols mean corresponding expressions:

p_{ir} : Solar power density on the earth surface (kW/m²)

p_o : Power density out of the earth (in general 1.353kW/m²)

Θ : zenith angle (the angle between the earth surface and the sun's disc)

α_{dt} : direct permeability of the gases other than water vapor that comprise some part of the energy that reflects and is not absorbed by gases

α_p : Permeability of aerosol

β_{wa} : Water vapor's coefficient to absorb radiation

The term of aerosol means the hoverer particles in the earth atmosphere.

Here from, it is possible to state solar productivity as follows:

$$\eta_s = p_{ir} / p_o = \cos(\Theta) (\alpha_{dt} - \beta_{wa}) \alpha_p$$

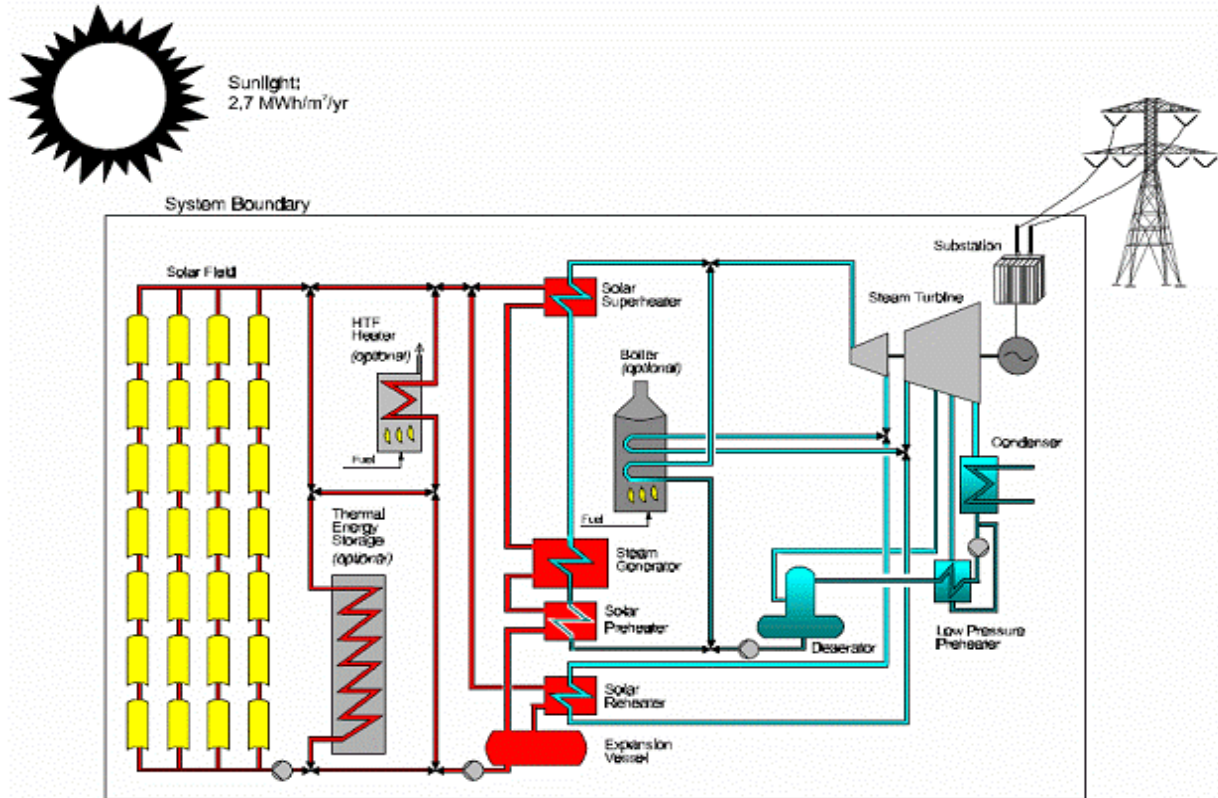


Figure 1.Solar-Electrical System [2]

1.1. Photovoltaic Cells

Photovoltaic cells are building blocks of all PV systems as they are elements converting sunlight into electric energy. While PV cells can be in very small sizes, they can also be in many different forms. Cells are used in creation of PV modules in tens of decimeters generally by interlocking each other. Once light falls on a PV cell, this light can reflect, can be absorbed or can pass through. However, electric can be generated only from absorbed light. [3] Energy of the absorbed light is transmitted to the electrons of the PV cell's semiconductor material. Electrical characteristic of PV cell which is named as "integrated electric field" supplies the force or potential which is required for driving the current flowing from an external load such as lamp.

Solar energy can be converted into electric energy with productivity between rates of 5% and 20% depending on the structure of the solar cell. Several solar cells are connected to each other in parallel or serially in order to increase the power output and are mounted on a surface, this structure is named as solar cell module or photovoltaic module.[5]

1.2. Crystalline Panels:

These are most common panels which are industrially used. Their lifetime is approximately 90 years. They are available as mono-crystalline and poly-crystalline.

1.2.1. Mono Crystalline : Mono-crystalline solar batteries are comprised of high productive mono crystalline cells in the aspect of quality and productivity. These panels occupy 1-2% less than Polycrystalline Panels which generate same power. In spite of this, the production period takes long because of the technology used in their production. Anyhow, the Mono Crystalline Solar Batteries are the best option for long term investment. Having solar battery as mono crystalline means that the entire cell is comprised of crystalline only and the atomic structure is homogeneous. All crystalline compounds existent in the nature are actually poly-crystalline, only diamond has almost a perfect mono-crystalline characteristic

1.2.2. Poly-crystalline: In the aspect of quality and productivity, polycrystalline solar batteries are produced with lesser productive cells comparing to ones having mono crystalline solar batteries. However, nevertheless, their usage area is more common. The reason of that is their being more accessible and accordingly being accessed for a more reasonable price. Thus, their productivity/cost rate is quite high. Polycrystalline refers to that material is not comprised of single crystal comparing to mono crystalline, that is the material is not completely

homogeneous.

1.3. Thin-film :

These cells which have high rate of light absorption, constitute a small part of the market share because of their less productivity. Thin-film photovoltaic materials are generally polycrystalline materials. In other words, a thin-film semi-conductive material is comprised of bands varying from micron to nanometer in size. Productivity rate of these panels varies between 7% and 14%.

1.4. Flexible Panel :

This is a technology developed especially for roof applications as an alternative to the traditional solar panels. Can be mounted in applications where to get PV constructions integrated to the roof without making damage to the roof insulation. Can be used as a roof membrane besides energy generation in many applications. There are solar panels available comprised of crystal and thin-film cells. The most important characteristic of the panels which are comprised of thin-film cells is their flexibility and their applicability in surface type. There is not any construction requirement. Besides, they contribute advantage to the weight distribution comparing to the solar panels in crystal structure. They don't have fragility risk as they don't contain glass. Their greatest characteristic is being portable.

2. WIND ENERGY

Wind turbines are machines which transform the moving air energy into the mechanical energy. The main components of wind-energy system are shown in Figure 2. The energy obtained from the moving air as the mechanical energy is transferred to the electrical generator by the way of transmitter which has a proper connection and the gear housing. The electric output of the generator is connected to a load or the power network according to the practice.

The control device which is used in this kind of system generates the appropriate signals for the control of generator in order to conduct the control of wind velocity and direction, mil velocities and torque, output power and blade angle by perceiving the generator heat if necessary in one or more points and the direction control (for only horizontal-axis machines) and to match the electric output with the wind electric input. Moreover, it protects the system against the excessive conditions resulting from high winds, the electrical faults and the overload of generator. [6]

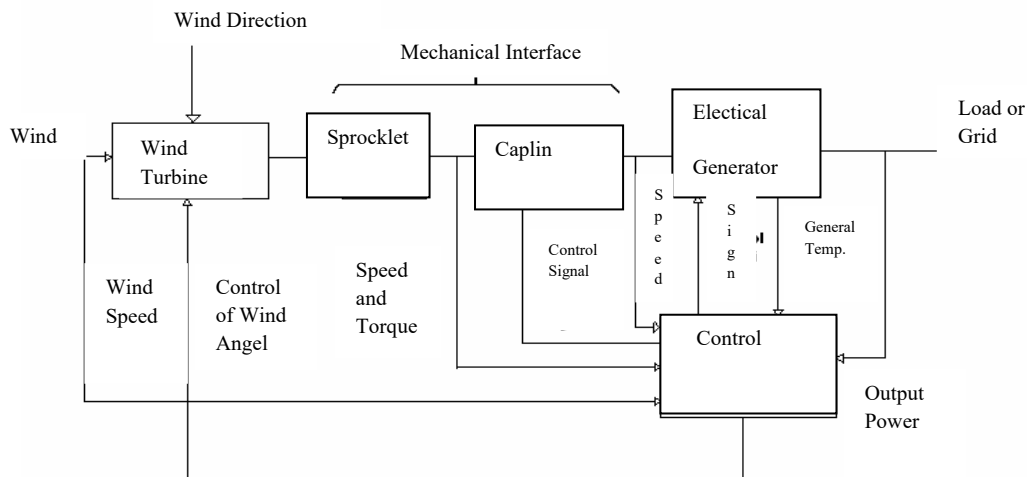


Figure 2.Wind-Electrical System

Wind-Energy Transportation (WET) can be categorized depending upon three main factors:[1]

1-Type of output;

- Direct current,
- Variable frequency, variable or constant voltage, alternative current,
- Fixed frequency, variable or constant voltage, alternative current.

2-Rotational speed of wind turbine;

- Constant speed with blade angle,

- Approximately constant speed with the plane angle transformer mechanisms
- Rotational speed of constant blade angle.

3-The way of utilization from electrical energy output;

- Storage in accumulator group,
- Storage in other forms,
- Connection to conventional network system.

In systems with the constant speed, small changes of rotor speed are only allowed. The structure and performance of this system depends on the mechanical characteristic of mechanisms such as the control of blade tilt. Moreover, the type of turbulence and tower type swiftly affect the fluctuation loads regarded as changes in power. These changes are undesirable features for the wind turbines based on the network. These changes in the power cause the mechanical pressures which shorten the life of wind turbine and decrease the quality of power. Therefore, the wind turbines can't be operated in the optimum performance and the maximum power can't be generally obtained from the wind.

In system with the variable speed which is an alternative for systems with the constant speed, the rotor speed is appropriate for being controlled. This property enables the wind turbine system to operate constantly close to the optimum speed rate. Some important advantages of systems with the variable speed as to systems with the systems with the constant speed:

- Since the turbine speed can adjust as a function of wind speed as maximizing the output power, the annual energy generation increases. Depending on the turbine aerodynamic and the wind regime, approximately 10 % contribution is made to the annual energy.
- Since the system enables the power to be arranged ideally, the mechanical pressures decreases.
- Instant situations, which originate from the wind and mechanical systems and cause the change in the output power significantly decrease. When the turbine is exposed to sudden and overpowering wind, the inaction of mechanical system increases and absorbs the rotor speed and it isn't an obstacle for the electrical system to transfer the constant power to the network.
- The power quality can be improved by decreasing waves in the power. The decrease of waves in the power will prevent that the voltage get away from the nominal values. This will increase the effect of the wind power on the network.
- Since the control time constant of blade tilt angle may be higher, the complicated control system of blade tilt mechanism may be made simpler.
- Acoustic noise will decrease. Noise is an important problem for the wind farms established behind the residential areas.

The disadvantage for systems with the variable speed is that the complication of generator and the power convertors necessary for the connection between the network and the cost are high. However, both some progresses on the power electronics have been made in recent years and the cost of semi-conductive technology have decreased day by day and the usage of this structure in the power systems is therefore attractive. [7]

2.1. OVERVIEW ON THE COMPONENTS OF WIND TURBINE AND THE ELECTRICAL COMPONENTS

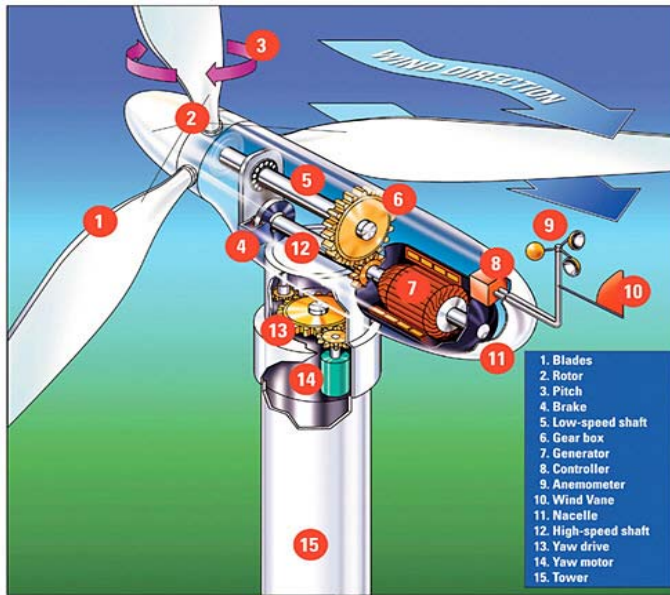


Figure 3. Components in a wind turbine [8]

3. A COMPARISON BETWEEN SOLAR AND WIND ENERGY ACCORDING TO DIFFERENT LOCATIONS

3.1. SOLAR ENERGY in BİLECİK

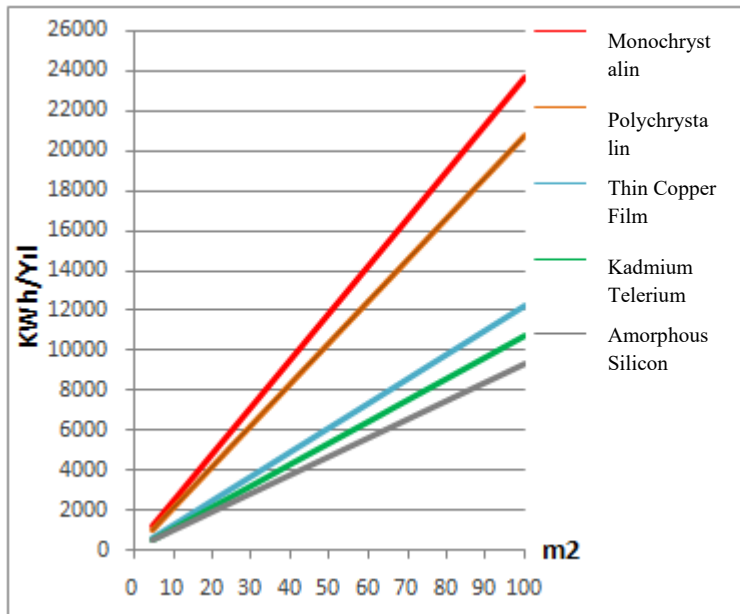


Figure 4. Bilecik PV Energy Production (kWh-Year) [1]

3.2. WIND ENERGY PLANT in BİLECİK

Table 1. Bilecik Wind Energy Power Capacity [1]

Wind power at 50 m. (W/m ²)	Wind Speed at 50 m. (m/s)	Total Area (km ²)	Total installed power (MW)
300-400	6.8-7.5	61.73	308.64
400-500	7.5-8.1	0	0
500-600	8.1-8.6	0	0
600-800	8.6-9.5	0	0
>800	>9.5	0	0
TOPLAM		61.73	308.64

It is clearly seen by a comparison to be done between solar energy and wind energy; solar energy can generate approximately 240 kWh/m² electric energy annually (in case of usage of mono crystalline silicone), and wind energy generates 308.64 MW electric energy. It is seen on the calculations that a 35% or greater capacity factor is required for a Wind Energy Facility investment here. Bilecik province is not an appropriate place for wind turbines.

3.3. SOLAR ENERGY in ÇANAKKALE

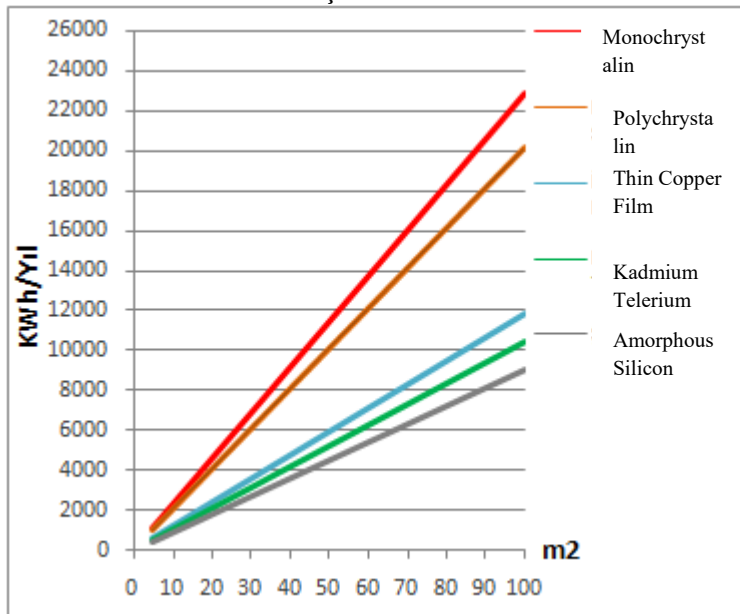


Figure 5. Çanakkale PV Energy Production (kWh-Year) [1]

3.4. WIND ENERGY PLANT in ÇANAKKALE

Table 2. Çanakkale Wind Energy Power Capacity [1]

Wind power at 50 m. (W/m ²)	Wind Speed at 50 m.	Wind power at 50 m. (W/m ²)	Wind Speed at 50 m.
300-400	6.8-7.5	863.7	4.318,48
400-500	7.5-8.1	802.99	4.014,96
500-600	8.1-8.6	761.09	3.805,44
600-800	8.6-9.5	174.74	873,68
>800	>9.5	0	0
TOPLAM		2.602,51	13.012,56

It is clearly seen by a comparison to be done between solar energy and wind energy; solar energy can generate annually approximately 220 kWh/m² electric energy (in case of usage of mono crystalline silicone), and wind energy generates 13,012.56 MW electric energy. Çanakkale province is an appropriate place for wind turbines.

In order to establish a different approach here, wind and solar energy potentials are acquired from SWERA website for Bilecik and Çanakkale provinces.



Figure 6. Bilecik Wind Energy Speed [9]

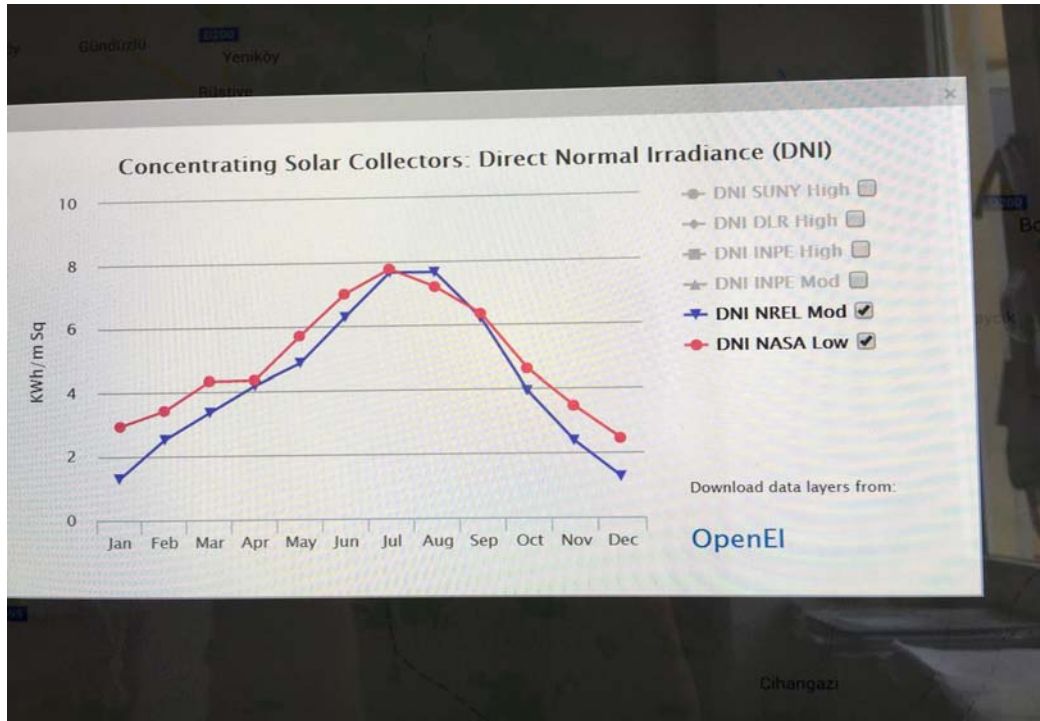


Figure 7. Bilecik Solar Energy Concentrating [9]



Figure 8. Çanakkale Wind Energy Speed [9]

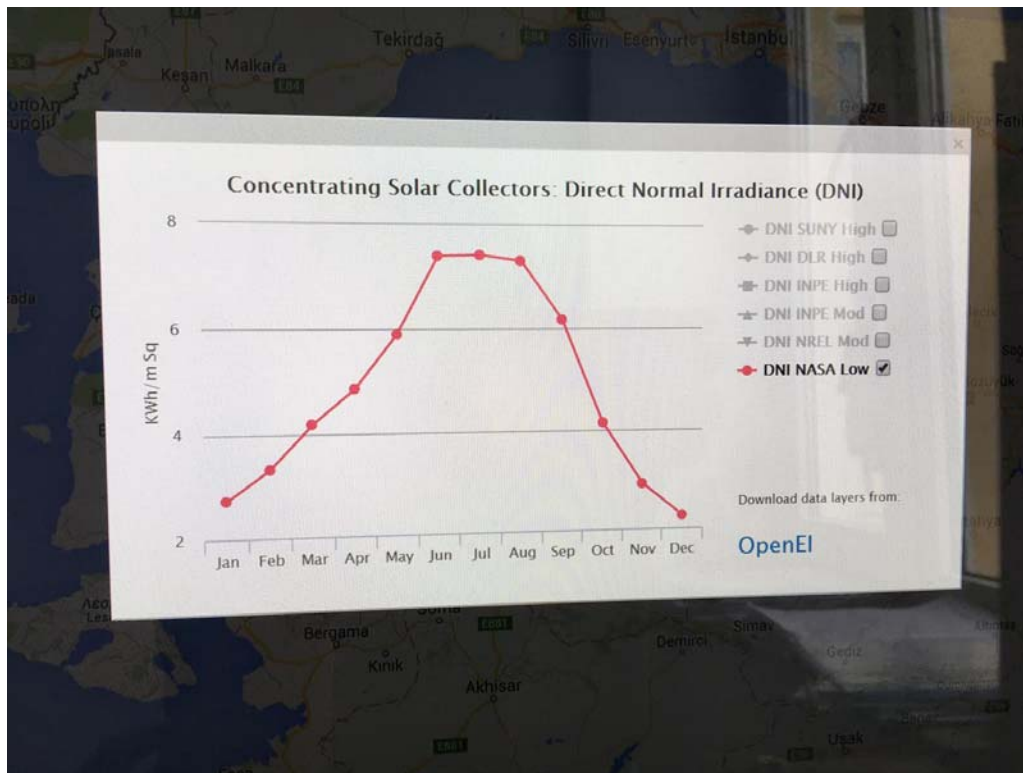


Figure 9. Çanakkale Solar Energy Concentrating [9]

CONCLUSION

Here different tables have been acquired for two different provinces from two different renewable energy websites. However, it is obviously seen on the results that we have acquired from SWERA as well as YEGM (General Directorate of Renewable Energy); that if a renewable energy source is going to be specified in Çanakkale, this must be absolutely wind energy. But the situation in Bilecik is opposite, to take decision for solar energy will be very useful in terms of productivity. The conclusion which attracts attention here is that every renewable energy source is not appropriate both in economic and productivity aspects everywhere. Before making a certain investment, to have a work paper by making use of these sites is considered as a method providing a big convenience.

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<https://maps.nrel.gov/swera>

A New Approach for Teaching Accounting Based On Technology

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ABSTRACT

Higher education in accounting has been following and aware of the business changes and new technology, providing students with new skills. Thus new courses emerge based on information technologies, in order to efficiently approach learning to business reality. This paper presents a case study of a course of management simulation. We enhance its operations to provide the development of new skills such as team work, creativity, enterprise resource planning competency, decisiveness, punctuality, ability to work under pressure and communication, on a control environment always with the support of new technologies.

Keywords: Accounting, Learning, Simulation, Skills, Management

INTRODUCTION

In the context of science and technology, it is possible to recreate a simulate behavior of a system or process - the simulated system - through a computerized system as a form suitable for study and interaction.

"Simulation is a process of designing a computer model of a real system and experiment with this model in order to understand their behavior and / or evaluate strategies for their operation" Pegden (1990). The essential advantage of the simulations and other synthetic learning environments is based on "ability to enhance, replace, create and / or manage the experience that the individual has with the world around you, to provide realistic content and educational tools". Its origin was in China, around the year 3000 BC, with the invention of board games and war games, contemporary management games dating 1955 when developing a simulation exercise for the logistics system of the US Air Force by the Rand Corporation - the monopologs – where participants were asked to simulate the management of inventory, assuming the role of warehouse managers in 1956, the surge first set of globally known management, management Decision Simulation Top, developed by the American management Association. Since then, the number of simulators grew rapidly and, around the 60's, it is estimated that their number was already 100 and more than 30,000 executives have already been in contact with at least one simulation.

The simulation of a model requires the implementation in cyclical sequences of 4 activities: written or model selection, model programming, execution of the model, evaluation and simulation model.

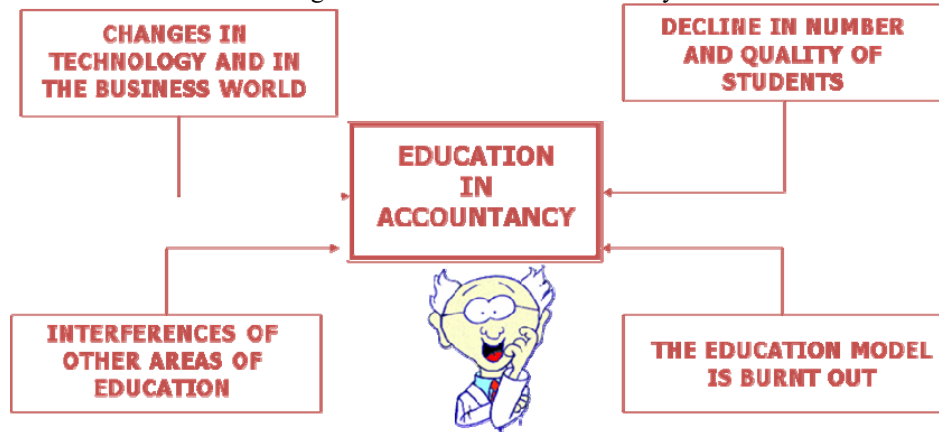
THE ISCAP CASE STUDY

The study of Accounting in Portugal must respect the roles of The Certified Accountants Order (OCC), a professional public association, created in 1999. The OCC has the primary mission regulate and discipline the exercise of the accounting profession, as well as develop all actions leading to greater credibility and dignity of the profession.

The OCC is the largest professional institution existing compulsory in Portugal and has more than 75,000 registered members. To belong to the order is necessary the course of management simulation or professional internship.

Managerial Simulation was introduced in the Course of Accounting and Administration at ISCAP in February of 2003, as a compulsory subject part of the curricula, distributed between two semesters, with a schedule of 6 hours per week, divided in two 3 hour periods, on alternate days, which totals an annual 180 hours.

Figure 1: Education in Accountancy



Source: Managerial Simulation ISCAP

Technology has played an increasing role in supporting the administration of education companies. Approaches based on multimedia tools and distance learning, integrated into new forms of teaching and interdisciplinary assessment, case studies, games companies, among others, has shown that the reality of the market can be brought to teaching practice.

The accounting profession emerges as the one that: supplies the information needed for the taking of economic, financial and social decisions; using sophisticated techniques of measurement and information technology applied to a broader range of phenomenon.

During the time, accountants perform functions even more specialized and amplified, which demand procedures less standardized and more innovative and relatively easy with new services and technologies. The accountant's role evolved from supplier of information to that of member of the decision making team.

PRINCIPAL OBJECTIVES OF MANAGERIAL SIMULATION

The main goals for the Managerial Simulation relating the students are: foment the development of new competences; activate the capacity of decision making; train and promote teamwork; prepare students to work under pressure; manage emphasizing quality; consolidate professional, personal and ethical attitudes; and approximate teaching to the managerial reality.

During the time Simulation exists in ISCAP it has been created or used/worked: 11.000 entities; 1.100 product references; 1.200 electronic documents treated each semester by the students; monthly processing of salaries of at least 33 workers; relationship with about 90 other firms of the same market; treatment of over 250 tasks; and 29 Application Modules of Professional Management used, in an Integrated System.

The creation of the environment of the logistic of all this process the coordination of this pass from the following steps: the System's logical components; the operation model; evaluation; monitoring of the system; monitoring of the students; monitoring of the teachers

Figure 2: Learning Process



Source: Managerial Simulation ISCAP

CONCLUSION

After the study of the Managerial Simulation process in ISCAP, we can conclude that the new approach of teaching Accounting, based on technology and not in the simple teaching of knowledge have several advantages, that we can summary as follows: teaching how to work and show it to the students; special attention on how to do; interaction between different areas and approach to reality

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A Research on Self-Efficacy and Future Expectations of Students in Vocational High Schools

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ABSTRACT

General self-efficacy, as a person's (or one's) general confidence in uncommon situations that are hard to cope with in different areas (Schwarzer, Bassler, Kwiatek, Schroder, Zhang, 1997; Scholz, Gutierrez-Dona, SudveSchwarzer, 2002), is a measurable characteristic which helps predict attitudes that a person displays in more than one area (Alpay, 2010). One of the determiners of individuals' behaviors is their expectations for the future (Adler, 1994). As for the construction of society, the young's expectations for the future and their hopes to be fulfilled can both affect their psychology and satisfaction with life, and also determine social change and its direction (Yavuzer, Demir, MeşeciveSertelin, 2005). The general purpose of this study is to determine Vocational High School students' general self-efficacy and expectation levels for the future. Within this scope, this study investigates whether there is any significant difference between general self-efficacy and future expectations of students in Vocational High Schools in line with such variables as education program type, gender, age, class and income. This study was carried out with 532 students studying at Siirt Vocational School, Vocational School and Eruh Vocational School embodied in Siirt University. For data collection, General Self-Sufficiency Scale developed by Yıldırım (2010) and Future Expectation Scale developed by Tuncer (2011) were utilized. The cronbach's alpha coefficient of general self-sufficiency scale developed by Yıldırım and İlhan (2010) is 0,80 and the scale is composed of three sub-dimensions of starting, not giving up and pursuance effort. The cronbach's alpha coefficient of Future Expectation Scale developed by Tuncer is .84 and it is single factorial. The analysis of the data is performed with SPSS 21.0 package program. In order to compare the means in the study, Kruskal Wallis Test and Mann-Whitney U Test were applied. The research findings have demonstrated that the self-efficacy levels of students in Vocational High Schools do not change according to gender, class, school of graduation and employment status and it has been found that there is a significant difference between self-efficacy levels of the students in terms of age, income status and the program they are enrolled in. When the data are analyzed in terms of future expectations, it has been found that while there is not any significant difference according to the variables of gender, age and graduation of school, there is a significant discrepancy between students' future expectations in terms of grade, employment status and the program they are enrolled in.

Key Words: *Vocational High School, General Self-Sufficiency, Future Expectation, Student*

1. INTRODUCTION

No matter what level of education they pursue, one of the most important elements that ensure students' success at school is their perceived self-efficacy. That is why students' self-efficacy takes an important place in researches carried out on education.

Self-efficacy is defined as an individual's belief in his/her capability to display behaviors required for reaching his/her desired goals successfully (Bandura, 1994). According to Bandura, the most important factor that affects individuals' behaviors is their faith in their capacities and sufficiencies in a field rather than their skills and abilities in that field. Thus, the more powerful sufficiency expectations individuals have, the more active they become and the more effort they make. From Bandura's (1977) point of view, people can generalize evaluations regarding their skills within any context into other skill evaluations within similar contexts. In this regard, general self-efficacy refers to an individual's belief in his/her sufficiency to cope with difficult and stressful situations in life (Scholz ve Schwarzer, 2005). General self-efficacy, as one's general confidence in (dealing with?) uncommon and arduous situations in different areas (Schwarzer, Bassler, Kwiatek, Schroder, Zhang, 1997; Scholz, Gutierrez-Dona, SudveSchwarzer, 2002), is a measurable characteristic which helps predict a person's future attitudes in multiple areas (Alpay, 2010).

It is of importance for individuals to have a true perception of themselves regarding what they can achieve and what they cannot. Once individuals underestimate their capabilities, they tend to set easier goals and give up easily when they face with an obstacle. On the contrary, when individuals have too high confidence in themselves, they tend to raise their expectations and ultimately fail due to their insufficient efforts (Bandura, 1997; Stevenson, Chen ve Uttal; Zimmerman ve Maylon, 2009; Akt. Ormrod, 2013). Therefore, one of the elements that determine individuals' behaviors is their future expectations besides their past experiences (Adler, 1994). Considering this on a social scale, the young generation who shall build the future and their expectations come to the forefront. According to Tolan (1990), as the young are a potential power for society, their own expectations often collide with the expectations of society. The young's expectations for the future and their dreams to be fulfilled in this regard may not only affect their psychology and satisfaction with their lives but also determine social changes and the direction of this change (Yavuzer, Demir, Meşeci ve Sertelin, 2005).

In today's world, many countries face with various problems while adapting to new developments and technological advancements. These developments and advancements affect the business world by creating new professional fields and an increasing need for qualified man power (Fırat ve Özel, 2003). Countries meet the labour force needs in the business world through vocational and technical education that is shaped in line with their dynamics and utilising international experiences. With its young and dynamic population, Turkey has a more significant advantage compared to developed countries. Within this context, in the 16th Council of National Education, it was decided to provide educational opportunities to individuals in accordance with their interests, wishes, capabilities and competences, and thus, ensure their active contribution to economy (MEB, 1999).

Considering the literature, it is observed there are several studies carried out to analyze university students' expectations for the future (Akman, 1992; Güleri, 1994; Kuzu ve Özdemir, 2004; Yavuzer, Demir, Meşeci ve Sertelin, 2005; Başkonuş, Akdal ve Taşdemir, 2011; Tuncel, 2011; Sanli ve Saraçlı, 2015). Besides, it becomes evident that while studies on general self-efficacy were mostly carried out in the health care field (Bosscher ve Smit, 1998; Chen ve ark., 2001; Chen ve ark., 2004; Scherbaum ve ark., 2006) studies on academic self-efficacy were predominantly examined in the education field (Schunk, 1981, 1982; Bandura, 1997; Vrugt ve ark., 1997; Pajares, 1997; Chemers, Hu, Garcia, 2001; Robbins ve ark., 2004; Zajonc, Lynch ve Espenshade, 2005). However, there seems to be no research having examined general self-efficacy and future expectations together. Therefore, this study attempts to contribute to the field.

1.1. Purpose of the Study

The purpose of this study is to determine general self-efficacy and future expectations of students in vocational high schools. Within this scope, this study has investigated whether there exists any significant difference between general self-efficacy and future expectations of students in vocational high schools based on variables such as education program type, gender, age, class and income.

In this study, responses to the following questions were sought:

- 1- Do general self-efficacy and future expectation levels of students differ according to gender?
- 2- Do general self-efficacy and future expectation levels of students differ according to class?
- 3- Do general self-efficacy and future expectation levels of students differ according to age?
- 4- Do general self-efficacy and future expectation levels of students differ according to school type they have graduated?
- 5- Do general self-efficacy and future expectation levels of students differ according to their employment situation?
- 6- Do general self-efficacy and future expectation levels of students differ according to family income?

- 7- Do general self-efficacy and future expectation levels of students differ according to program they are enrolled in?

2. METHOD

2.1. Working Group

The study was carried out on spring term of 2014-2015 academic year. The working group was composed of 532 students in total studying at Siirt Vocational School of Social Sciences, Siirt Vocational School of Technical Sciences, Eruh Vocational School, Kurtalan Vocational School and Vocational School of Health Services which are embodied in Siirt University. The distribution of the working group according to programs is provided in Table 1.

Program	f	%
Finance	51	9.6
Banking and Insurance	25	4.7
Postal Services	41	7.7
Accounting and Tax Practices	34	6.4
Business Management	46	8.6
Electric Works	24	4.5
Practical English and Translation	8	1.5
Office Services and Secretaryship	22	4.1
Child Development	138	25.9
Medical Documentation and Secretaryship	71	13.3
Social Services	72	13.5
TOTAL	532	100

2.2. Research Model

In the research, “general scanning model” among descriptive scanning models was used. General scanning model is “scanning procedures carried out on the population or a group or sample selected from it in order to make an inference about the population which is composed of many components” (Karasar, 1994:79).

2.3. Data Collection

General Self-Sufficiency Scale developed by Yıldırım and İlhan (2010) and Future Expectation Scale developed by Tuncer (2011) were used for data collection in the study. Cronbach's alpha coefficient of General self-sufficiency scale is 0.80 and the scale is composed of 3 sub-dimensions as starting, not giving up and pursuance effort. Future expectation scale developed by Tuncer consists of 14 items. 5 point likert scale was used for scoring. Scoring of the scale is as following: “Strongly Disagree (1,00-1,79)”, “Disagree (1,80-2,59)”, “Neither Agree nor Disagree (2,60-3,39)”, “Agree (3,40-4,19)”, “Strongly Agree (4,20-5,00)”. Cronbach alpha coefficient of future expectations scale is .84 and single factorial.

2.4. Data Analysis

For the analysis of the data, SPSS 21.0 statistical package program was used. Significance level to be used in statistical analyses was determined as $p=0.05$. In order to compare the means, Kruskal Wallis Test and Mann-Whitney U Test were utilized in the research.

3. FINDINGS

The distribution of students in Vocational High Schools according to gender, age, grade, employment status and income levels is provided in Table 2.

Table 2. Frequencies and Percentages as to Variables

Variables		f	%
Gender	Female	336	63.3
	Male	196	36.7
Class	1 Class	424	79.7
	2 Class	108	20.3
Age	18-24	408	90.2
	25-30	36	6.8
	31-35	9	1.7
	36 and over	7	1.3
Types of Graduation School	Vocational School	309	58.1
	General High School	163	30.6
	Anatolian/Science High School	38	7.1
	İmam Hatip High School	8	1.5
	Open High School	14	2.6
Employment Status	Unemployed	467	87.8
	Employed in a relevant job.	24	4.5
	Employed in an irrelevant job.	41	7.7
Family Income	Minimum Wage	206	38.7
	1001-2000.	175	32.9
	2001-3000.	68	12.8
	3001 and over	21	3.9

As seen on Table 2, students' 63.3% are female and 36.7% are male. 79.1% of participant students are at first grade and 20.3% are at second grade. 90.2% of students are between 18-24 ages, 6.8% are between 25-30 ages, 1.7% are between 31-35 and 1.3% are at 36 age and over. 58.1% of students are vocational school graduates, 30.6% are general school graduates, 7.1% are Anatolian/Science High School graduates, 1.5% are İmam Hatip High School graduates and 2.6% are open high school graduates. 87.8% of participant are unemployed, 4.5% are working in a job related to their professional field and 7.7% are working in a job not related to their professional field. Family income of 38.7% of the participant students is minimum wage, of 32.9% is between 1001-2000 TL, of 12.8% is between 2001-3000 TL and of 3.9% is 3001 TL and over.

Findings as to First Sub Problem

Table 3. Results of Mann Whitney U Test as to Gender

Variables		N	Mean Rank	Sum of Rank	U	P
Future Expectation	Female	336	272.74	91642.00	30830.0	0.220
	Male	196	255.80	50136.00		
General Self-efficacy	Female	336	270.73	91237.5	31430.5	0.403
	Male	196	259.18	50540.5		

Having analyzed Table 3 according to Mann-Whitney U test carried out in order to determine whether future expectations and general self-efficacy of students in Vocational High Schools differ by 'gender' or not, any difference between students' future expectations [$U=30830,0, p>0,05$] and general self-sufficiency levels [$U=31430,5, p>0,05$] in terms of the 'gender' variable has not been found. However, it was observed both future expectations and general self-sufficiencies of females were higher than those of males.

Findings as to the Second Sub-problem

Table 4. Results of Mann Whitney U test as to 'Class'

Variables		N	Mean Rank	Sum of Rank	U	P
Future Expectation	First Grade	424	277.98	117862.50	18029.50	0.001
	Second Grade	108	221.44	23915.50		
General Self-efficacy	First Grade	424	263.31	111644.5	21544.5	0.343
	Second Grade	108	279.01	30133.5		

Having analyzed Table 4 according to Mann-Whitney U test, carried out in order to determine whether future expectations and general self-efficacy of students in Vocational High Schools differ as to 'Grade' or not, it was observed there was a significant difference between future expectations of students in terms of the variable 'Grade' [$U=18029,0, p<0,05$]. It was determined that observed difference was in favor of students at first grade. On the other hand, there was not any significant difference between general self-efficacy levels of students in terms of the variable 'Grade' [$U=21544,5, p>0,05$]. According to Table 4, future expectations of students at first grade was higher than those at second grade; nevertheless, it is vice versa in terms of general self-efficacy levels.

Findings as to Third Sub-Problem

Table 5. Results of Kruskal Wallis H Test According to Age

Variables		N	Mean Rank	sd	χ^2	P	Significant Difference
Future Expectation	18-24	408	263.25	3	2.141	0.544	-
	25-30	36	284.53				
	31-35	9	255.11				
	36 and over	7	334.93				
General Self-efficacy	18-24	408	269.85	3	14.51	0.002	18-24> 25-30
	25-30	36	196.93				36 and over >18-24
	31-35	9	248.33				36 and over >25-30
	36 and over	7	417.64				36 and over >31-35

Having analyzed Table 5 according to Kruskal-Wallis H Test carried out to determine whether future expectations and general self-efficacy of students in Vocational High Schools differ as to 'Age' or not, it was observed there was a significant different between future expectations of students; on the other hand, there was not any difference between their general self-efficacy levels [$\chi^2=14,51, p<0,05$]. As a result of multiple comparisons done via Mann-Whitney U test, it was determined that this difference was in favor of those aged 36 and over among all age groups and it was in favor of those at aged 18-24 among 18-24 and 25-30 age groups. Accordingly, it was found the older students' perceived self-efficacy was higher than others and the lowest self-efficacy level was observed in 25-30 age group.

Findings as to Fourth Sub-Problem

Table 6. Results of Kruskal Wallis H Test According to Types of Graduation School

Variables		N	Mean Rank	sd	χ^2	P
Future Expectation	Vocational High School	309	270.68	4	3.278	0.512
	General High School	163	270.27			
	Anatolian/Science High School	38	225.67			
	İmam Hatip High School	8	243.63			
	Open High School	14	254.21			
General Self-efficacy	Vocational High School	309	282.70	4	9.306	0.054
	General High School	163	250.34			
	Anatolian/Science High School	38	231.50			
	İmam Hatip High School	8	215.25			
	Open High School	14	221.39			

Having analyzed Table 6, according to Kruskal-Wallis H Test carried out in order to determine whether future expectations and general self-efficacy of students in Vocational High Schools differ by 'Type of Graduation School' or not, it was observed that there was not any significant different between future expectations and general self-efficacy levels of students in terms of the variable 'Type of Graduation'.

Findings as to Fifth Sub-Problem

Table 7. Results of Kruskal Wallis H Test According to Employment Status

Variables		N	Mean Rank	sd	χ^2	P	Significant Difference
Future Expectation	Unemployed	467	262.44	2	7.542	0.023	Related Job>Unemployed Related Job>Unrelated job
	Related Job	24	350.65				
	Unrelated job	41	263.51				
General Self-efficacy	Unemployed	467	265.83	2	14.51	0.850	-
	Related Job	24	283.83				
	Unrelated job	41	264.02				

Having analyzed Table 7, according to Kruskal-Wallis H Test carried out in order to determine whether future expectations and general self-efficacy of students in Vocational High Schools differ as to 'Employment Status' or not, it was observed there was not any significant different between general self-sufficiency levels of students; nonetheless, there was a significant difference between their future expectations [$\chi^2=7,542$, $p<0,05$]. As a result of multiple comparisons done via Mann-Whitney U test, it was determined that this difference was in favor of students working in a related job among those who stated they were not working and working in a related job and those who stated they were working in a related job and working in a unrelated job. Accordingly, it was found that future expectations of students who were working in a related job was higher than those who did not work and were working in an unrelated job.

Findings as to Sixth Sub-Problem

Table 8. Results of Kruskal Wallis H Test by Income Status

Variables		N	Mean Rank	sd	χ^2	P	Significant Difference
Future Expectation	Minimum Wage	206	247.92	3	3.251	0.354	-
	1000-2000.	175	223.31				
	2001-3000.	68	231.23				
	3001 and over	21	229.05				
General Self-efficacy	Minimum Wage	206	228.72	3	8.611	0.035	2001-3000>Minimum wage 1001-2000> 3001 and over 2001-3000> 3001 and over
	1000-2000.	175	237.84				
	2001-3000.	68	268.43				
	3001 and over	21	175.93				

Having analyzed Table 8, according to Kruskal-Wallis H Test carried out in order to determine whether future expectations and general self-efficacy of students in Vocational High Schools differ as to 'income status of family' or not, it was observed there was not any significant difference between future expectations of students; on the other hand, there was a significant difference between their general self-sufficiency levels [$\chi^2=8,611$, $p<0,05$]. As a result of multiple comparisons done via Mann-Whitney U test, it was determined that this difference was in favor of those having 2001-3000 TL income rather than those having the minimum wage; was in favor of those having 1001-2000 TL income rather than those having 3001 and over income; was in favor of those having 2001-3000 TL income rather than those having 3001 and over income. Accordingly, it was found that self-sufficiency perceptions of students whose income status were the highest and the lowest was lower than others and the lowest self-efficacy level was observed among students whose family income status was 3001 and over.

Findings as to Seventh Sub-Problem

Table 9. Results of Kruskal Wallis H Test according to Program Type

	Variables	N	Mean Rank	sd	χ^2	P	Significant Difference
Future Expectation	(1) Finance	51	273.56	10	55.649	0.000	
	(2) Banking and Insurance	25	294.46				(1)>(6), (1)>(10),
	(3) Postal Services	41	271.34				(2)>(3), (2)>(6),
	(4) Accounting and Tax Practices	34	319.22				(2)>(10),
	(5) Business Management	46	262.36				(3)>(10),
	(6) Electrical works	24	197.83				(4)>(6),
	(7) Practical English and Translation	8	247.56				(4)>(10), (5)>(10),
	(8) Office Services and Secretaryship	22	389.11				(6)>(10),
	(9) Child Development	138	268.39				(8)>(1), (8)>(2),
	(10) Medical Documentation and Secretaryship	71	171.30				(8)>(5), (8)>(6),
	(11) Social Services	72	304.56				(8)>(9), (8)>(10),
General Self-efficacy	(1) Finance	51	220.82	10	21.083	0.021	(8)>(11),
	(2) Banking and Insurance	25	182.20				(9)>(6), (9)>(10),
	(3) Postal Services	41	267.30				(11)>(6),
	(4) Accounting and Tax Practices	34	288.68				(11)>(10),
	(5) Business Management	46	256.62				
	(6) Electrical works	24	250.56				(4)>(2), (4)>(7),
	(7) Practical English and Translation	8	160.19				(8)>(2), (8)>(7),
	(8) Office Services and Secretaryship	22	281.93				(9)>(1), (9)>(2),
	(9) Child Development	138	281.80				(9)>(7),
	(10) Medical Documentation and Secretaryship	71	287.22				(10)>(1),
	(11) Social Services	72	286.16				(10)>(2),

Having analyzed Table 9, students in Office Services and Secretaryship Department and Accounting and Tax Practices Department have the highest future expectations whereas those studying in Medical Documentation and Secretaryship programs have the lowest future expectations. In terms of general self-efficacy, students at the highest level are studying in Accounting and Tax Practices, Medical Documentation and Secretaryship and Social Services while those at the lowest level are studying in Practical English and Translation and Banking and Insurance Programs. According to Kruskal-Wallis H test to determine whether future expectations and general self-efficacy of students in Vocational High Schools differ by the program type they are enrolled in, a significant difference both between their future expectations and self-sufficiency levels by the variable 'program type they have enrolled in' was found.

As a result of multiple comparisons done via Mann-Whitney U test, significant differences were determined in terms of future expectations in favor of students in Accounting program among Accounting, Electrical Works and Medical Documentation programs; in favor of those in Banking Programs among Banking and Insurance, Postal Services, Electrical Works and Medical Documentations Programs; in favor of those in Postal Services between Postal Services and Medical Documentation Programs; in favor of those in Accounting Program among Accounting, Electrical Works and Medical Documentation; in favor of those in Business Management Program between Business Management and Medical Documentation Programs; in favor of those in Electrical Works Program between Electrical Works and Medical Documentation Programs; in favor of those in Office Services Program among Office Services, Finance, Banking, Business Management, Electrical Works, Child Development, Medical documentation and Social Services Programs; in favor of those in Child Development program among Child Development, Electrical Works and Medical Documentation and in favor of those in Social Services program among Social Services, Electrical Works and Medical Documentation.

As a result of multiple comparisons done via Mann-Whitney U Test, significant differences were identified in terms of general self-sufficiency levels in favor of students in Accounting Program among Banking and Insurance, Accounting and Practical English and Translation; in favor of those in Office Services among Banking and Insurance, Practical English and Translation and Office Services; in favor of those in Child Development program among Finance, Banking and Insurance, Practical English and Translation; in favor of those in Medical Documentation and Secretaryship among Finance, Banking and Insurance, Practical English and Translation; in favor of those in Social Services among Finance, Banking and Insurance, Practical English and Translation and Social Services.

4. DISCUSSION, CONCLUSION and SUGGESTIONS

Future expectations of the young, considered as a indispensable part of society in terms of social change and development, and their beliefs in this regard may determine both social changes and the direction of this change. Future expectations of individuals affects not only the present moment but also the following periods (Tuncer, 2011). Future expectations of students have an impact especially on their success and performances at school. In this regard, it is of quite importance to determine future expectations of students in vocational high schools which aim to meet the intermediate staff need of society and are expected to meet future expectations.

Within the scope of this study, having analyzed the data on future expectations of students in Vocational High schools by the variables of gender, grade, age, graduation school, income status of family and program type, the following results have been obtained:

- 1- Findings in this study showed there was not any significant difference between future expectations of students in terms of gender, graduation school and income status of the family. However, it was observed that future expectations of females were higher than those of males. Similarly, in the study carried out by Tuncer (2011) on students in Vocational High Schools, it was determined that there was not any significant difference in terms of age, graduation school and income status; however, there existed a significant difference in favor of females in terms of the variable 'gender'. Nevertheless, the results of the study carried out by Bayoğlu and Purutçuoğlu (2010) on future expectations of adolescents show parallelism with the results of this study and they did not find any significant difference among future expectations of students in terms of gender, either.
- 2- Findings have demonstrated that there is a significant difference between future expectations of students in terms of grade levels. It was observed that this difference was in favor of students at first grade. Accordingly, it is assumed that future expectations of students increase within the framework of the objectives they have determined at first grade. It is considered that job opportunities and their experiences at the department become more realistic and lowers their future expectations at last grade. This result shows parallelism with the findings of Akman's study which reveals that the future and job expectations of students at last grade are lower than those at other grades. On the other hand, Tuncer (2011) could not find any significant difference in his study in terms of the variable 'Grade'.
- 3- Findings obtained showed that there was a significant difference between future expectations of students in terms of the variable 'Employment status'. As a result of multiple comparisons done via Mann-Whitney U test, it was determined that this difference was in favor of students working in a related job. Accordingly, students being enrolled in programs that would help them expertize in their own professional fields might increase their future expectations.
- 4- A significant difference between future expectations of students in terms of the variable 'program type they have enrolled in' has been found. According to the findings, students having the highest future expectations were enrolled in Office and Secretary Services programs, Accounting and Tax Practices program and Social Services program; on the other hand, those having the lowest expectations were enrolled in Medical Documentation and Secretaryship program and Electrical Works program. In the study carried out by Tuncer (2011), any significant difference in terms of the variable 'department' was not indicated.

There are many psycho-socio-cultural and economical factors that affect future expectations of individuals. According to Akman (1992), any expectation regarding a specific field is shaped by individuals' perceptions of themselves rather than their hopes and wishes for the future. Within the scope of this study, the following results were obtained as a consequence of the analysis of the data on perceived self-efficacy of students in Vocational High Schools, which is one of the self-perceptions of individuals, in terms of the variables 'gender, grade, age, graduation school, income status of family and program type'.

- 1- Any significant difference between general self-sufficiency levels of students in terms of gender, grade, graduation school and employment status was not found. However, it was observed that self-efficacy of female students in terms of gender, of high school graduates in terms of graduation school, and of those working in a related job are higher than the others. Whereas Aypay (2010) demonstrated that general self-efficacy levels differed significantly in terms of gender and age, Göller (2015) found out there was not any difference between self-efficacy levels of preservice teachers in terms of gender.

- 2- A significant difference between general self-efficacy of students in terms of the age' was found. Although the difference was in favor of students aged 36 and over, it was observed that there was a significant difference in favor of the younger group when self-efficacy levels of students aged between 18-24 (n=48) and 25-30 (n=36) were compared.
- 3- A significant difference was also observed between general self-efficacy of students in terms of the income status of their families. Students at the highest self-efficacy level in terms of income status are those whose family incomes are between 2001-3000 TL; on the other hand, those at the lowest self-sufficiency level are students whose family incomes are 3001 TL and over.
- 4- A significant difference between general self-efficacy levels of students in terms of the variable 'program type they have enrolled in' has been found. Programs in which students show the highest self-efficacy levels are Accounting and Tax Practices program, Medical documentation and Secretaryship program and Social Services program; however, students enrolled in Practical English and Translation program and Banking and Insurance programs have the lowest self-efficacy levels.

In this study, future expectations and general self-efficacy of students in Vocational High Schools were examined through various variables. More elaborate results could be obtained by contributing to similar studies with qualitative data.

Considering Bandura's (1997) claim that perceived self-efficacy affects performance, the relationship between students' general self-efficacy and future expectations remains to be researched further.

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A Study Of Malaysian Students Adaptation From A Dependent Learning Environment To An Independent Learning Environment

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ABSTRACT

Enhancing a student's first year experience in university is important in improving a student's success, retention and engagement in the institution. The first year, is often a time of great stress for a large majority of students, often occurring as a result of the students' transition from a dependent learning environment, common in most secondary schools in Malaysia to an independent learning environment. Hence, students struggle to cope as their secondary school experience does not prepare them adequately for the demands of tertiary education. This paper identifies the challenges faced by Malaysian students in adapting to the independent learning environment of higher learning institutions and strategies that are being taken to cope with this change. It also makes a observation on what is currently being employed by the University of Nottingham, Malaysia Campus (UNMC), in helping to support its foundation (pre-university) programme students' transition into its various undergraduate programmes in the university.

1. INTRODUCTION

Studies have shown that entering university is a time of great stress for students, including those who are successful (Greenback, 2007; Wintre and Yaffe, 2000). While many factors influencing these behaviours are personal, for example, how students finance their studies and lack of personal commitment to study (Yorke, 2006, Yorke & Longden, 2008), most of this stress is related to the students' transition from a dependent learning environment, common in most secondary schools to an independent learning environment in the university (Entwistle, 1982). There is also growing recognition that in higher education, it is more likely to be the quality of a student's independent learning which has the greatest influence on degree performance rather than the quality of teaching (Entwistle, 1982). In secondary schools, rather intensive preparation for external examinations may induce a form of reproductive learning, which is contrary to what is required in most areas of higher education (Entwistle, 1982). This similar culture has been observed in the Malaysian education system as teachers are being caught up in 'teaching to the test' (Ramasamy, 2002). It has been suggested that Malaysian students are so used to spoonfeeding that they cannot learn without it, something that is generally know as the 'Malaysian Student Syndrome' (Zubir, 1988). Ramasamy (2002) added that, if at the pre-university stage, students are not inducted successfully into the culture of reflective learning and reflective practice, it is a fear that at the degree level the task may prove even more difficult if not impossible. It is a struggle for students to cope with a new learning environment when they enter the first semester of their tertiary education, as secondary school experience often does not prepare them adequately for tertiary education (Bangser, 2008). Among the foundation students in UNMC particularly, students struggle to cope in their first semester and this is observed even in excellent students on scholarships. This paper, thus, seeks to understand the factors involved in student transition and ways to improve student transition from a dependent learning environment into an independent learning environment.

2.1 INDEPENDENT LEARNING

Independent learning is a process and a philosophy of education where a student acquires knowledge by his or her own efforts and develops the ability for inquiry and critical evaluation. It also places increased educational responsibility on the student for the achieving of objectives and for the value of the goals (Candy, 1991). Independent learning or self-regulated learning is important in institutions of higher learning (Pintrich, 1995). Zimmerman (1989) defined self-regulated learning strategies as "actions and processes directed at acquiring information or skill that involve agency, purpose, and instrumentality perceptions by learners". Research investigating the relationship between independent learning and academic achievement have generally found that independent learning to be positively related to academic achievement across education levels and subject areas (Lindner & Harris, 1992; Van Den Hurk, 2006).

2.2 DEPENDENT LEARNING

Zubir (1988) stated that some of the factors that causes learning disabilities among the fresh tertiary students are the new educational system and the overloaded curriculum. According to Kee (2004), in Malaysia as long as you study and memorize what you learn, you can do well. He also added that, the Malaysian assessment system requires students to remember all that they have learnt and to reproduce their learning in the examination in order to do well. Yong (2010) added that, no longer spoon-fed with notes and model answers as in Malaysian secondary school, pre-university students need high self-efficacy to develop independent study skills and critical thinking skills essential for academic success. Unfortunately, independent learning and problem-solving skills are rarely emphasized in Malaysian schools, which tend to be exam-oriented and authority-centered. Asian students in general also tend to adopt more inferior surface-level learning (Samuelowicz, 1987). This resulted in a stereotyped portrayal of Asian students as rote learners and surface learners who use memorizing as a learning strategy, are passive, teacher centred, and extremely achievement oriented (Samuelowicz, 1987; Ballard, 1991).

2.3 LANGUAGE BARRIER

The medium of instruction at private tertiary institutions is usually English, but many pre-university students complete high school in their own national language (Yong, 2010). Although they have been given 11 years of formal English teaching, Malaysian students are still not able to grasp the language (Jalaludin et al. 2008). Malaysian students also display poor effort in learning English, although its importance is generally acknowledged (Parilah, 2002). This causes a barrier and those facing language difficulty will need to make an extra effort to improve their language to have a smooth learning in university.

2.4 TRANSITION

Transition in education refers to transitional points when a students moves from elementary school to middle school, middle school to high school and high school to college. During these transitional periods, students often to experience significant academic, social, emotional, physical or developmental changes that may adversely affect their academic performance (Education Glossary, 2013). Transition in this case is referring to students progressing from Malaysian secondary schools into privately institutions of higher learning. One of the major changes that the students will experience in this transition is the change in the learning environment, from dependent to independent, and also the change in the medium of instruction from Bahasa Malaysia (the national language) to English.

3. FACTORS THAT AFFECT STUDENTS' TRANSITION

3.1 STUDENT SELF-EFFICACY

Self-efficacy is a preson's ability to attain goals. Individuals with high self-efficacy are capable of taking the necessary steps to solve problems (Bandura, 1991; Nevid & Rathus, 2007; Schwarzer & Jerusalem, 1995; Rathus & Nevid, 1995). According to Yong (2010), self-efficacy influences the thought and behavior of pre-university students in many ways. He added that, those with high self-efficacy are able to predict events and develop appropriate ways to control those that affect their lives. In brief, he added that the stronger students' self-efficacy is, the higher the goals they set, and the firmer their commitment becomes. Yong (2010) added that self-efficacy influences pre-university students' motivation, including their causal attributions, outcome expectancies, and cognized goals. Self-efficacy has an impact on pre-university students' affective development (coping behavior, sense of control, and social behavior). Coping efficacy affects how much stress, anxiety, or depression students experience in unpleasant situations. Control efficacy gives them the confidence to deal with new environments and overcome disturbing thoughts and potential threats. Both coping efficacy and control efficacy in turn enable them to reduce stress, anxiety, and avoidant behavior. Besides that, the social efficacy enables students to establish meaningful relationships that are essential to reduce stress, anxiety, or depression. This promotes pro-social behavior (helping others, sharing information, and being considerate and cooperative). It also discourages moral disengagement (making excuses for negative behavior, avoiding responsibility, and blaming others). Self-efficacy affects the choices (course, career, etc) of pre-university students. Students usually choose environments and activities they believe can maximize their potential. By making challenging choices, they are able to develop different competencies, interests, and social networks. Self-efficacy is particularly influential in terms of career choice and personal development.

3.2 INSTITUTION'S SUPPORT

The responsibility for student retention and engagement does not reside solely with commencing students; institutions and their teaching and support staff have an obligation to provide necessary 'conditions and opportunities' and expectations for such engagement to occur (Coates, 2005). Increasingly, students seem to need greater support in their adjustment to academic work and therefore it is pivotal to establish attitudes, expectations

and motivational approaches to learning in the first year (Kantanis, 2000). Early intervention in the first year experience based on student-centred learning (Lea, Stehenson & Troy, 2003) offer teachers an opportunity to provide necessary support to encourage students to remain at university, while enhancing the learning environment. The activities of supportive staff have been shown to enable successful transition. Engendering a climate where students can actively participate in learning may ease the issues involved in transition to university (Fisher, Cavanagh & Bowles, 2009). Yong (2010) stressed that, to better help pre-university students make a smooth transition to an independent learning environment, there is a need to gain insight into their beliefs about their intellectual and psychosocial capabilities. Awareness on pre-university students' self-efficacy and expectancy for success leads to the implementation of more effectual instructional and motivational techniques that foster desired learning outcomes and graduate attributes.

4. STRATEGIES TO FOSTER BETTER TRANSITION

Essentially institutions should provide students with the guidance on how to become independent learners. Within psychological literature development of independent learning has been characterized as 'learning how to learn' (Nisbet & Shucksmith, 1986), reflection (Yussen, 1985), self-regulation (Schunk & Zimmerman, 1994) and metacognition (Metcalf & Shimamura, 1994) all of which are concerned with developing self-awareness and control of their own mental processing (Whitebread et al. 2005). According to Yong (2010) to create a positive learning atmosphere, pre-university lecturers need to collectively convey the message that they are capable of modifying students' behaviors and attitudes. When lecturers unanimously see themselves as capable of helping students, they project a consensual sense of efficacy that pervades the entire program. Only with high self-efficacy can lecturers raise students' aspirations, interest level, and in the long run, program effectiveness. Yong (2010) also added that, to foster expectancy for success among pre-university students, lecturers should help them maintain accurate but high expectations, while avoiding the illusion of incompetence. Feedback should reflect the students' level of understanding of content and task requirements. Sincere feedback allows students to learn from mistakes.

Learning support in UNMC is generally provided by the Learning Centre @ UNMC. The centre provides academic and study skill support to help students in their studying at UNMC. Help is provided in the form of workshops and one to one sessions that are designed to compliment the support already given by schools. Advice given in areas such as general study strategies, research skills, referencing, revision and examinations as well as time management are presented in Nottingham's Open Online Learning Courses (NOOC) while language support is provided by the Centre of English Language Education (CELE).

4.1. Nottingham Open Online Course

NOOC or Nottingham Open Online Course is a tool provided to all Nottingham students. These are courses or modules that are available in Nottingham's online learning system Moodle. One module that has been set up especially for first year students is Your University Journey Year 1. This is a module targets first year students, to help with transition into university study. It is made up of short units, each requiring just four hours of independent study. Topics include becoming an independent learner, strategies for reading and good notes for good writing. Help provided for first year students continue into the second year where students can then enroll into Your University Journey Year 2. Where earlier students were introduced to the idea of becoming an independent learner, tells you to become independent in your thinking and to deepen your knowledge and progress your ability to learn effectively.

4.2 LANGUAGE SUPPORT

The demographics of the students on the foundation programme in UNMC are fairly mixed. Although majority of the students are local, students come from various countries where English is not the main spoken language. Centre of English Language Education or CELE offers arrange of programmes and services for all students across the university in need of language support. Whether you are a students wanting to study in UNMC or already a student of UNMC, CELE helps you with any English language needs. There are courses to help students improve their English and there are courses that give students a range of skills to help students with their studies. CELE also provides individual consultations about language and academic skills to UNMC students.

5. CONCLUSION

Generally students performance and abilities in local universities have been decreasing over the years (Ambigapathy & Aniswal, 2005). This could be due to the stress caused by academic workload, inadequate resources, low motivation and poor academic performance, overcrowded lecture halls, and uncertainty of getting jobs after graduation (Espenshade et al. 2005). And while many of these factors are personal (Yorke, 2006, Yorke & Langdone, 2008) the responsibility for student retention and engagement does not reside solely on the students

(Coates, 2005). Teachers as well as the institutions need to take responsibility since teaching and learning are two interrelated phenomena. Therefore strategies that teacher's adopt for their teaching and underlying intentions (Trigwell, et al 1994) are related to students' learning approaches and subsequently to their learning outcomes (Simon et al. 2013). Hence there is a need to investigate the needs of each group of students. In UNMC where majority of the students are from the Malaysian secondary schools, the need mainly lies in providing learning as well as language support. Although these support is already in place for UNMC students more still can be done to improve the support provided to them.

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Accountability in Local Public Administration: A Case Study

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ABSTRACT

Although ordinary citizens show little enthusiasm for the discussion of issues of public interest that do not concern their personal and immediate interests, direct communication, either face-to-face or through Information and Communication Technologies, has been used to encourage citizen participation in public affairs. Within this context, the present paper, following a case study methodology, intends to identify how willing and motivated citizens are to discuss the accountability of local authorities and institutions. All the data were collected in the four parishes of the Valongo Council, located in the district of Porto in northern Portugal. Direct observation was combined with informal interviews, questionnaires and document analysis, and data processing was submitted to both qualitative and quantitative approaches.

The results have shown that citizens, to whom local authorities are accountable, have a narrow view of the public interest.

Key words: Accountability, Public Communication, Information and Communication Technologies, Autarchies, Case Study.

INTRODUCTION

Knowledge has always been considered an important resource for the progress of society (Fuller, S., 2014; OECD, 2008). However, what characterizes and differentiates today's society is the intensity and the way knowledge is created, distributed and used. In modern societies, the development of Information and Communication Technologies (ICT) has allowed and favoured the creation of more and better communication channels through which political powers can be "held accountable" by people. By providing the necessary data, access to information is the first stage of the accountability process, essential for the assessment of public officials' actions (Meijer, 2003).

Some initiatives have been carried out in recent years, aimed at transparency in the public administration (Bovens, 2007). These actions, however, have proved to be insufficient and restricted in their scope. Due to a political will, European guidelines and consolidated experiences have led to new approaches in search of more satisfactory answers.

Seeking to help find new ways of getting citizens closer to public life, a research project, called "TAClaro" (Transparency in Local Public Administration), is currently under way, led by the authors — a multidisciplinary team of researchers from ISCAP university. In addition to the researchers, this project has a partnership with a local council - Valongo Municipal Council (VMC) and an ICT company.

The project's goals include: a) to advance transparency in local government; b) to increase public financial literacy in the general community, by explaining some general concepts; c) to provide citizens with information about the local municipal management, showing how public resources are managed, and d) to contribute to citizen education, by encouraging the development of critical thinking, analytical skills and democratic participation.

The diagram shown in Figure 1 defines and contextualises the project, by illustrating the project's focus (Public Communication), as well as the diverse fields involving accountability in local government.

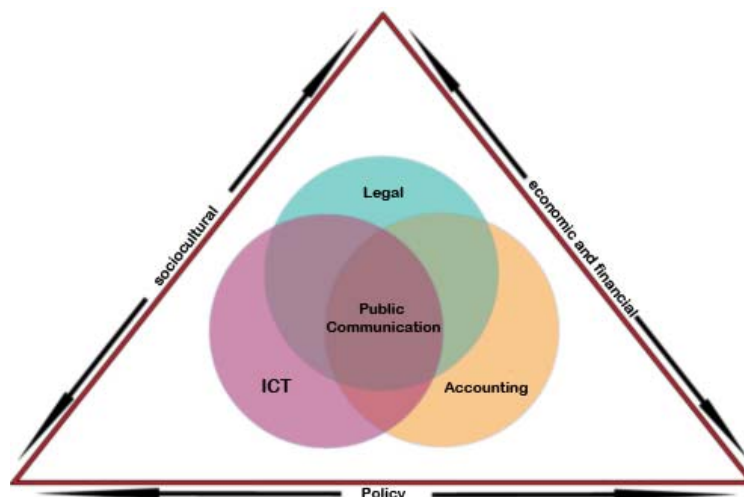


Figure1: TAClaro's conceptual scheme

The proposed scheme illustrates the accountability practices in the dynamic flow of communication between political powers and citizens. This communication process is usually determined by socio-cultural, economic, financial and political variables. All combined and intermingled, these dimensions will dictate "what to communicate", "why communicate" and "how to communicate".

Within each contextual dimension, the scheme proposes the following instrumental components: "Information and Communication Technologies", "Legal setting" and "Financial setting", as they exert a direct influence on the configuration of the communication model to be developed between the political and administrative power and the citizen, in each specific case.

This paper deals with the citizen's viewpoint, which makes up only one aspect of the entire project. It is organized in four sections. After this brief introduction, Section 2 contains the definition of some key concepts, clarifying the way in which they are understood. Section 3 introduces the problem, the research question and the methodology used for its resolution. Section 4 presents the results obtained. Finally, the main contributions of this work are summarised and future work lines are put forward.

THEORETICAL BACKGROUND

The "boom" of ICT have enabled the rapid and global spread of ideas and practices in the public sector, allowing the public to demand the highest standards of ethics, transparency and accountability.

These prerequisites for good governance and sustainable development contribute not only to a better response given by public bodies, but also play a crucial role in preventing the onset of systemic corruption (Chadwick & May, 2003). In fact, there is now international recognition that corruption and lack of transparency hinder socio-economic development and diminish trust in public institutions (EGM, 2011). Therefore, accountability is central to good governance (Arnold & Garcia, 2011). Government responsibility has its roots deeply embedded in history and is based on the basic principle that, ultimately, the power belongs to the people. However, although the essence of "accountability" is firmly based on the principles of democracy, the details of what is needed to show that sense of responsibility have evolved and continue to evolve as the nature and scope of government and people's needs change. Before the Industrial Revolution, the responsibility concept was closely associated with accountability, and it was usually measured through personal contact and direct participation in public governance processes. Industrialization brought about the extension of the state's role, both as a regulator and protector of life and property, and even as social services provider (GASB, 2007). Currently, in democratic societies, "accountability" is a key pillar of the relationship between political power and the citizen. All over the globe, there is extensive evidence that modern societies with full-fledged democracies develop engaging political, socio-cultural, economic and financial measures to promote, boost and facilitate "accountability".

However, without intelligible information to citizens, they are prevented from participating in the governance reform. Within this context, the way in which the government communicates with citizens is crucial in shaping public opinion and citizen involvement in public issues of general interest. Thus, the main goal should be to differentiate between communication of public interest and communication driven by commercial and market interests (Koçouski, 2012; Kunsch, 2012; Miller, 2007; Novelli, 2006). Public communication is a concept under

construction (Brandão, 2007) that should involve citizens and raise their partaking in the communication flow between the state and society in general (Matos, 1996). Public communication may still be seen as a process of social relations, to the extent that the sharing of information can influence ways of thinking, acting and feeling, leading to a collective consciousness, paving the way to community participation and citizenship actions. Thus, communication may and should be seen as an ally of public organizations, in such a way that, in combination with other management instruments, it plays a key role in the image building of public organizations, namely what the general audience will make of it. And because image is ethereal, it is of the utmost importance that public organizations develop an integrated communication strategy that allows for the management of information and communication, both inside and outside of the organization, in order to create a homogeneous image and a stable identity (Brandão, 2007; Matos, 1996).

In the digital age, public communication has new ways at its disposal to deliver content and produce communication. According to Kunsch (2011), ICT arose and developed to promote communication, relationships and citizen participation in matters of public interest, which has contributed to change citizens' behaviours when faced with the collection of services provided by public institutions as well as the encouragement of public transparency. In fact, the evolution of information technology has allowed and favoured the creation of more and better communication channels through which political power can be "held accountable" to the citizens. Thus, interactive tools based on Internet, mobile technologies and the media are constantly being developed, in order to solve everyday problems and uncover corruption. There is real potential in new technologies to facilitate transparency and accountability. The new technologies allow us to, on the one hand, systematically analyze large amounts of data, thus validating administrative and legal proceedings and, on the other, to automate processes and information sharing at the organizational level, thus helping improve organizations' internal efficiency and effectiveness.

But whatever the channel or tools used, citizen involvement is crucial, lest those tools be purely technocratic and not really beneficial for the people (Arnold and Garcia, 2011). This is a two-way relationship — for the culture of "accountability" to become effective, it is not just politicians that must take up their responsibility, but citizens too must react, encourage and demand accountability. Hence the importance of understanding their perspective on the accountability process in which they play an active part.

PROBLEM, QUESTION, OBJECTIVE AND RESEARCH METHODOLOGY

We are currently witnessing a growing number of "accountability sessions" carried out by public, particularly municipal, organizations. In spite of this effort, ordinary people's interest and participation in such initiatives is, in our view, still insufficient. Consequently, the following research question has been posed:

Is the average citizen interested in public institutions' accountability?

Since this question is too "broad" and multidimensional to be answered here, this paper focuses instead on the following objectives:

- To understand whether the average citizen is willing to receive information about accountability.
- And, if so, to identify the reasons for such willingness.

The most appropriate method to achieve the proposed objective and to answer the research question is the case study. It is certainly the most widely used strategy to find out the "how" and "why?" (Yin, 1994), when the investigator has little control over events and when the field of research focuses on a natural phenomenon within a real life context, as is the case. In this study, we have investigated a contemporary phenomenon within its actual context, and the boundaries between the phenomenon under study and its context are not clearly obvious.

Despite the limitations of case studies for the purpose of statistical generalization, the diversity of sources and types of data used in case studies justify and provide a combination of quantitative and qualitative methods. This choice is sanctioned by the literature not only as enriching but also as scientifically valid (Coutinho & Keys, 2002).

Due to the nature of the project and the partners involved, the data collection focused mainly on the "Accountability Week" promoted by the VMC. Empirical data were gathered throughout five sessions taking place in the four parishes of that municipality, in compliance with Law No. 11-A / 2013 dated 28 January, namely: União de Freguesias de Campo e Sobrado, Ermesinde and Valongo, the latter being the seat of the municipality.

RESEARCH STRUCTURE

The practical application of this study followed the guidelines presented in Figure 2.

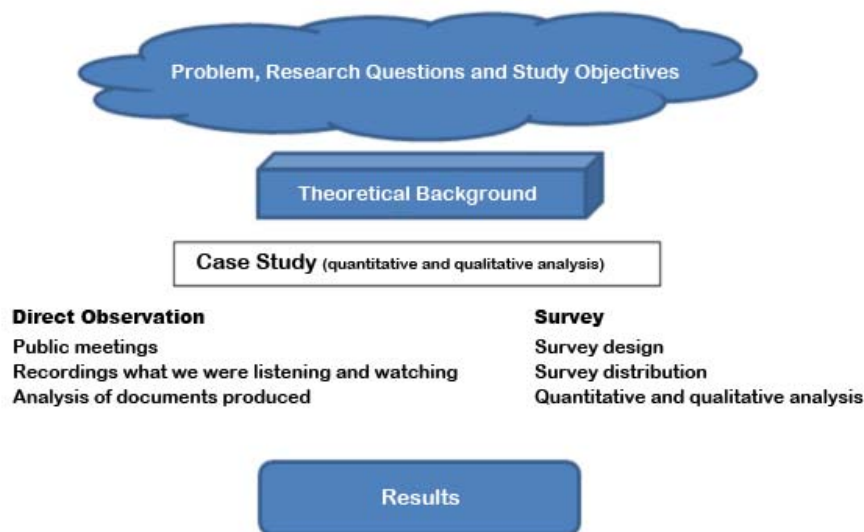


Figure 2: Investigation Draw

The first stage consisted of a review of the literature in the areas concerning this project, namely: Public Communication, Information Technologies and Accountability.

The literature review has shown that accountability by national and international public-sector organisations, in the past few years, has gradually increased. Some examples include the projects “¿Cómo y en qué gasta el Ayuntamiento de Torrelodones?”, carried out by the Ayuntamiento de Torrelodones, in Spain, available at <http://torrelodones.dondevanmisimpuestos.es/resumen>; as well as @TABridge: Transparency & Technology, affiliated to the Ash Center for Democratic Governance and Innovation at the Kennedy School of Government, Harvard University, available at <http://tech.transparency-initiative.org/tech-and-transparency/>, among others. Both projects were intended to improve accountability, helping managers to improve transparency, uncovering corruption and collaborating to good governance by using ICT.

For the collection of empirical data, we opted for the direct observation technique, in order to obtain information about the behaviour, speech, language use and observable developments (Yin, 2003) and surveys.

Direct observation

Direct observation was used in five sessions dealing with accountability held in the four parishes of Valongo Municipality. Open to the public, the sessions took place after working hours, starting at 9.30pm and finishing approximately 3 hours later. The event was unprecedented in the area and ran from 15 to 19 June 2015.

Informal records were made on paper and in digital format, trying to capture citizens' perceptions, behaviours and interests.

In the first part of the session accountability was introduced and defined. This was followed by a debate in which residents questioned council authorities, such as the Mayor and Councillors.

Those attending started their interventions by identifying themselves and greeting the municipal officials in the room (the Mayor and councillors). They welcomed the initiative and finished by placing 1, 2 or 3 questions to municipal leaders.

Surveys

This investigation was also supported by the quantitative analysis of the responses to a questionnaire in physical format. A cross-sectional study was used, since the collection of the sample information was carried out at different times (Malhotra and Birks, 2006), i.e. the five sessions taking place in the four parishes.

Informal interviews were conducted for the design of questionnaires - a method that turned out to be very useful. Five people of different age and educational levels were requested to answer the following question:

What has led you to participate in a municipal meeting on accountability?

The first part of the questionnaire included questions that helped characterise the respondents. The questions in the second part made it possible to identify the reasons that led citizens to participate in the open sessions.

POPULATION AND SAMPLE CHARACTERIZATION

Population Characterization: Valongo Municipality

Located in northern Portugal, the Valongo Municipality is part of the district of Porto. It covers an area of 75,8km². The population is unevenly distributed through different villages, as shown in Table 1.

Parishes	Total area	Population	Population Density
Alfena	11,1 km ²	15.211	1370,4 pop. per km ²
Campo	13,3 km ²	9.197	691,5 pop. per km ²
Ermesinde	7,6 km ²	38.798	5105 pop. per km ²
Sobrado	22 km ²	6.727	305,77 pop. per km ²
Valongo	21,8 km ²	23.925	1097,5 pop. per km ²

Table1: Resident Population and population density

Source: INE, Censos 2011

Table 2 shows the resident population in 2011, broken out by their educational level and gender.

Year	Level of education	Gender			%
		M	F	Total	
2011	Without qualifications	7374	8799	16173	17,23
	Basic education	27339	26923	54262	57,81
	Secondary education	6129	6600	12729	13,56
	Post-Secondary education	683	533	1216	1,30
	University graduates	3509	5969	9478	10,10
	TOTAL	45034	48824	93858	100,00

Table2: Resident population according to educational level

Source: INE; Censos 2011

Therefore, in 2011, uneducated residents accounted for 17.23% of the total population, whereas those with basic and secondary education totalled 57.81% and 13.56% respectively. Only 11.4% of all inhabitants had continued their education after secondary school or had a university degree.

Table 3 shows the ICT penetration rates in Portugal. According to INE, in 2012, 66% of households had access to broadband. In the same period, 62% of the people between 16 and 74 years of age used computers, 60% had Internet access and 13% placed orders through the Internet. Among those who used the Internet, 35% go online on the move. The use of ICT was widespread among young people 10 to 15 years of age: 98% used computers, 95% had Internet access and 93% used mobile phones. ICT penetration is a particularly relevant aspect, since the proper use of technology can be an important tool for those initiatives intended to promote stronger and sustainable social responsibility (EGM, 2011).

As Valongo is the most populated municipality in the Porto district, the following dated may be safely extrapolated to the Valongo area.

Year: 2012	Unit: %		
	Computer	Internet	Broadband
Portugal	66,1	61,0	59,7
Continente	66,1	61,0	59,7
Norte	64,6	58,0	55,7
Centro	61,1	55,2	54,2
Lisboa	74,8	71,9	71,5
Alentejo	54,6	48,8	47,2
Algarve	64,4	60,7	59,9
R.A. Açores	67,3	64,1	63,5
R. A. Madeira	64,2	60,5	60,0

Table3: Families with computer access, with Internet access and broadband connection, total and by regions
NUTS II¹
Source: INE, 2012

Sample characterization

As previously mentioned, the empirical data were obtained during the week devoted to accountability. Table 4 shows the number of residents attending the sessions and the percentage of responses from the questionnaires handed out at the beginning of the session.

Parish	Citizens	Response rate
Valongo	35	51%
Ermesinde	75	36%
Sobrado	30	43%
Campo	30	53%
Alfena	40	35%
Total	210	42%

Table4: Number and percentage of residents present

As we can see, the number of people attending is still small — only 210 people out of a total population of 93,858.

This study confirms the relevance of the project. Despite the efforts made so far by local organizations, citizen membership and active participation in political life is still low. It is urgent to reverse the situation. From the questionnaire analysis we have obtained several socio-demographic indicators, namely:

Age group

In Figure 3, respondents are broken out by age. Thus, 92% of the respondents belong to the active population, their ages ranging from 18 to 67 years of age. The groups 18 to 45 and over 67 are evenly represented.

¹ NUTS II –the three levels of the Nomenclature of Territorial Units for statistical purposes.

Respondents by age

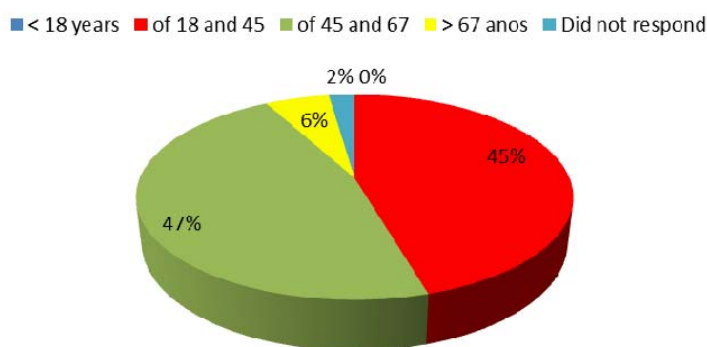


Figure 3: Age group

Level of Education

Regarding the respondents' educational level, it appears that the largest number completed secondary education (41%), followed slightly behind by respondents with a university diploma (39%), and, to a much lesser degree, by those with basic education. In future studies it will be important to find out whether there is any correlation between this variable and participation in political life, as some studies suggest a strong influence of people's educational level on the way they envisage and practice social responsibility (World Bank, 2006).

Respondents by Level of Education

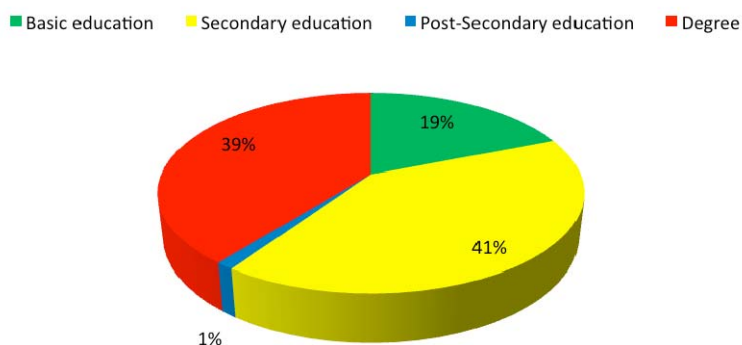


Figure 4: Level of education

PRESENTATION AND DISCUSSION OF RESULTS

Direct observation showed that residents mainly discussed those measures that would like to see implemented in the future (public works, schools, transport, canteens, swimming pools, soccer fields, etc.). The second most discussed topic was the demand for information about the year's budget execution.

In informal interviews, the following reasons were identified:

VMC employees;

Has political responsibilities in the VMC;

Does not agree with the political choices of the Mayor;

Has political affiliation with an opposition party;

Wants to be informed about the measures to be implemented in the municipality next year (works schools, transports, canteens, etc.);

Wants to have information about public funds management.

The analysis of the questionnaires resulted in a ranked list of motivations leading citizens to participate in public accountability events (see table 5). These motivations are presented in their descending order of prevalence.

Comparing the results obtained from direct observation with those from the questionnaires, they both seem to converge, as the use of the two methods resulted in the same two main reasons and in the same order.

Questions	List of Motivations	% of response
Multiple choice	Wants to be informed about measures to be implemented in the municipality, next year (works schools, transports, canteens, etc.)	69
	Wants to have information about public funds management	59
	Has political responsibilities in the VMC	16
	VMC employees	14
	Has political affiliation with an opposition party	8
	Does not agree with the political choices of the Mayor	3
Open	Curiosity	1
	Because I'm a citizen with full rights	1

Table5: List of Motivations

CONCLUSION

The project consisted in identifying the main reasons leading citizens to participate in accountability public sessions, held to increase literacy in the area and promote the active participation of residents in political life.

Those public session were attended by a small number of residents. Many of them congratulated the initiative and appeared to be pleased by the possibility of being able to express their views and to see their questions answered. Some residents participated quite actively as they put one or more questions to different municipal leaders, which proved that people are receptive to a flow of communication promoting transparency in local government.

A list of motivations was identified, in which the two most frequently mentioned were citizens' need to learn about measures to be implemented in the municipality in the near future (works, schools, transport, canteens, swimming pools), as well as to be informed about the management of public funds. Thus, the main motivation was of a personal nature, whereas the second is directly related to the residents' need for local authorities to be held accountable.

Within the project's ambit, a study will be carried out to identify the areas and the information available on national and international Web portals. The aim of this study is to contribute to citizenship empowerment.

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Adoption And Implementation Of Information And Communication Technology Into Geography Teaching: A Systematic Review

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ABSTRACT

This paper summarizes an extensive literature review addressing the issues of adoption and integration of Information and Communication Technology (ICT) in geography teaching. In November 2015, we performed a search of the literature indexed in SCOPUS (2000 to date) using geography, technology/ICT, and teaching as search terms. Then, we started an initial screening of titles and abstracts for deleting possible contributions that could result to be not in line with the research theme questions and outcomes to be studied. The aim of this systematic review is to provide a narrative synthesis of the evidences on 1) which technologies have been adopted into geography teaching in the last fifteen years, 2) how technology has been implemented into geography teaching, 3) what effects ICTs may have on the acquisition of geographic content and skills.

KEYWORDS: technology adoption; technology integration; information and communication technology; education technology; geography teaching.

INTRODUCTION

The trust in the possibility of a technology-driven reorientation of learning/teaching processes has inspired the ongoing discussion in the field of education technology. An argumentative line has started from the conviction that technology, in virtue of its potential for transforming pedagogical practice, can facilitate the experimentation of a variety of teaching strategies and methods in the classroom (Underwood, 2014; Morrison, et al., 2007; Beetham, Sharpe, 2013). Another argumentative line refers to perceived values of digital and interactive technologies that increasing students' engagement, motivation, attention during class time in order to achieve better learning outcomes and greater understanding (Heafner, 2004; Handley, 2008; Davies, West, 2013). However, it is important to note that empirical studies and evidence results show a much different situation: technology is not widely integrated into the classroom, despite its availability and in spite of teachers feel themselves competent in using ICT; the results expected were not achieved; the data do not confirm that technology automatically enhances learning for everyone (Nichol, Watson 2003; Vrasidas, 2014).

The work presented in this paper fits in this frame, since it concerns an extensive literature review addressing the issues of adoption and integration of Information and Communication Technology (ICT) in geography teaching.

Geography - as the discipline devoted to the study of objects and phenomena, arising from the interactions between man, society and environment in the complex reality of the world - plays a vital role in young person development since it develops intellectual and practical skills that help to decode, interpret and construct meaning of physical, anthropogenic and socio-economic phenomena of the environment in which people live, as well as to understand, accept, and respect the world in its natural and anthropogenic diversity. And yet when geography teaching is limited to involve descriptive patterns and store information in memory, it is not only boring but also causes damage to students (Gersmehl, 2014; Lorimer, 2005; Thrift, 2007; Smith, 2002).

Current technology is considered capable of overcoming the limits of the descriptive and mnemonic approaches to geography and, above all, of offering many benefits to enhance geography teaching and learning. The debate on the role of technology in geography is broad. For example, technology, changing the nature of the task, is believed capable of influences the affective-motivational states, increasing motivation, participation, engagement, and students' overall level of interest in the geography course. Furthermore, integrating active and interactive technologies within geography courses is believed a high priority to make teaching and learning of geography more authentic and relevant, and, therefore, to allow the development of students' key competencies - also better known as transversal skills (such as capacity to work in a team, critical thinking, creativity, responsibility, self-organisation, and so on) - through geography courses. Technical innovations in representation and geospatial technologies (such as GIS, GPS, geovisualization, and remote sensing) have also changed the "representational" nature of geography (based on maps, globes, graphs) and the visual nature of geographical knowledge, with the integration of virtual field trips, laboratories, digital games, and simulations that can have an impact on many of the geographic skills that students need to develop (da Silva, 2015; Taylor, 2010; DES/WO, 1990).

METHODOLOGY

The aim of this paper is to provide a narrative synthesis of adoption and integration of Information and Communication Technology (ICT) in geography teaching. In order to achieve this aim, three research questions were posed:

- RQ1) which technologies have been adopted into geography teaching in the last fifteen years
- RQ2) how technology has been implemented into geography teaching
- RQ3) what effects ICTs may have on the acquisition of geographic content and skills.

We undertook a systematic review to answer these three research questions. We systematically searched the SCOPUS database for all studies published since 2000 until November 2015, in all languages. The search terms used were: (1) “geography”, (2) “teaching”, (3) “technology”/“ICT”. First, we screened all studies (249 works) identified in the SCOPUS by abstract and title. Irrelevant or duplicate studies were removed, and the remaining articles were assessed for eligibility by full-text review. Secondly, we read all full-text studies and excluded the contributions that were not in line with the research theme questions and outcomes to be studied. Finally, we assessed 109 documents, 81 by full-text version and 28 by only abstract and title.

The distribution of the 109 documents by year of publication (Fig. 1) shows that the peak is recorded in 2010 (they were 20) but the number of the studies is felled to 7 in 2015. The distribution of the documents by type of publication (Fig. 2) shows that 78 papers are articles in journals, 22 are conference papers, and 8 are book chapters. The other is a conference review.

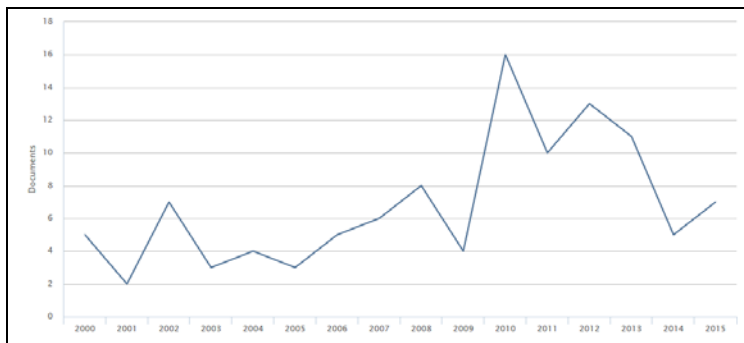


Figure 1: The distribution of the 109 documents by year of publication.

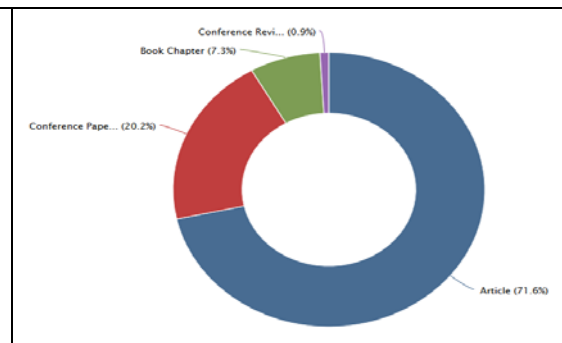


Figure 2: The distribution of the 109 documents by type of publication.

DATA EXTRACTION

Then, the data matrix was organized. Each column of the data matrix represents a variable and all values of the variable are or numeric or string type. Each cell contains a value for a particular variable and observation. If the value is not available the cell contains a missing value indicator. In the data matrix the values of the qualitative variables are reported as they are written from one document to another. Each of the variables was categorized into a number of categories depending on the nature of the variable, according to the literature in the fields of the geography teaching and the educational technology.

Thereafter, the descriptive statistics was calculated and presented in tables or graphs.

As shown in Figure 3, sixty-seven (61,5%) documents describe courses focused on the aspects of geography that relate to human, cultural, and economic geography (**HG**) and that include historical geography, cultural geography, cultural ecology, human geography, human use of the earth, and humanity and nature. Nineteen (17,4%), instead, focus on the aspects of geography that relate to physical geography (**PG**) and earth science (climatology, meteorology, oceanography, geomorphology, ...). Ten (9,2%) documents tell about introductory cartography classes (**C**) in which students learn vocabulary and symbols of maps, types of maps and mapping tools, and basic principles of statistical mapping and graphing. Nine (8,3%) documents relate teacher certification programs or teacher education (**GE**) either in geography geared to state curriculum requirements in geography, earth science, economic geography, natural resources, urban geography, but above all are focused on teaching methods and education technology in geography teaching. There are only four studies that focus on aspects within two sub-disciplines of geography (the 2,8% within HG and PG and the 0,9% within C and HG).

The figure 4 shows which types of technology are recognized in the geography courses described in the 109 documents. Fifty-three studies (48,6%) describe geography courses or programs in which technologies are being used to deliver education or curriculum contents (Technology-based Learning - **TBL**), such as mobile learning, e-learning, web-based learning, blended learning, computer-assisted instruction, DVD, video lectures, telematic lessons, multimedial software and material, films, digital photography, IWB (interactive whiteboard), and stereoscopic displays. Forty-four documents (40,4%) promote use of Geographic Information Technology (**GIT**) that is computer-based tools for spatial data analysis of the real world. Ten studies (9,2%), instead, focus on Technology-enhanced Learning (**TEL**), particular

digital technologies with an original methodological specificity, that extend and enrich the potential offered by education technology. Digital animations, virtual excursions, video games, gesture-based contents, and laboratory experiments were included in the TEL category. Technology of multimedia production (MPT) is confined to only two papers that explore principles and practice of media production to develop students' expertise by working on a range of practical projects.

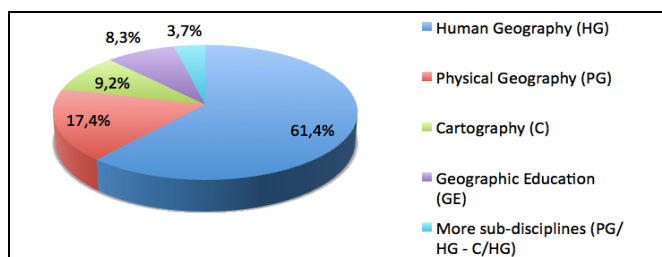


Figure 3: The sub-disciplines recognized.

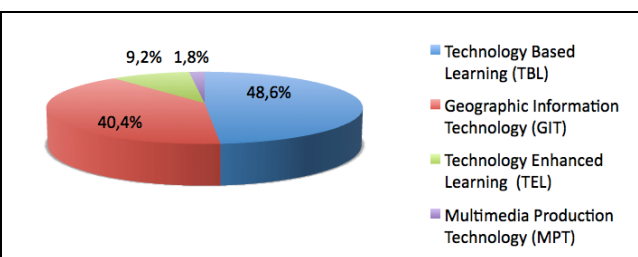


Figure 4: The types of technology recognized.

Thirty-nine out of the 109 documents (35,8%) report the experiences in which two or more technologies are used simultaneously. To be more specific, 21 documents (19,3%) describe the use of at least two technologies, and 18 documents (16,5%) describe three technologies used simultaneously. Sixteen documents of the 39 utilize more technologies of the same category (11 GIT and 5 TBL); 23 (out of the 39), instead, describe the use of technologies related to different categories (there are as many as 13 studies that fall within the category of "GIT/TBL").

For a broader coverage related to the aims, we have also categorized studies by levels of education (Table 1). The classification of the levels or stages of education does not follow the pattern of a specific educational system. We have organized the categories under five headings, which adequately respect the diversity of structure of national education systems and mirror the main differences found in the 109 documents. The five categories are Preschool (PrS), Primary school (PS), Secondary school (SC), Higher Education (HE), and Professional Higher Education (PHE). Whereas the universities' scholars focus mainly on research accomplishment, as component of their core mission, so it is understandable that the documents for the most part involve researches conducted in a university setting.

Table 1: The stages of education.

HEADING	DESCRIPTION
Preschool (PrS)	Children up to 5 years of age (nursery schools; nursery classes; kindergarten)
Primary school (PS)	Children from 5 to 12 years old
Secondary school (SC)	Between the ages of 12 and 18 (secondary school; upper school; ninth grade)
Higher Education (HE)	Undergraduate students; master's degree students
Professional Higher Education (PHE)	Post-MA degrees; Doctorates; Specializing schools

The distribution of the documents for stages of education	a.v.	%
Higher Education (HE)	34	31,2
Secondary School (SC)	21	19,3
Primary School (PS)	13	11,9
Professional Higher Education (PHE)	10	9,2
More stage of education (PS/SC; HE/PHE; PrS/PS; SC/HE)	10	9,2
Total	88 out of 109	80,8

But perhaps the most interesting aspect of this review is the issue of the teaching approaches. While reading the documents, we observed that this type of variable is more difficult to detect because typically it is not explicitly referred to and does not use a uniform terminology, which unequivocally distinguishes one approach type from another. Only 55 out of the 109 documents (50,5%) provide a description that allows understanding what teaching approach is adopted (Table 2). The frequency table for the teaching approaches shows the frequencies of the various categories that are approximately equal.

The table 3 considers another key aspect of the data presented here. Learning outcomes articulate the knowledge, skills, and competencies that students are expected to achieve as a result of taking a course. This paper focuses on learning outcomes claimed in the context of the 109 documents and expressed in the aims of the module or course. Therefore, learning outcomes are intended as areas, or domains, on which technology seems to have exercised some influence, and

these will be used to test the hypothesized potential of technologies in geography teaching. These learning outcomes are been classified into five distinct domains. The “Geographic Content Knowledge” area (**GCK**) is the domain of declarative geographic knowledge, i.e., it has focused on acquisition of spatial terms, places, regions or on the representation of physical and human facts; the “Geographic Skills” area (**GS**) is the domain of “to think geographically”, that is, skills that have applications to all levels of geographic inquiry and that involve the ability to acquire, arrange, and use geographic information; the “Key Competencies” area (**KC**) is the domain of the transversal skills that involves critical thinking, creativity, initiative, problem solving, risk assessment, decision taking, collaboration, autonomous learning, self-regulation skills, and time management; the area of “Affective/Motivational States” (**AMS**) is concerned with feelings or emotions and, in the context of this work, involves the motivation, satisfaction, engagement, interest in the course, self-esteem; in the context of this work, the “Digital Skills” area (**DS**) refers to the technical fluency to use computer programs and other tools. The table 3 reveals there are no reported cases in which digital skills are the expected learning outcome. Digital skills are in four documents but with other learning outcomes considered the largest part of the workload. In three documents digital skills are occurrence with the geographic skills; in one case, digital skills appear together with the GCK and AMS areas.

Table 2: The teaching approaches.

The types of approach recognized	a.v.	%
Action Learning Methods (ALM)	18	16,5
Discovery Learning (DL)	15	13,8
Expository Methods (EM)	15	13,8
More approaches	7	6,4
Total	55 out of 109	50,5

Table 3: The learning outcomes.

The types of Learning Outcomes (LOs) recognized	a.v.	%
Different types of LOs	40	36,7
Geographic Skills (GS)	17	15,6
Geographic Content Knowledge (GCK)	8	7,3
Key Competencies (KC)	8	7,3
Affective/Motivational State (AMS)	6	5,5
Total	79 out of 109	72,4

The data analysis process afterwards attempts to analyze the reciprocal relationships among the variables and provides insights in order to answers the research questions.

DATA ANALYSIS AND RESULTS

Previously we counted the occurrences of each element (technology, sub-disciplines of geography, teaching approaches, learning outcomes), and now, in this section, we will consider the relationship between two of these elements or variables (bivariate association) related to the phenomenon that we are studying.

The figure 5 shows the distribution of different category of technology in the sub-disciplines of geography and allows to identify the type of technology used in every field of geography. The overall analysis very clearly indicates that human geography (HG) is the only sub-discipline of geography in which learning experiences with all types of technologies are found. To be specific, TBL (36 documents) and GIT (25 documents) are in more than 55% of the cases, and TEL (5 documents) and MPT (1 document) are in the remaining 5,5 percent. It can be clearly seen that the introduction of technology is relevant, but only in the field of human geography (HG), and still limited to the TBL and GIT categories. The analysis of the documents also identifies the prevailing implementation and adoption of at least two types of technology. The implementation of three types of technology used simultaneously is found in the documents of the PG field (and falls within the sub-category of “TBL/GIT/TEL”) and in those relating to GE sub-discipline (TBL/GIT/MPT).

The graph of the Figure 6 visualizes the relationship between technology and the teaching approaches recognized and we must remember that only 55 out of the 109 documents (50,5%) provide a description that allows understanding what teaching approach is adopted. As is evident from this graph, the most used technologies are those of the TBL (23,9%) and GIT (21,1%) categories, and the overall distribution of the approaches appears balanced (18 ALM, 15 DL, 15 EM, 7 documents with more approaches). In particular, the technology that is used to deliver instruction (TBL) appears to be correlated with the transmissive approaches to learning (EM) in 11 documents, whilst the GITs appear to be frequently associated with active methods (ALM), such as role-playing, digital storytelling, problem solving, flipped-classroom, and so on. It is also important to note that the two documents with the MPT technologies report the adoption of the ALM approach. Considering the ALM approach, it appears that there have been no documents relating to the application with the TEL approach.

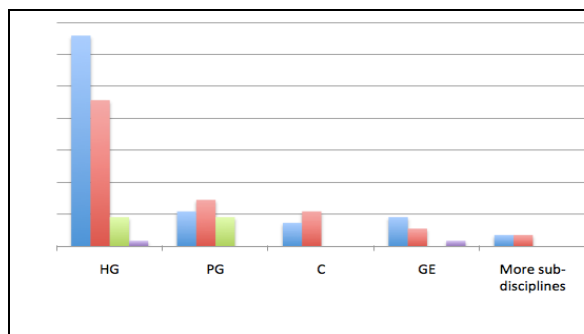


Figure 5: The types of technology recognized for the sub-disciplines of geography.

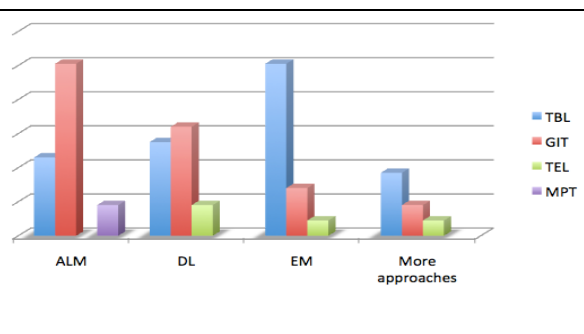


Figure 6: The types of technology recognized for the teaching approaches.

The data shown by the graph of Figure 7 can guide to understand linkage of technology and learning outcomes. First of all, you may notice that the TBL technology (12 documents) and GITs (22 documents) seem enhance all learning outcomes. This evidence falls within the more general tendency of items to bring more types of learning outcomes (40 documents) and the application of TBL (36 documents) and GIT (34 documents). The documents relating the application of TBL also show a considerable variety in terms of learning outcomes: KC (8 documents), GS (7 documents), GCK (6 documents), AMS (3 documents). Then, there seems to be a special affinity between the key competencies and the TBL technology. On the contrary, it is hardly surprising the relationship between the GCK and the TBL technology and between the GS and the GITs. There is just a case of MPT, and it records different types of learning outcomes. Learning outcomes of the GS and KC categories have not been found with technologies of the TEL category. Here it is important to remember that 40 out of the 109 documents (36,7%) aim to simultaneously achieve different types of learning outcomes.

The Figure 8, instead, presents the types of teaching approaches recognized for the learning outcomes. Also in this case, the analysis of the graph is difficult, not only because of the paucity of data (42%), but also due to the concentration of more approaches and different learning outcomes. However, it can be noted that the correspondences between the geographic skills (GS) and active methods (ALM) and between key competencies (KC) and the expository methods (EM) are particularly striking. The bivariate analysis also shows a certain concentration of the “more types of learning outcomes” value that is correlated with the DL (9 documents) and ALM (7 documents) approaches. The learning outcomes of the KC type are not been recorded with the ALM approaches. The approaches of the DL and EM types do not record the learning outcomes of AMS and GS types. The learning outcomes describing the relationship with the EM approach are not of the AMS type. There is no document referring to the adoption of more approaches with the learning outcomes of the GCK type.

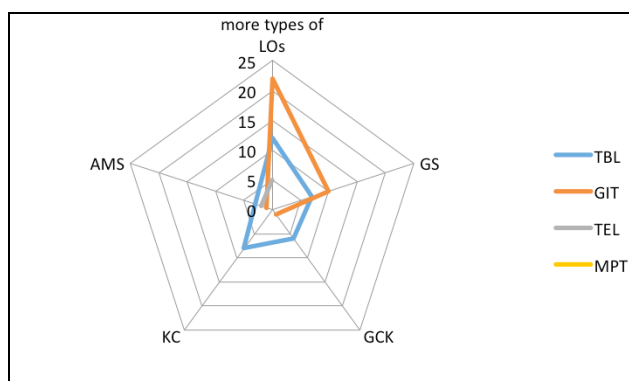


Figure 7: The types of technology recognized for the learning outcomes.

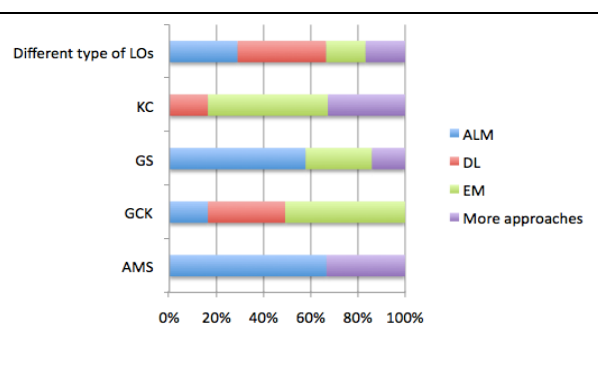


Figure 8: The types of teaching approach recognized for the learning outcomes.

INTERPRETATION OF RESULTS

The final step is to answer the three research questions on the basis of the descriptive study and of the patterns or trends, which have been identified.

Which are the types of technologies adopted into geography teaching in the last fifteen years? The analysis carried on the 109 documents published since 2000 until November 2015 shows that the technology adoption into geography teaching concerns the technology utilized to deliver instruction and the geographic information technologies. That is, all technology used to delivery of educational content (such as mobile computing, e-learning, web-based learning, blended learning, computer-assisted instruction, DVD, video lectures, telematic lessons, IWB) and to capture, store, manipulate,

analyze, manage, and present spatial or geographical data (GIS, GPS, remote sensing). Above all, it is important to remember that these types of technologies are mainly used in the field of human geography.

How has technology been implemented into geography teaching? The technology used for instructional delivery in the online and hybrid programs is associated with the expository approach to teaching of geography, which is characterized by the lectures, dissertations, e-learning modules, and lessons. The geographic information technologies are associated, instead, with the active methods, such as the role-playing, digital storytelling, problem solving, flipped-classroom, and the cognitive apprenticeship model. We must not underestimate the fact that, yes, the data analysis allows to relate the type of technology with the teaching approaches but only 55 out of the 109 documents provide a description explicitly referred to the teaching approach adopted and unequivocally distinguishes one approach type from another.

What effects does ICT have on the acquisition of geographic content and skills? The data analysis shows that the technologies utilized to deliver instruction are linked to all learning outcomes, although with particular affinity to the transversal skills. Furthermore, the data show the relationship between the declarative geographic knowledge and technology utilized to deliver instruction, and between the geographic skills and the geographic information technologies. But, it is important to remember that only 79 out of the 109 documents provide a clear description that allows to understanding which learning outcomes aim to achieve.

QUALITY APPRAISAL

By gathering data, an answer was given to each of the three research questions. But, the aim of this aspect of the paper is to enable the reader to appraisal the quality of the analysis carried, highlighting the limitations that were encountered in the research. Three main limitations of this study have been identified.

First, as already mentioned there are many documents (more than 40%) of studies conducted in a university setting. This finding is not surprising since, as discussed earlier, the academic scholars are more likely and pressed to publish their research work, while teachers tend to write less frequently about practices in classroom and their experiences with educational technology.

Second, we have not excluded the documents that not provide an explicit description of the teaching approach and the learning outcomes. Already during the reading step, we observed that these types of variables are more difficult to detect because they are not always explicitly mentioned. Then, the data analysis found that only 55 out of the 109 documents (50,5%) provide a description that allows understanding what teaching approach is adopted, and the 72,4 percent of the documents indicate the knowledge, skills, and competencies that students are expected to achieve as a result of taking a course.

Finally, the empirical evidences obtained from the 109 documents are scarce. As shown in Figure 9, only 47% of the documents provide empirical results and only a small subset of them present the design of the research methodology used. The methods recognized are quantitative (27 documents), qualitative (10 documents), and mixed (7 documents). The most common tools used are questionnaire, survey, experiment, observation, case study, focus groups, interview, and secondary data. There are thirteen studies that present different tools used simultaneously. Furthermore, the methodological limitations of many of these empirical studies were noted. They suffer from small sample sizes, use no well-validated psychometric measurements, rely solely on user evaluation, present only descriptive statistics, and have experiment time frames very short.

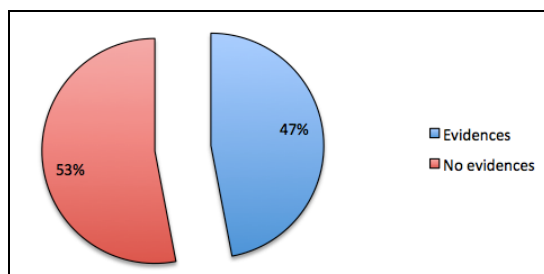


Figure 9: The empirical evidences in the 109 documents.

CONCLUSIONS

At the conclusion of the study, we can highlight certain aspects of adoption and implementation of ICT into geography teaching, and also contradict some frequently assumed considerations.

First of all, it is clear that geography teaching with technology seems to be characterized by a plurality of methods, such as the expository, discovery, and active methods of instruction. It is equally clear, that there is an relationship between technology and teaching approach. In particular, between technology-based learning that replaces or supports traditional face-to-face education and the expository approach to geography teaching, and between geographic information

technologies and active methods of learning to capture, store, manipulate, analyze, manage, and present spatial or geographical data.

However, the data of the research do not confirm the widespread enthusiasm for technology-enhanced learning (such as digital animations, virtual excursions, video games, gesture-based contents, and laboratory experiments). The learning experiences with technology-enhanced learning in teaching geography are few but above all they have not privileged relationships with a particular teaching approach and even with the learning outcomes. Thus, the results of this study support the conclusion that adoption of technology into geography teaching is limited to technology-based learning and geographic information technologies.

Another interesting finding relates to technology and the different kinds of learning outcomes. Primarily, it affects the low incidence of technology on the affective-motivational states. In spite of the continual reference to its capability to increasing students' motivation, participation, and engagement, there are very few documents that indicate the affective-motivational states as the strategic objective of the use of ICT to support learning into geography teaching. In second place, it is surprising to notice the relationship between the technology-based learning and learning outcomes, in particular in the relation to the transversal skills. Instead, the relationship between the geographic skills and the geographic information technologies is not surprising.

If it is impossible to deny the centrality of visual experience into geography teaching, it also is true that this research seems to prove the overcoming of the eminently representational model of geography teaching in favour of a learning model based on action. Despite a general tendency to overlook geography in school curriculums was recorded, it has also been noted a growing trend for learning activities devoted to the exploration, investigation and development of the understanding of the cultural, social, human, and natural dimensions of local and global environments in order to learn and practise a wide range of skills and competencies, and to acquire and improve open, critical and responsible attitudes towards the environment and world. The shift may have been encouraged and supported, also, by the integration of geographic information technologies that have made collection, handling, and analysis of spatial data far easier and especially promote students engagement in inquiry about local and global issues using authentic data.

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An Analysis Of Vocabulary Teaching In Turkish Courses In Terms Of Creative Language Acquisition

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ABSTRACT

The main function of language is communication. However, language is also the source and the tool for all fields of art that are based on language. Art productions are one of the indicative elements of being human. First Language Education is carried out at two major areas: comprehension (reading, listening) and narration (writing, speaking). Vocabulary teaching is one of the basic knowledge domains that play important roles in developing these skills. In order to improve students' main communication skills and their ability to use the language creatively and artistically, they need to build up their vocabulary knowledge to a certain level. Therefore, the aim of this study is to investigate the effectiveness of the vocabulary teaching activities in the Turkish Language course-books in terms of creative language use. As a descriptive study, this is a qualitative research in which scanning model has been used. In accordance with the aim of the research, the activities in the Turkish Language course-books published by the Ministry of National Education (MNE) and used in secondary education have been analyzed. The results of the quantitative analyses show that 56 % of the total vocabulary teaching activities is composed of figurative language. In other words, the activities used to teach creative language are used more than the activities utilized to teach denotative-basic meanings of the words (44%). Nevertheless, the qualitative analyses indicate that the great majority includes fixed expressions such as idioms, proverbs, metaphors. Therefore, it is found out that the course books do not include sufficient amount of activities to develop creative language use, and certain techniques related to improving creative language use have been suggested.

Keywords: Turkish Language Education, vocabulary teaching, creative language, word figure

INTRODUCTION

First Language Education aims to enable individuals to develop the language they have acquired in the family and in the immediate environment within academic setting in a systematic way. This education aims to develop communication skills in the first place. Turkish Language courses play a fundamental role in improving reading, listening, speaking, and writing skills which are the sub-skills of communication skill in general. There are also certain sub-skills which are related to these four major language skills. The ability to use words correctly, appropriately, and with multi-dimensional meaning aspects is one of these sub-skills. Moreover, building such vocabulary knowledge constitutes a major part of vocabulary teaching. Grammar and vocabulary knowledge are the basis of all language skills. As a sub-field of language knowledge, vocabulary teaching occupies an important place in developing comprehension and narration skills. In this case, it is obvious that vocabulary teaching aiming to develop creative language use will affect all of the other language skills and areas. Vocabulary knowledge is one of the most significant indicators of the success in communication. In this regard, the aim of vocabulary teaching is to teach how to benefit from the systematic and magical structure of language and use them with their wide conceptual meanings.

Jakobson (1960) states that there are six functions of language, the first being the communication. Poetic function is also one of them. The aesthetic, creative, and artistic language use is not only related to the productions of art. When new meaning dimensions are produced from the structures available in the daily language, the impact value of the language, that's, its effectiveness increases. One of the features of human beings is their tendency for aesthetic and art. The poetic function of the language which is as important as its communication function denotes to its power of imagery. People do not speak only about the concrete objects and events available in their immediate environments. Hence, language makes use of imageries in particular. Imagery is an important terminology that lies between the concepts of image and creation and it requires being explained (Dils ve Boroditsky, 2010). "Imagery" can be defined as the ability to establish a relation among imaginary visions and to create new concepts and ideas. This is a conscious act. In fact, imagery is a unique ability peculiar to humans. To create unexpected and new relations among images is defined with the term "creative imagery". As the main topic of this study, *the figurative language*, in other words, *figures of speech*, is an indispensable element of creative language.

In educational contexts, it is necessary to choose texts which include many original associations and metaphors with rich connotative value and various meaning dimensions, and to design the activities accordingly. Because incorporating the words with their new meaning dimensions to language teaching will enable students to use the

language more creatively and fluently. To help students discover the imaginary potential, vocabulary teaching activities in Turkish lessons can be highly effective.

In time, apart from their basic meanings words take on temporary meanings though permanent or new connotations and imageries such as polysemy, metaphors, and idioms. This phenomenon indicates that words possess an enormous potential and wide meaning dimension. Connotation, metonymy, metaphors, and novel associations constitute the figurative use of language. Figurative language refers to the use of words out of their literal meanings and dictionary definitions (Çalışkan, 2013). According to Özkırmı (1994), although emotions and imagination are thoughts on the one hand, they are completely based on words. Therefore, the more words an individual know, the more their world of thoughts are developed since every word has its place in human minds as concepts. Thus, humans think through concepts, namely, words. Then how is it possible to build vocabulary knowledge? At this point, it is necessary to touch upon 'lexical semantics'. Lexical semantics examine words in terms of meaning dimensions such as synonymy, homonymy, and polysemy. Moreover, differently from the traditional language studies, it analyzes words as the parts of a whole. It accepts the fact that every signifier has certain aspects of meaning in structural, interpretive, and productive semantics (Aksan, 1994). Similarly, according to Kıran (1999), a word in a syntagm determines its value with the syntagmatic and paradigmatic relations with the elements that come before and after the word or both. Apart from syntagmatic relations, words sharing common features are connected to each other through associations in mind.

The figurative language which includes figures of speech such as metaphors, similes, and fixed expressions such as idioms and proverbs is an important part of both literary language and daily language as well (Çalışkan, 2013: 95). All of these figures of speech reflect and shape ideas, consequently, identify and direct human behaviors (Strenski, 1989). They enable individuals to think creatively, imagine, and make sense in their own lives. This, in return, prevents individuals from limiting their thoughts and help them find themselves in the depths of language (Tompkins ve Lawley, 2002). Incorporating the words with their new meaning dimensions to language teaching is related to enabling students to use the language more creatively and fluently.

It is hoped that this study which aims to examine the effectiveness of creative language teaching in Turkish courses will have significant contributions to the field. To the best of our knowledge, there is not a specific research related to the impact of vocabulary teaching activities on creative language use used in Turkish lessons although the review of the related literature shows that there are some studies regarding vocabulary teaching. It is thought that this study will make significant contributions to the field in terms of being a reference for further research by uncovering the features and the quality of the vocabulary teaching activities in Turkish lessons.

THE STUDY

The aim of this study is to examine the effectiveness of the vocabulary teaching activities in the Ministry of Education's Middle School Turkish Language workbooks, with respect to the acquisition of a creative language. The main research question constructed in accordance to the aim of the study is: Are the vocabulary teaching activities in the Turkish Language workbook used by the Ministry of Education for the 2013-2014 Education Period, adequate with respect to the development and improvement of a creative language?

The descriptive analysis, which is a qualitative research method, has been used in this study. In accordance with the aim of the research, the vocabulary teaching activities in the relative textbooks have been surveyed and have been examined with the document analysis method. In this study, the vocabulary teaching has been limited to creative word (figures of speech) teaching and the examined textbooks have been limited to the Middle School Turkish Language student workbooks used by the Ministry of Education for the 2013-2014 Education Period. In the analysis process first of all the activities aiming the vocabulary teaching were identified among all activities in the textbook. Subsequently, these vocabulary teaching activities were categorized and converted to a table based on their characteristic of whether they are teaching the word's direct meaning or teaching figures of speech. This analysis and categorization operation was carried out separately for each relevant grade level, namely 5th, 6th, 7th and 8th grades. During this categorization process, which was undertaken by domain experts, the directives and clarifications in the Turkish language teaching instructor's manuals that were prepared based on the Turkish Language Program were followed. In order to illustrate the realized categorization process, one application example for the word's direct meaning teaching and one application example for the figures of speech, both from the 8th grade textbook, are given below.

Sample for figures of speech activities

3 activities from the text "Love Letters" (*Aşk Mektupları*)

Find the meanings of the idioms given below and write these meanings next to them. Then, write

down a sample sentence in accordance with the meaning of the idiom.

- “Be down in the dumps” (*yüreğine ateş düşmek*):
My sentence :
- “Scream blue murder” (*Kıyametleri koparmak*) :
My sentence :
- “Lose face” (*Küçük düşmek*):
My sentence:

Sample for teaching a word’s direct meaning

3 activities from the text “Boğaçhan, the Lion of the Kazılık Mountain” (*Kazılık Dağı’nın Aslanı Boğaçhan*)

Find the meanings of the words and word groups from the dictionary and write these meanings next to them. Construct a sentence with each.

- “Nomad tent” (*Oba*):
My sentence:
- “Bridle” (*Zaptetmek*):
My sentence:
- “Inn” (*Han*) :
My sentence:
- “Roach” (*Çamçak*):
My sentence:
- “Kumys” (*Kımız*) :
My sentence:
- “Quiver” (*Sadak*):
My sentence:
- Stowage (*İstif*):
My sentence:
- Claw (*Pençe*):
My sentence:

FINDINGS

The number of total vocabulary teaching activities, the number of teaching a word’s direct meaning activities and the number of figures of speech activities in the 5th, 6th, 7th and 8th grades, and their corresponding percentages are given in Table 1.

Table 1 The Number and Percentage Distribution to Grades of Teaching a Word's Direct Meaning Activities and Figures of Speech Activities

5th Grade	
<i>Number of Activities</i>	335
<i>Total Number of Vocabulary Teaching Activities</i>	149 (%44)
<i>Total Number of Figures of Speech Activities</i>	59 (%39)
6th Grade	
<i>Number of Activities</i>	321
<i>Total Number of Vocabulary Teaching Activities</i>	77 (%23)
<i>Total Number of Figures of Speech Activities</i>	55 (%71)
7th Grade	
<i>Number of Activities</i>	332
<i>Total Number of Vocabulary Teaching Activities</i>	71 (%21)
<i>Total Number of Figures of Speech Activities</i>	38 (%53)
8th Grade	
<i>Number of Activities</i>	285
<i>Total Number of Vocabulary Teaching Activities</i>	93 (%32)
<i>Total Number of Figures of Speech Activities</i>	67 (%72)
Overall	
<i>Overall Number of Activities</i>	1273
<i>Overall Total Number of Vocabulary Teaching Activities</i>	390 (%30)
<i>Overall Total Number of Figures of Speech Activities</i>	219 (%56)

When the distribution of the Middle School Turkish Language vocabulary teaching activities to the grades and their relative characteristics is examined it can be seen that within all grades, most vocabulary activities are in 5th grade. On the other hand, the number of figures of speech activities within all vocabulary teaching activities is more in 6th and 8th grades, compared to 5th and 7th grades. In other words, it is observed that as the grade level increases the number of vocabulary teaching activities declines. Moreover, it is noteworthy that vocabulary activities at higher grades substantially are figures of speech activities.

The distribution of the activities according to the text type are given in Table 2.

Table 2 The Distribution of Vocabulary Teaching and Figures of Speech Activities to Text Types

Grade	Text type	Number of texts	Effect score to vocabulary instruction	Effect score to figures of speech
5	Literary	16	81	34
	Instructive	16	68	25
6	Literary	15	44	32
	Instructive	9	33	23
7	Literary	16	46	23
	Instructive	8	25	15
8	Literary	12	49	39
	Instructive	13	44	28
Total	Literary	59	220	128
	Instructive	46	170	91

Examining Table 2 it is seen that the number of figures of speech activities in literary texts is higher compared to the number of figures of speech activities in instructive texts.

In order to obtain information regarding the quality of the activities in the workbooks, they were examined with respect to activity types and the findings are presented in Table 3.

Table 3 The Distribution of Vocabulary Activities Based on Type and Grade

<i>Types of Activities Used for Vocabulary Instruction in the 5th Grade Turkish Language Student Workbook</i>
<ul style="list-style-type: none"> - Unknown word activities - Keyword activities - Lexicalization with a given derivational affix - Entity arrangement based on entity types - Finding synonyms and antonyms - Comprehending homonymous words - Constructing a sentence with unordered words – completing the sentence with the appropriate word - Cartoon – photograph – picture interpretation - Puzzle (crossword) activity with words that their meanings are given - Writing activities with different text types - Finding the implicit (hidden) meaning - Constructing concept maps - Finding the words with figurative meaning, idioms and proverbs – interpreting their meaning
<i>Types of Activities Used for Vocabulary Instruction in the 6th Grade Turkish Language Student Workbook</i>
<ul style="list-style-type: none"> - Activities to differentiate between the figurative and actual meaning - Activities to match idioms with their meanings – idiom analysis - Text writing activities by using keywords - Word activities aimed at finding the text type - Word activities aimed at finding the figures of speech - Finding synonyms, homonyms and antonyms - Puzzle (crossword) activity with words that their meanings are given - Writing activities with different text types - Finding the implicit (hidden) meaning - Unknown word activities - Interpreting different images
<i>Types of Activities Used for Vocabulary Instruction in the 7th Grade Turkish Language Student Workbook</i>
<ul style="list-style-type: none"> - Finding synonyms, homonyms and antonyms - Keyword search and find activities - Puzzle (crossword) activity with words that their meanings are given - Activities to match idioms with their meanings – idiom analysis - Writing activities on different text types - Unknown word activities - Figures of speech activities - Activities to differentiate between the figurative and actual meaning - Finding the words that belong to the same conceptual field - Finding the implicit (hidden) meaning - Interpreting different images

Types of Activities Used for Vocabulary Instruction in the 8th Grade Turkish Language Student Workbook

- Activities to differentiate between the figurative, actual and connotation meaning
 - Finding and identifying synonyms, homonyms and antonyms
 - Comprehending homonymous words
 - Interpreting images
 - Writing activities with different text types
 - Proverb and idiom analysis
 - Finding and identifying figures of speech
 - Unknown word activities
 - Matching words that their meanings are given, with each other
 - Keyword activities
 - Finding the implicit (hidden) meaning
 - Interpreting images
-

As it can be seen in Table 3, the examined activities show similarities with respect to their activity types. The ones related to figurative language are in the way of having the student find the related figure of speech. No activity has been found that is related to the development of figures of speech.

CONCLUSION

When the findings of the study are examined, it is observed that on the overall grades level, the number of figures of speech activities are relatively more than the teaching activities of word's direct meaning. This observation, at first view is satisfactory. Connotations and combinations with artistic usage are in second position, therefore, the fact that their meanings are less known than the word's direct meaning, can be considered as an expected result. However, a finding that we consider important with respect to this study is that when the textbook activities that are used to teach figures of speech are qualitatively examined, it is seen that almost all of them consist of cliché and stereotyped words and phrases like figurative phrases, idioms and proverbs. These are only quantitatively adequate in terms of developing and improving the use of creative language, but it is our belief that these structures are not structures that would constitute the cognitive and creative processes effective. In parallel with this structural repetitiveness and uniformity, it has been observed that the figures of speech activities are of similar characteristics at each unit, subject and text.

Figures of speech, both in terms of structure and meaning, are products of abstract thinking. It is identified that there is an increase on figures of speech activities at the 6th, 7th and 8th grades. This increase is agreeable with the development of abstract thinking skills of the students, which development is in parallel with their age, intellect and personality development. However, even though the activities are sufficient in quantitative terms, it is appraised that they are inadequate in qualitative terms. The reason for that is that the figures of speech activities consist mostly of idioms, proverbs and figurative phrases. It is observed that metaphors, poetic syncretism and similar figurative language usages have been ignored.

It is seen that the number of figures of speech activities in literary texts is higher than the number of figures of speech activities in instructive texts. Due to their nature these texts accommodate figures of speech in higher rates, therefore this was a foreseen finding. This is because literary texts have the characteristic of being a field of the creative, aesthetic and artistic use of language. However, similes and metaphors can add strength to the expression of not only literary texts but also of informative texts. In this context, the fact that figures of speech activities have been overlooked in instructive texts has attracted our attention as a deficiency.

As it can be seen by the activity categorization of the word teaching activities in the findings section, the activities are mechanical and repetitive. This characteristic is not only prevalent in the figures of speech activities but also in activities for teaching words' direct meaning. In this context, primarily an emphasis should be placed on the teaching of metaphors as they require a creative cognitive and emotional process within the writing and word teaching activities. For that purpose, texts that have conceptual metaphors should be included to the textbooks. Within the context of comprehension activities the analysis of these structures, and within the context of expression activities the development of similar structures by the students should be included.

There are differences between the difficulties of understanding a language and speaking in that language. If an analogy can be constructed with on that fact, we can argue that individuals who can construct their own creative language products and use them have internalized the language. Students should be encouraged to develop headings, slogans and banners as creative word structures and thus to use their mother tongue freely. This is considered to be important to develop and improve the speaking and writing skills of the students and to add to

their self-confidence on effective communication.

The figurative language does not only include stereotyped language figures (proverbs, idioms, etc.). A higher step from that is the use of the words in the language in very different forms by having them in uncommon syncretisms. Idioms and proverbs, as they are self-stereotyped expressions, they do not possess a high adequacy in developing the creative language. In order to use creativity, the individual should construct the meaning characteristics and relations in stereotyped expressions with different words or concepts and new meanings should be produced. Idioms, proverbs and figurative expressions that are used in Turkish language courses within the scope of word teaching, have great importance in terms of the language's vocabulary and therefore they need to be taught meticulously. However, diversifying the methods, activities and materials used in their teaching would be appropriate.

Words committed to mental processes in order to understand something can be named as passive, whereas the words that are processed in mind and used to construct new structures in order for the individuals to express themselves can be named as active (Özbay, 2008). Ensuring that students can develop their own language figures, would actually allow an effective vocabulary to become functional.

The human thinking process is realized with symbols. By constructing relations between the words and symbols in the process of oral and written communication the thinking, comprehension, decision-making and response giving processes of the students are evoked. In other words, by encouraging and facilitating creativity in language at the same time a creative thinking education is realized. Therefore, the teaching of figures of speech and especially the teaching of conceptual metaphors should not only be viewed as a topic of Turkish courses. In order to transfer the creative language to the educational environment special importance should be given to selection of texts where words are used with different meaning dimensions, are highly connotative, have unusual syncretisms and include elements with high potentials of creativity, such as metaphors. Activities are required to be suitable to allow the comprehension of the creativity and aesthetics of these structures. As elements of figures of speech contribute to individual's creative thinking processes and to his/her skills of interpreting the life, it would be helpful if these elements are emphasized and their use is encouraged in all disciplines in the academic domain.

Another observation of this study is that the instructions and clarifications on the instructor's manual regarding word teaching are not adequately reflected on the applications in the student workbooks. It can be suggested that the teachers should not rely entirely to the textbooks but can develop and construct their own activities and exercises with respect to the specific purpose.

At the existing Turkish Language Course Teaching Program (2006) the main purpose of language teaching has been set as "having the students comprehend the aspects and profiles the language takes in different contexts, express themselves with the use of language, enrich their emotional, mental and imagination worlds by allowing them to access different sources of information and knowledge". Therefore, in accordance with this purpose, it would be appropriate if the activities would be developed by taking into consideration all aforementioned characteristics.

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An Exploration Of Arab Students Opinions On Higher Education System In Romania

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ABSTRACT

The article analyzes how the Arab students adapts to the education system and daily life in Romania. First it shows the attraction of Romanian schools for Arab students to attend graduate, masters and PhD studies. Then identified some Romanian cultural particularities and how they consider be. Based on the responses to a questionnaire identifies Arab students opinion about how they are received by the Romanian colleagues, and by society in general. Likewise identified Romanian students opinion about their fellow Arabs. At the end of the paper, shows some changes that have been made in teaching to ensure the performance of all students, including those Arabs.

Keywords: education abroad, technical education, cultural adaptations.

INTRODUCTION

Traditionally, Higher Education in Romania has a world-wide reputation as a centre of excellence in learning, teaching and practice. Romanian Universities and Colleges have been receiving thousands and thousands of students from all over the world, especially from developing countries. Today most all Romanian Universities are partners with thousands of well known Universities in all over the world. And Romania has become one of countries offering state-of-the-art facilities and cutting-edge research opportunities together with the chance to walk in the footsteps of so many of the world's most influential thinkers.

Higher education institutions in Romania began to provide education services based on promoting international cooperation between universities in order to respond to the requests coming from different industries. In these conditions appeared a large number of educational offerings for students from different countries.

The Romanian education was popular among the foreign students, especially after World War II. Before this, between 1850 and 1914 many Romanian students have studied in other European countries and afterwards they have contributed in building up the Romanian education system, Romanian industry and culture. Today, when Romania is part of the European Union, it can be noticed an increased mobility among youngsters that decide to go abroad for studies in European universities or in USA.

The purpose of this article is to identify key aspects that represent an attraction for foreign students to come to study in Romania, especially Arabic students. To identify these attractive factors we have started our analysis beginning with a range of studies met to underline the cultural particularities of the Romanian people.

ROMANIAN EDUCATION ATTRACTION

The Romanian higher education system comprised 48 public universities and 56 private universities. These universities included 536 faculties with a total number of 620,529 students enrolled. Mention should be made that the data available do not allow for the identification of the accurate number of individuals enrolled in the Romanian universities, either public or private.

In 2014, 12.000 foreign students were registered in Romania and in 2015 their number reached 21.000. Most of them are coming from other European countries, especially from France but 6100 foreign students are from non-European countries. The number of foreign students registered for a bachelor degree is around 19.000, for a master degree have registered around 1000 foreign students and for Ph.D around 1000. Foreign students have arrived also from Arabic countries, for example from Tunisia have registered around 1500 and from Maroc around 900.

The application file must be sent to Romania by 15th of September (for undergraduate and graduate studies), but there is no deadline for PhD applicants. International students have to prove good knowledge of the teaching language (English, French or German). For the students who do not meet this criterion there are specialized departments where they can improve their language skills.

It is commonly believed that foreign students decide to attend the Romanian universities due the high quality of the education. There are also opinions that state the fact that Romanian universities represent an attraction due to lower tuition fees in comparison with other European countries and also due to the low cost of living. Researches have demonstrated that foreign students have chosen Romania to complete their education because the living costs in Romania are low even though the trend is heading towards the European Union level, also universities' tuition fees are smaller compared to other European countries (3200 USD or 2300 Euros per year), there is also the possibility of getting hired in a multinational company at a wage similar with the ones in European Union, in addition to this the Romanian Government offers study scholarships to talented. The average annual budget for studying in Romania is: €5500 (€4700 - living expenses, €300 for Books, €500 for Holidays/travel in Romania).

The majority of the foreign students have enrolled in the medical university but also they have enrolled in other universities as well. For example, the Polytechnic University of Bucharest has around 27.000 students, 800 out of 27.000 are foreign students enrolled for a bachelor, master and Ph.D degree. 700 students out of 800 foreign students that the University has are from Arabic countries and Turkey.

Polytechnic University of Bucharest is the oldest and most prestigious engineering school in Romania, with a tradition accumulated over 190 years of existence through the efforts of some of the greatest teachers of our nation, defines its uniqueness by creating knowledge through research and by technological innovation and its implementation through education and vocational training at European level. University Politehnica boasts many years of academic excellence. A rich academic heritage is based around many landmarks in human knowledge, and today's this higher education institution benefit from this lasting legacy.

The studies in University POLITEHNICA of Bucharest can be done in international languages at the following in different faculties. For bachelor studying electronics and telecommunications engineering (in English, French, Germany), computers and information technology (in English, French), applied electronics (in Germany), mechanical engineering (in English, French, Germany), chemistry and engineering of organic chemicals, petroleum and coal chemistry (in English, French), materials engineering-materials science (in English, French), economical engineering for electrical, electronics and power engineering fields (in Germany), economical engineering for mechanical field (in Germany), air navigation (in English).

For master studying business management in (English), biomedical informatics (in English), automatic translation technology (in French), business administration of industrial systems (in Germany), engineering and management of industrial systems (in French), software engineering (in English), mechatronics and bionics technique and organization (in Germany), management digital enterprise (in English), artificial intelligence (in English), advanced microelectronics (in English).

Another factor of attraction is the certification programs in universities. The qualifications of Higher education must be internationally recognized. Transferable qualifications aid mobility, making it easier for students to further study or to transfer achieved credits to other higher education institution or to move from studying to launching a career elsewhere. In order to facilitate and ensure that the quality and transferability of higher education qualifications mean something and are recognized all over the world, Politehnica University developed and apply a number of instruments, among which: European Credit Transfer and Accumulation System (ECTS), The Diploma Supplement (DS), The European Quality Charter for Mobility, The European Qualifications Framework for Lifelong Learning (EQF), The ENIC Network (European Network of Information Centre on academic recognition and mobility), The NARIC Network (National Academic Recognition Information Centre).

THE CULTURAL PARTICULARITIES

Even though all the aspects mentioned above are true, from different discussions with foreign and Romanian students resulted that the Romanian people demonstrated kindness towards the foreign students that have arrived in Romania for studies.

Now Romanians are adapting to the European culture, but some cultural aspects have been formed over time and can not be ignored. It has been studied in the last 150 years folklore, traditions, customs, mores, popular literature, classical literature, art, film, religion, nature, architecture and through this cultural particularities were identified. The opinions are quite divergent, but in general any Romanian believes that the peasants, which until 50 years ago used to represent the majority in the country, should be welcoming, tolerant, humane.

It is true that different races have contributed to the Romanian people, some in a higher proportion such as Dacians, Romans and Slavs and others in a smaller like Turkish peoples. For example (quote from Stănescu

2006), D. Drăghicescu (1907) in a classic book believes that the Scythians would have transmitted a strong will, a sharp mind, lively, an opening towards relationships, on the other hand they have also transmitted a some kind of guile, hypocrisy, duplicity. From Thracian it has been inherited the sober character and some sort of guile and even the tendency to deceive. The Romans would have transmitted the forbearance, strong-willed character and sometimes choleric temperament. Slavs contributed with a sense of sociability, an exuberant enthusiasm, belief in superstitions. From the Turkish people it is believed to have acquired a certain carelessness, belief in destiny, in faith and luck and the lack of confidence in ourselves. From the experience of being in contact with the great empires that used to be right across the border, Draghicescu also distinguishes the passivity, the resignation, the lack of offensive power and defensive resistance practice. From these key cultural particularities would results the heterogeneity of the Romanian people ethos.

As shown in the literature (Stănescu 2006), great Romanian philosopher, Lucian Blaga believes that the geographical place has influenced the Romanians' body and soul. The great French geographer Em. de Marton noted that Romania's geography is an almost ideal space. Being sedentary and taking care of agriculture to survive, the Romanians knew that time passes after a certain cyclical. Other scholars such as C. Radulescu-Motru said that Romanian history thought them to resist over time and to behave sometimes collectively and sometimes individually to hide their existence. The great historian Vasile Parvan speaks about fatalism, melancholy, levity into action and about a shell where the soul retreats. The philosopher Constantin Noica noticed a serenity and a fear of change, a shepherd cosmic solitude. The writer Mircea Eliade noted that Romanians being surrounded by great empires have adapted, although they are neither pessimistic, nor passive, nor resigned. Mihail Ralea believed that Romanians are essentially good, with no memory of the evil, not infatuation and exhibit passive adaptability resulting from the East passivity. Other scientists have noted a tolerant and open character, no religious wars, maybe some soul atheism although it is not declared and that the Christianity has profoundly influenced their lives. Romanians were too weary to deal too much with spirituality until the Middle Ages and they have witnessed a lot in their long history.

We believe that these divergent characteristics belong to people of every nation and not to an entire people. The historian Lucian Boia (1997) noted that one can say anything about he Romanians and about others as well as the ethnic psychology is inconsistent as it has no scientific grounds. However there is an eastern component in the Romanian culture. In conducted research, we've tried mostly to identify how foreign students are being accepted among the Romanian students.

Taking as a reference the G. Hofstede's theory (Hofstede 1995), in Romania studies have been conducted to determine the cultural particularities. Culture is the "structures of thought and action mentality widespread in the environment " (Kelly 2004). These aspects have been formed over time depending on various factors: economic, political, social, geographical, demographic. The business culture lead to a collective mentality, whereby a group of people is different from another group of people. Different business cultures differ (Hofstede 1995) based on five criteria:

Distance towards power: shows the existing inequality. When the distance is small, the subordinate dependence towards the leader is small. Having a big distance requires obedience, if the distance is small people consider themselves equal and organizations are becoming decentralized.

The degree of individualism: individualism allows for personal freedom, personal achievements. Collectivism emphasizes group that protects the person in exchange for loyalty. In collectivist societies man lives through collective society, in the individualistic organizations human involvement is small, more important is to satisfy their needs

The degree of masculinity: masculine societies seek performance, feminine societies seek prosperity. Masculinity is characterized by earnings, recognition, advancement, promotion; feminism by means of cooperation and security. In masculine societies enterprises, managers are aggressive, disagreements are high. In the feminine societies the predominant style is the democratic one where the role of managers is moderate.

The uncertainty level: the need expressed by predetermined rules. Without them we encounter stress, anxiety, irritation. In tolerant societies towards uncertainty the plans are developed on short term, in intolerant societies every action is carefully planned.

Time management: businesses could be targeted in the long term, when promotes perseverance, thrift, savings, or short-term when it is encouraging the initiative.

The Trampenaars model (1997) identifies the following characteristics of culture: universality / particularity (the emphasis is on rules or relationships), individualism / collectivism; emotionality / neutral (show or no show feelings); specific / diffuse (make a difference or not between private and professional

life); social status is acquired / purchased (obtained by achievement or by age, education); sequential / synchronous (simultaneous or successive events); internal control / external (it is believed that people can control their destiny or not) .

Gallup Romania has conducted in 2005 a survey on business culture in Romania and found a large distance from the management, collectivism, femininity, high uncertainty avoidance and a short-term orientation.

A recent research (Musat 2013) shows the following indicators for cultural characteristics: the distance towards power - 80, the degree of individualism - 30, the degree of masculinity - 42, tolerance to uncertainty - 90, long-term orientation - 52. The study also investigated the degree of indulgence that has value 20.

THE RESEARCH METHODOLOGY

The research sought to determine how foreign students adapt in Romania, was conducted at the Engineering Faculty of Polytechnic University of Bucharest. In this faculty classes are held in foreign languages like German, English and French. The Engineering Faculty has 500 students enrolled for a bachelor degree and 150 students enrolled for a master degree. Out of the total number of students enrolled in the Engineering Faculty, 300 are foreign students.

In order to identify more accurately the relations between Romanian and foreign students, a research has been conducted over an entire year of study, the last one so the students knew each other for 4 years. Two questionnaires were developed with similar questions addressed to Romanian students and foreign students. All students have answered: 30 Romanians, 16 Arabs and 4 French.

The questions referred to the following:

1. The impact of the existence of mixed groups in preparation;
 2. The existence of rivalries among students by forming mixed groups;
 3. Relations between students;
 4. Participation in joint activities outside teaching hours;
 5. Consultation between students preparing lessons;
 6. Group unity;
 7. Ease of adaptation to Romanian cultural environment;
 8. Interest in knowing the culture of the country to foreign students;
 9. Awareness of the language in which courses are taught;
 10. Awareness of the technical language;
 11. Adapting to Romanian standards of behavior;
 12. Romanians disturbing behaviors towards foreign students;
 13. Interest for knowing the Romanian culture;
 14. The level of knowledge of the Romanian language.
- Foreign students have also responded to two questions:
15. If Romanians are talking about their country;
 16. If teachers give responses to requests to clarify some issues being taught.

RELATIONSHIPS BETWEEN STUDENTS

From the answers given by foreign students unanimously believes that know well the language of teaching and technical language, are interested to know Romanian culture, teachers respond to their wishes to clarify issues raised in courses, Romanian students do not have behaviors that disturb them.

Also 90% of them believe they have friendly relations with their Romanian colleagues, but they form a distinct entity, they have learned from Romanian culture. Withal 70% consider that the existence of mixed groups has a positive impact in their training. They also consult Romanian students in clarifying certain aspects of the course, it is not difficult to adapt to the environment in Romania, that were easily adapted to living conditions in Romania, they have learned Romanian well, that Romanian colleagues speak about Romania. Also 50% of them consider that there is a emulation between Romanian and foreigners to education. The same percentage believes that participating in the joint action.

From the answers given by Romanian students we can conclude that that students unanimously considers that the foreign students adapt well in Romania, that cultural information is being changed and that Arab students quickly learn Romanian.

It is noted that 2/3 of the Romanian students consider that the existence of mixed groups has a positive impact in training, that students consult each other while preparing their homework, that there is unity in

the group, that foreign students are interested in knowing the Romanian culture. Also 2/3 of Romanian students consider that there is no special emulation to learn whether foreign students are part of the group or not, that they do not participate in common activities in their free time, and that Romanian students' behaviors is not disturbing for foreign students.

Also 85% of the Romanian students consider they have established friendly relationships with foreign students and that they have learned some aspects of the culture of the countries the foreign students come from, they know to an acceptable level technical language and that their behavior is compliant in our country

So Romanian students consider that foreign students adapt well to the conditions in Romania, both in terms of behavior and the Romanian language, that friendly relationships are established between them and that they exchange cultural information. Regarding the educational process there is a collaboration between them and they are not considered as separate entities, all being students, it is estimated that they know very well the French language in which the education process is conducted .

It seems that the friendships do not extend far and extra teaching activities. Although some Romanian students have replied to the questionnaire that they went together to different conferences, they have made visits to potential employers, they went to clubs, to theaters and concerts, doing sports and excursions together.

It is interesting to **compare students' opinions** about their relations. The same proportion (66-70%) think that it is good teaches the same group. Romanians feel emulation for teaching in 33% of the cases and foreigners in 50% of the cases. The same percentage (80-90%) believe that relations between them are friendly, it helps to lessons (66-70%). Romanians feel that foreigners adapt easy to the environment (90%) but only 70% of foreigners feel the same.

Differences do occur. Of Romanian 33% believe that certain behaviors of their disturbs, but no stranger said this. 66% of Romanian feel that they are two distinct entities in the group, while foreigners think this of 50%. It means that each group has however identity.

In order to create a friendly social and learning environment to foreign students, Polytechnic University of Bucharest provides the following supports: printed books and practice handbooks written in foreign languages, with specific indications for foreign students; E-Books and and practice handbooks written in foreign languages posted on the website of the Faculty (Moodle Platform); specialist advice for foreign students; attracting and motivating foreign students to participate in Annual Student Scientific Sessions; tutorial for carrying out practical activities within multinational companies operating in Romania; facilitating participation in scientific conferences and congresses having technical profile; providing accommodation and participating in social activities on campus.

In order to revitalize the relations between Romania and the Arab World, by launching cultural projects with national, European, Arabian, and international support, four years ago was founded The European Romanian- Pan-Arabian Cultural Center (CCERPA). This Center aim is to promote and support the Arab culture in our country, and the Romanian culture throughout the Arab world, by initiating informational and educational programs to raise the awareness of our people and communities, about the history, culture of each nation, emphasizing on the common ground, and also on a good knowledge of the moral, social, scientific, sightseeing, economic and political values specific of each country.

CONCLUSIONS

The study shows that Arab students are welcome in the Faculty of Engineering. Romanian students are friendly with their fellow Arabs. Do not feel differences between Romanian and foreign students, all is considered to be peers with the same interest, training in engineering. This behavior is a consequence of the fact that Romania was at a crossroads of civilizations.

At the same time Arab students retains its cultural identity, as well as Romanian students or students from other European countries.

Foreign students get advantage of wonderful blend of tradition and modernity, vitality and performance, along with traditional and new campuses at low cost.

Also, studying in Politehnica Univesity offers a unique cultural experience in a dynamic and multinational environment. Besides earning a world-class qualification, international students have the chance to learn new languages, get international intercultural skills that are of great value to future employers and an essential advantage in a dynamic world, build a friend and professional network lasting forever, to travel and make practice or exchange studies in other countries, etc.

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Assessment Of Usage Efficiency Of Information Technologies In Educational

Institutions

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ABSTRACT

Thanks to the rapid development of information technology and thanks to the fact that individual computers became accessible to all people and that the information technologies were used in education and training as of 1990, many innovations such as computer aided education, web based training have started to take place (Aksoy, 2003). Even recently, Lave and Wenger (1991) have introduced some different perspectives about learning within the framework of Virtual reality applications. That is to say, it has been created a media which is very efficient in understanding the course by making users really feel in mind to be in a different media by using computer based sensors, thanks to Virtual reality and 3-D virtual media that are prepared in computer environment and again thanks to a technology in which the users can interact with the objects in this virtual environment (McGonigle and Eggers, 1998). In this way, it is an expected result that the organizational efficiency increase by improving the educational environment and tools through innovative systems besides such innovations that are implemented in order to increase the individual efficiency. The obstacles existing against increasing the efficiency of the technology usage in educational institutions mentioned above have been detected and the possible studies for removing these obstacles have been recommended thanks to a study of evaluating the efficiency of the use of information technologies in educational institutions. Teachers resist to the usage of information systems in educational institutions from time to time and they specify deficiencies of it by querying the system. The justifications of these behaviors can be listed generally as followings; that the teachers want their salaries to be increased instead of investing in technology, senior teachers are chary of new technologies with regard to authority, the fear of teachers who don't have computers to be insufficient, not overcoming the difficulties of computer usage as well as the architectural insufficiencies of institutions, that the administrators debit the computers to the teachers and fearing of the possible problems, that the students learn computers by themselves, that young people show more interest to the new technologies, that the locations of schools and the quality of students is efficient. In the negotiations made with the students, it has been observed that the schools of Nicosia region are in best condition regarding information technologies when compared to other schools. The fact that Nicosia is the capital city and it has close relations with Ministry of Education and other agencies and institutions besides the advantage of infrastructure dating back are among the issues that explain why the schools of Nicosia region are ahead of other schools.

KeyWords: *information technologies, informatics, virtual reality, efficiency, Educational institutions*

1. INTRODUCTION

The rapidly developing technology has been influencing every sector in a positive way as of the early 20th century. The nations have invested in technology in order that the individuals could make life in which they will live comfortably, and today individuals meet their needs easier thanks to the developing technology. In parallel with the development of technology of the developed countries, it can be observed that their culture levels are high. The usage of the technological innovations in educational institutions just like other innovations made in every field provides the increase in the quality and efficiency in education.

When talking about 21st century, the importance of quality human force as the basis of the development has come to the forth. It is obvious that the quality human force has increasingly become a case to be in demand not only in private sector but also in public and civil society sectors. As for the beginning of quality human raising depends on the properties to be obtained after a good education. That is why the systems implemented in education should be designed according to the needs of the period and scientific basis. It is very important to use the technological applications that will meet these needs faster and more extensively in creating the education systems and activities.

Thanks to the rapid development of information technology and thanks to the fact that individual computers became accessible to all people and that the information technologies were used in educational institutions as of 1990, many innovations such as computer use, computer aided education, web based training have started to take place (Aksoy, 2003). It is expected that the organizational efficiency increase by improving the educational environment and tools through innovative systems besides such innovations that are implemented in order to increase the individual efficiency.

The importance of using the information technologies in education is that it helps the sender and receiver to form the knowledge together and transform it to bidirectional arrow instead of one-way communication period within the scope of sender-receiver model that exists in class communication, and so it becomes more effective communication period thanks to the mutual knowledge share.

It is a matter that has been argued for many years that the educational system which has been used in our country for a long time is a system based on rote-learning and teachers, and overcoming it could be ensured by implementing a refurbished educational system that is appropriate for educating young people who are creative and making more comments. The governments of TRNC prepared and put into effect a comprehensive educational reform in 2005 after realizing the matter. The course programs were renewed and organizational and infrastructural changes started to be made within the scope of the reform. In addition to these all implementations, it is essential to use the technologies to increase the efficiency in terms of time, knowledge and ability that will meet the needs of the period in education. The adaptation of the related technologies to educational institutions needs both a technical and individual capacity increase of not only teachers but students too.

In order to create qualitative workers, determining the technical and individual needs that are necessary for improving the education and meeting these needs will contribute to improvement process to be conducted more effectively and to use the technological tools more efficiently.

1. Information Systems that are Used in Educational Institutions

In spite different descriptions, the knowledge society can be described generally as society that the majority of people work in works associated with the informatics and the usage and application of knowledge is an important factor in many fields (Akın, 2001; Toffler and Toffler, 1996; Toffler, 2008).

According to Becker, there are four basic phases for the computerization in education. First phase is to determine the computer as fundamental need in order that the society could participate in the computer literate world of future when it is considered from cultural view. The second step is to understand that this is necessary for being successful in higher education and career in future. The third one is to provide the efficiency in education on condition that it is integrated with computer applications. In the fourth step, the programming or the usage of real computer programs develops the mental abilities (Cavalier and Reeves, 1993).

The modernized technology ensured the education firstly by usage of smart board done with blackboard - chalk, book, pen, then film, picture, barcovision, slide and finally the usage of radio, television and video, and the usage of computer, projector, automation systems, net systems and telecommunication by the development of information technologies in today's world has become possible (Aksoy 2003).

Even recently, Lave and Wenger (1991) have introduced some different perspectives about learning within the framework of Virtual reality applications. That is to say, thanks to Virtual reality and 3-D virtual media that are prepared in computer environment and again thanks to a technology in which the users can interact with the objects in this virtual environment, it has been tried to relate the interaction of some factors like student, specialist, society, knowledge level and practical application in detecting the current authentic activities characteristics, which is very efficient in understanding the course by making users really feel in mind to be in a different media by using computer based sensors, (McGonigle and Eggers, 1998). The virtual reality application as education technology in this perspective ensured the student to act in a simulated world and he was provided with a very powerful environment in understanding the lesson (McGonigle and Eggers, 1998).

The adaptation need for requirement of technological innovations in educational institutions increases by way that the productions which students use in different environments both at school and outside the school thanks to the rapid developments in technology sector. This situation has led the students to develop thanks to changing themselves and to be more creative and demanding in implementations. The rapid improvements that are faced in relation eith technology in social and cultural environmentforces the educational institutions to make technological adaptations and renew their educational activities.

If we should consider the technological applications with more details, we can see that computer and internet are brought to the fore. Internet provides communication and limitless interaction possibility and provokes the usage of computer to increase. Internet causes the age average of the users to decrease and makes a current issue about the questions that will ensure the trainers and students to improve their abilities and benefit from new technologies. The important point here is to provide the new generation with perception of the technology as methods that the new generation will use in increasing its capacity but not as game and communication material.

When we have a look at the benefit style of educational institutions from information technologies today, we can see that the usage of technology splits into two subjects. The first one is the basic computer

applications that are currently used by the teachers and students; and the second one is different softwares and tools that are used by school administrators and management system (Turgut, 2009). According to this; the issues that are in the foreground in using computer systems in educational institutions are as follows;

- Basic Computer Information; software and hardware
- Office Applications; Word, Excel Powerpoint
- Internet; E-mail, Network configurations, reaching for knowledge online (Aksoy, 2003).

The technological developments that may be applied for increasing the quality and efficiency of the management and education within the organizational structure of the institutions are listed as registration system, absenteeism, permission, health system, behaviour and consultancy system, announcement and agenda system, internal communication system, question bank and examination system, archive system, tutoring and homework distribution system, interactive educational system and e-learning system.

The matching and separating aspects of the technological applications used in both fields could be found and it should be given importance to do comprehensive and harmonized studies when technological planning is conducted in educational institutions because of that. Any deficiency or disruption that could be seen in any leg reduces the efficiency use of the foreseen activities and could lead to loss of efficiency. In this context, many factors that are developed interconnectedly of the integrated approach to be used in the institution should be taken into consideration (Özdemir, 1995). According to Özdemir (1995), the issues to be taken into consideration in order to make the use of technology in educational institutions more efficient can be listed as follows: a) the increase in efficiency of the learning and teaching system, b) encouraging the individual education, c) determining educational needs, d) to make teaching practices permanent, e) to remove the impediments relating to usage, f) to design the education according to the abilities of the student.

The fact that the institution aims at the mentioned goals in technological investments and adaptation activities that will be carried out in order to increase both organizational (financial, physical, administrative) and educational capacity (teacher, student, auditor) has a big importance in operating the system in the long term.

2. Educational Administrators and Students

As it is pointed out above, the objective of the use of information technologies in educational institutions is to create more qualified youth actually. In this context, the observed differences in the nature that the students should have by using the information technology in educational institutions can be listed as following; accepting the innovations in technology, not to hesitate for these innovations to have a place in daily life, to take the initiative of sharing information, to behave in a relaxed manner in communication, to have a scientific and reasonable thought system, to have a confidence individually, to respect and esteem colleagues, students and himself/herself, not to give up research, to have an awareness of efficiency in the works conducted, not to fear of taking risks and to be interrogator (Arslan, 2003).

It is important to raise skilled students who have creativity features and who could be effective thanks to these qualities, and thus let them conduct more efficient studies regarding qualified workforce that has been obtained in the sector.

However, use of information technology itself and directing students to them is not sufficient by itself. In this case, teachers have important roles too. In order to increase the efficiency of the use of information technologies, the teachers should satisfy the following characteristics; working selflessly, devote himself/herself to education and love the profession, to be professionalist, to keep up with the improvements of technology and use the technology. At this point, the fact that teachers could understand that technology has a structure to facilitate their own work makes them become more successful within the system.

As it was pointed out before, the information technology systems that are used by school educators and administrators are necessary for the process to be complete. For this reason, there are some properties that the administrators of education should have with regard to the use of computer. Among them, there are the usage of technology in schools and educational system, to be open to new ideas and improve these new ideas, to provide fund, to understand the information technology and basic concepts, to use certain softwares and hardwares and to determine the prior fields.

For this reason, the administrator of education should have the necessary sufficiencies and authorities so as to fulfill the ones listed above. Such an administrator plays an important role in realizing the objectives of the school. The adaptation and use of the related technology of the educational institutions could be detected by observing financial, physical and administrative factors primarily. Due to restricted sources, many public and private education institutions apply to existing project funds in order to improve the information technologies. In

this respect, putting into practise the development of project and implementation of information technologies in accordance with the principles of administration provides safe processes to be created in terms of management.

However, the important thing at this stage is that the administrators do the assessment of the use of technology in respect of subjects that can be observed in students in terms of education. In order to determine how much an administrator of education in an educational institution uses the technology efficiently it should be regarded the increase in the success of the students, improvement in the rate of attending to school, the fact that the students dominate their profession, development of the management procedures in schools.

During examination of these issues when an assessment is made, the fact that different issues could affect the process possibly comes to the fore. As in all other institutions, the educational institutions are the organizations that are formed of sections like general management, administrative sections, service provider educational sections. In addition, technological investment is a complex process that is pretty costly and entails technic and planning. Because of that, it is an inevitable factor that the educational institutions sustain the information technologies and making it by realizing the necessary administrative regulations for increasing the efficiency and making it continuous. A scheduled maintenance should be done in order that the computers or related technologies are taken into educational institutions and for their effective use, they should be supplied by taking into consideration the software needs, the softwares and hardwares should be kept up-to-date and the needed hardware should be provided. In this context, the administrators of the institutions should allocate the necessary finance during budgeting and implementation and realize the financial arrangements that are needed.

3. Teachers

As all other workers, profession of teachers is a workforce sector supervising the acquisitions that they obtain in exchange for the service they supply. Although the teaching service is accepted as a sacred duty, it has been more regarded as professional service after the education is opened to private sector in our day's economic conditions and it has started to focus on the profit that is obtained in return for service approached. In this context, teachers resist to the usage of information systems in educational institutions from time to time and they specify deficiencies of it by querying the system. The justifications of these behaviors can be listed generally as followings; that the teachers want their salaries to be increased instead of investing in technology, senior teachers are chary of new technologies with regard to authority, the fear of teachers who don't have computers to be insufficient, not overcoming the difficulties of computer usage as well as the architectural insufficiencies of institutions, that the administrators debit the computers to the teachers and fearing of the possible problems, that the students learn computers by themselves, that young people show more interest to the new technologies, that the locations of schools and the quality of students is efficient.

It is important for the efficiency of use of information technology in institutions that the educational institutions consider the foregoing issues of the related school administrators in private sector and related ministry in public sector as well as their management and to consider these issues when the necessary planning is realized. Because these factors are important for realizing the key role of the teachers that they take over and who will transfer the knowledge and abilities to their students by using these technologies as basis.

On the other hand, when these all factors and requirements that are mentioned are fulfilled, the teachers should be active for the individual capacity increase in order to cope with the indicated restrictions (Orhun, 2000; Seferoğlu and Akbıyık, 2001). In order to ensure the usage of the information technologies in the institutions efficiently, the increase of the knowledge level of teachers will support students to have more profits. There are certain problems to be removed in order to increase the capacity of teachers. These are generally technical weakness, failure of preparing common projects among workers, the current deficiency in materials, deficiency of planning, deficiency of the possibility of using computer at schools, inadequate support for the management and inappropriate substructure of classes (Meral and Cambaz, 2001). On the other side, the followings form the important issues preventing the problems to be removed; the communication disorders between teacher-student, that the students adapt themselves to the innovations by learning computer applications, the teachers feel themselves insufficient, the expenses to come out, the insufficiency of the parents to the education, insufficient knowledge in Computer Aided Education, not benefiting efficiently from the capacity of teachers, and that there is no appropriate applications for the level of students.

Besides that, as the technology changes rapidly, it may lead this problems to change and grow. Due to that, the capacity increase studies of teachers should not be restricted to school basis but should be supported with developmental programs that will be applied by the Ministry of Education. Therefore, the adaptation of not only senior teachers but the new recruited teachers too will be provided, and a chance for all teachers will be created for updating their information.

Regardless of what system is depended on the information technologies in educational institutions, the leader role of teachers should not be forgotten. The teachers have a central importance in all education systems

and they have a direct impact on the quality and outputs of the education. That is why they have an important duty to benefit from the information technology efficiently that will be used as an innovative tool. It should be adopted by all teachers that the use of information technologies will not change the duties of the main teachers but the type, and that the objective is to increase the quality and efficiency of the education.

2. METHOD

2.1. The Design and Approach of Research

The qualitative scanning design has been used in this research. The qualitative research has seven basic features, these are; susceptibility to the natural environment, participant role of the researcher, entirety approach, bringing up perceptions, flexibility in research design, inductive analysis and qualitative data, and it is defined as the research in which qualitative data collection techniques like observation, negotiation and document analysis are used (Yıldırım and Şimşek, 2008). The important thing in qualitative researches is to go deeper and to bring to light things under the surface (Kuş, 2009).

It is aimed in this research to determine the opinions of the administrator, teacher and student/parents for the assessment of usage efficiency of information technologies in educational institutions. For this reason, the phenomenology design which is one of the qualitative research designs has been used in the research.

Yıldırım and Şimşek (2008) pointed out that the phenomenologic design focuses on the cases that we are aware of but we do not have a deep and detailed mentality. We come across with cases in various ways such as the cases, experiences, perceptions, concepts and situations that we experience in our lives. The fact that we may come across with such cases in our daily life and to meet them does not mean that we figure out the cases exactly. The phenomenology is a research method making us utilize the cases which are not totally stranger to us but whose meaning we cannot comprehend exactly (Yıldırım and Şimşek, 2008, 49).

In this research, the interview which is qualitative data collection method and the semi-structured interview technique were used. “The characteristic of the interview technique brings to light the opinions of the interviewed individuals. That is why it is essential to understand the world of meaning, feelings and thoughts of the interviewed people and to obtain deep information from the interviews” (Kuş, 2009). In the semi-structured interviews, the questions are predetermined and data is collected through these questions. This method is neither severe as fully structured interviews nor flexible as non-structured interviews; it has a location between these two points. The semi-structured interview technique among the interview techniques has been used because it has provided the researcher with this flexibility.

2.2. Universe of the Research and the Working Group

The individual or groups, who experience the data research sources in the phenomenology researches and to express or reflect this, form the exemplary. For this reason, it is a possible situation that samples are given for such studies, the duration of the interviews to be conducted and qualitative analysis of information to be obtained. The working group is determined as a result of the conducted observations and interviews in the field. “Criteria sampling method” is appropriate for such researches (Yıldırım and Şimşek, 2008, 49).

When the working group was determined in this research, some interviews with representatives (an administrator, a teacher, a student/parent) from three groups in every school that is selected, to be in each district by creating a 10 % share minimum in order to create a meaningful representation that will be selected among 57 schools at primary and secondary levels within the scope of TRNC.

2.3. Technics of Data Collection

The interview is the main data collection tool in phenomenology researches. The main objective of the interview is to bring to light the feelings and thoughts of the contacted individual regarding the subject that has been researched. Furthermore, the interview is one of the most powerful methods for empathy and a good way for people to have a good command of the perceptions for reality, understanding, defining and building the truth (Punch, 2005).

In this research, the qualitative research method will be used and the interview technique that will be composed of standardized open-ended questions with regard to structure will be used because it is appropriate for the scope of the research. A semi-structured interview form has been prepared in order to apply for the opinions of participants in this research. The statements aiming at bringing the interviewed individual confidence in the interview form primarily, and short answer questions where the individual information of the interviewed person is noted in the introduction by preparing appropriate introduction to the research. And later, the teachers were asked some general questions about their own professions and on education by passing the semi-structured open-ended questions that were prepared accordingly with the objective of the research,

subsequently they were asked about how they use information technologies during lessons and finally their opinions and suggestions were questioned for increasing the efficiency in education. In this context, five open-ended questions for each of the school administrator and teachers and four questions for each of the students were used.

Before preparing data collection tool, the idea of experts was received about whether this technic was appropriate or not. In this context, in order to ensure the internal validity of the interview form, the interview form was given to three specialists and the form was given the last shape. After the pilot interview was carried out, in order to detect whether the questions were clear and comprehensible and whether the answers reflected the questions that were asked the breakdown of the obtained answers and the questions were examined by three experts.

Diminishing the effect of the researcher to the research has been the main objective by asking the same type of questions to the same participants in the standardized open-ended interview. Even though the questions have been remarked clearly, the researcher has the right to ask additional questions in order to deepen the questions beyond the answers (Yıldırım and Şimşek, 2008; May, 1996).

An interview form consisting of open-ended questions has been developed in order to get the opinions about the assessment of usage efficiency of information technologies in educational institutions.

As it was pointed out by Yıldırım and Şimşek (2008), an interaction based on empathy and confidence between the researcher and participant is quite important. The individuals could externalize the meanings and experiences which even they did not realize before or they did not think much on thanks to such environment. That is why it has been remarked that the participants will be given the quotations that will come out of the opinions or suggestions they will indicate during the interview where personal and occupational information will be kept secret by being coded. When quotations were adapted one-to-one from the opinions of the participants, a coding system was used. In this coding system, primarily the regional area code was used in order that the conducted interviews become more comprehensible. The codes of the region are used respectively as L/şa (Nicosia), M/sa (Famagusta), GNE (Kyrenia), GZT (Morphou). As for the separation between teachers and students, for teachers ÖĞT, for students ÖĞR coding shall be used, and it will be explained by his/her sequence number which person to be interviewed whether teacher or student together with the abbreviation name of the school apart from the interviewed schools. If we should give an example, an interview to be conducted with a student from 20 Temmuz Science High School shall be coded as follows: 20TFLÖGR (1); it was remarked to be the interviewed student having number 1 at 20 Temmuz Science High School.

The interviews shall be carried out in an environment that is silent and has appropriate physical conditions. The researcher cared that a healthy environment based on trust and empathy to be formed in order that the participants could express their opinions easily and reflect their emotions more comfortably.

Data source of the research consists of the written registrations that are obtained from the interviews made with the participants. The interview hours were negotiated with the related participants and the appropriate day and hours were specified to them. The interviews were realized within the period that was suitable for both sides.

The written or audio recordings help to identify the categories in content analysis by facilitating repeating any statement or word and quoting (Bell, 1999). Recording the interview registrations allowed the interpretation of the opinions of teachers and the analysis of the speakings.

2.4. Data Analysis

According to the statement of Gökçe (2006), the data which is collected from the administrators through data collection tool has been subject to “content analysis”. The content analysis has importance with respect to the research question that was identified by researcher who has a search and screening strategy, and its objective is to put forward the common aspects of the text content (Früh, 2001 akt: Gökçe, 2006). The content analysis is the process of arrangement of collected data in a sensible way according to the concepts coming up after conceptualization and determination of the theme explaining data accordingly (Yıldırım and Şimşek, 2008); identification, coding and categorization of data (Patton, 1990, Bell, 1999). The approach of content analysis is frequently used in the analysis of the open-ended questions and the qualitative interview data (Robson, 2001; Bell, 1999). The content analysis method has been used in this research in order to bring to light the concepts underlying the data and the relations among these concepts (Miles and Huberman, 1994; Yıldırım and Şimşek, 2008).

The written records that were taken during the interview were transferred to computer media by using Microsoft Office Word 2007 program which is one of the text editor software by the researcher after the

interview. The process that data are transferred to computer media by the researcher has led to positive results like clarification of the conceptual framework thoroughly by the researcher.

A pilot interview was carried out by selecting three school administrators and two teachers. In this way, it has been detected whether the questions were clear and comprehensible and whether the answers reflected the questions that were asked. For this purpose, the interview breakdown form of the records taken during interview and which is created in computer environment has been transformed into written form. Later on, two other specialists were asked to investigate the breakdowns and control the possibility of supplying the necessary information and to make a control whether the asked questions were clear and comprehensible, they cover the subject dealt with or not. It was observed that these two specialists were in consensus in a rate of 90 %.

The validity of the question articles has been detected at the end of the study. The data collection process has been initiated by having the opinion that the interview questions have supplied the necessary data.

Grouping the solutions into categories is formed by analysing the data obtained based on the similarities and differences between the statements of individuals that participated to the study of the researcher in phenomenology method. Each category shows how different individuals perceive different concepts and experience them. The actual basis in this method is that a limited number of categories for each concept will be obtained and these categories shall be created by analysing the data collected in the study (Didiç, Özcan and Abak, 2008).

The “categorical analysis” among the content analysis types has been used in the research. This analysis is primarily to divide the message into units generally and then to group these units in categories according to the criteria that were identified before (Tavşancıl and Aslan, 2001).

The situation that is effective in coding and determining the solutions comes to the light in findings as well as the related literature. Coding is a definite labelling activity that initiated the data analysis held on in analyzing phase. While initial coding entails a descriptive and rather limited conclusion, the next coding means to integrate the data by using higher level concepts (Punch, 2005; Robson, 2001).

The subjects that data analyses tend to are to bring to light the experiences and senses in the phenomenology researches. The objective of the content analysis that is carried out for this purpose is to bring to light the conceptualization of the data and the themes that could define the case. The results are presented through descriptive expression and direct quotations are allowed continuously. At the same time, the findings that are obtained in the boundaries of the emerged themes and patterns are explained and interpreted (Yıldırım and Şimşek, 2008).

The codes and general categories defining them in the light of the data obtained have been determined and the registrations have been resolved by taking into consideration the codes and categories. Afterwards, they have been interpreted in the light of the related literature after the report of the research in which the results were assessed was written.

The validity in the qualitative research means the accuracy of the results of research and to interpret in an objective way the case being researched by the researcher; the matter that is important for reality is to define the results obtained by giving place to the quotations directly from the interviewed individuals (Yıldırım and Şimşek, 2008).

When the study of validity of the data analysis was carried out, exact quotations were cited among the opinions of the administrators in which the codes and categories were obtained in the research. That the internal validity of the research is controlled whether the results are appropriate to the reality or not by having a critical look at the data has been provided upon the investigation of the raw data and analysis by the experts and receiving feedback. Moreover, the collected data has been presented for the verification of the supplying school administrators. The external validity has been ensured by giving place to the quotations directly and using the purposeful sampling.

The reliability is formed by connecting the cases to the same category by different observers or relating such cases to the same category in different times by the same observers (Altunışık, Coşkun, Bayraktaroğlu and Yıldırım, 2005). The internal reliability namely consistency has been ensured by gathering data in similar ways, consistency in the coding of data, and building relationships between data and results. The external reliability namely verifiability has been provided thanks to the fact that an external expert has compared and confirmed the obtained judgment, comments and suggestions in the research with raw data.

After the breakdown of negotiations were made, the data obtained from the participants was divided into sections by being examined and these sections having meaningful complements in themselves were named and coded. After this data is wholly coded in this way, a code list was created and acted as key list in examining and arrangement of data.

Later then, the coding keys and negotiating breakdowns were separately read by the researchers and the necessary arrangements were counted by discussing the subjects “consensus” and “difference of opinion”.

It was counted by using the reliability formula that was suggested by Miles and Huberman (1994) for reliability calculation of the research. Accordingly, a number of data was given to another researcher in order that he could form the themes. This researcher formed the themes based on data and these themes were compared to the actual themes. As a result of this comparison, the similarity between the two theme groups was counted as 87%. Because this proportion is over the similarity threshold of 70% which is foreseen in the literature, the verifiability has been proved and accepted to be reliable.

The interpretation of the findings has been conducted in the last phase of the data analysis. The interpreting of the findings defined and presented comprehensively were realized in this step. The gathered data was interpreted by being passed through stages that the qualitative research entailed and a number of results were reached. Descriptions with regard to the importance of the results have been supported with literature.

3. FINDINGS and INTERPRETATION:

OPINIONS OF TEACHERS:

As a result of the negotiations made about the use of the information technologies in schools, it has been understood that the use of information technologies especially in the schools of Nicosia region is in better condition than other regions. The administrations who make effort to introduce the application of the use of information technologies both in lessons and administrative field not just accept it consisting of lessons keep ahead of some schools. Namely, the management of Nicosia Turkish High School (LTL) gives information to the parents of the students who are troubled about the continuity to the course by sending them e-mail. An administrator that was negotiated from LTL about the matter expresses the current situation as follows: “We inform the parents of the students who are troubled about the continuity to the course via e-mail. Today everyone benefits from internet. Everyone controls his/her e-mail. The purpose here is to fulfill the requirements of the age but not being behind the times” LTLÖĞR (2). As LTLÖĞR (2) pointed out, that the parents of the students are informed through internet draws the attention as an extremely positive situation in terms of use of information technologies. This approach which is extremely appropriate not only for present conditions but also for cost can be described as an important step towards the solution of the problems provided that the information technologies are used. The use of information technologies in an era where seldom people do exist having no e-mail address is regarded as a communication tool in terms of not only lessons but student-parents also and consequently, the mutual exchange of information is ensured to be realized more quickly and easily.

Even though the use of information technologies is highly important with respect to “foreign language teaching” exclusively at the present time in the interview conducted with (AL) ÖĞR (1), from Anafartalar High School which is one of the schools of Kyrenia region, the lessons are still taught by more “traditional methods” because of the problem between class size and number of computers. “The computers provide more opportunities for the teaching of foreign language in our modern age. Computers are very beneficial in teaching of foreign language to the students because it is both visual and audible. However, using computers in classes is not really possible due to the number of overcrowded classrooms” AL.ÖĞR (1). As AL.ÖĞR (1) pointed out, the teacher cannot teach the lesson benefiting from computers due to the problem concerning the number of computers and the number of the class in AL even if he/she wants to do it so, thus; he/she continues to teach it through methods that we can call as “traditional education”.

Even though the use of the information technologies has been detected to be in a better situation than before especially in the negotiations carried out in Famagusta Turkish Maarif College (GMTMK), one of the schools of Famagusta region, it is not possible to say that the targeted level has not been reached due to the insufficiencies of material and infrastructure. GMTMK.ÖĞR (3) stated in the clarification made regarding the matter; “even if the use of computer is in a good condition in our school, especially the students coming from rural areas have problems with using internet”. Thus, although the use of information technologies in some lessons (e.g. computer) especially is in good condition, some problems emerge in the application matter. For example, it can be understood there are difficulties about realizing the given duty to the students coming from surrounding villages, when they are given some research tasks to do over internet. Consequently, the problem or problems that could be described as “external factor” are reflected to the education field, so the expected efficiency cannot be obtained from education.

for the question of the teacher about how and which knowledge technologies are used in classroom environment, 20TFL.ÖĞR (1) who is one of the teachers of 20 Temmuz Science High School (20TFL) pointed

out that the use of “smart board” is more common in classes apart from computer courses while saying that the use of computer in computer courses is common and especially it is well carried out in terms of administration. And the teacher added that the design problem of the classes is important, and is obliged to give the lecture traditionally due to the class design 20TFL.ÖĞR (1).

According to the interview made in 19 Mayıs Turk Maarif College (19MTMK), “the use of computers is not so common apart from computer courses. The reason is most probably the overcrowded classes” 19MTMK.ÖĞR 2. 19MTMK.ÖĞR 2, detected a current problem about the use of information technologies due to the reason mentioned above continued as follows: “the use of smart board is more common in classes. Maybe the reason is the overcrowded classes.”

(EL), who is from Erenköy High School in Karpaz region stated that: “the use of the information technologies in our school can be reckoned as good when the current possibilities are regarded, yet we have big difficulty financially. I said it can be reckoned as good, because there is not much chance in terms of using computer. This is because of both infrastructure and budget of the school” EL.ÖĞR (3). Another point that EL.ÖĞR (3) remarked the use of information technologies in EL is unfortunately behind the modern age, and the school cannot encourage the use of information technologies due to the insufficiencies even if the administration of the school wants it.

It is possible to do an ascertainment as follows regarding the question how the use of information technologies in schools should be in terms of administration:

In most of Nicosia region schools (e.g. 20TFL, LTL, Atleks Sanverler Secondary School), the use of information technologies is encouraged in terms of administration. As an example is given above, the use of information technologies is not only within school especially in LTL and it is used to ensure communication and information exchange between school-parents.

As for Kyrenia region schools, the situation is a little different from Nicosia region. The use of information technologies in Kyrenia region schools is more accepted to be an application for school and within class, and no information was given during interviews regarding its use in an administrative manner.

OPINIONS OF STUDENTS: The interviews made with students focused on how the information technologies are used in schools and how to increase the efficiency of the information technologies in terms of students.

While the conducted interviews are the same as interviews carried out with teachers, the questions focused initially on what opinions the students have about the information technologies generally, and then it was tried to understand their main opinions on the matter by asking them the place of the information technologies in their daily lives. In the next questions, the courses they were taking and how was the use of information technologies in the school for them was questioned.

At the end of the negotiations, it was seen that there were some regional differences. In the negotiations made with the students, it has been observed that the schools of Nicosia region are in best condition regarding information technologies when compared to other schools just like in the negotiations made with the teachers. The fact that Nicosia is the capital city and it has close relations with Ministry of Education and other agencies and institutions besides the advantage of infrastructure dating back are among the issues that explain why the schools of Nicosia region are ahead of other schools.

According to 20TFL.ÖĞR (3) from 20TFL Nicosia region, the use of information technologies are mainly taught as computer courses in general, and both the teachers and students make effort to use the information technologies in every chance. 20TFL.ÖĞR (3) stating that the computer is very important in his/her life, controls e-mails everyday, corresponds with friends on facebook, hears about many innovations via internet will be so satisfied by the courses to be in this way but there are no sufficient computers in the school for each course.

According to the student number (2) OF Lapta Yavuzlar High School (LYL) from Kyrenia region, the use of information technologies is far from the expected rate in classes. LYL.ÖĞR (2) alleging that the number of computers is not the same number as the students stated that “The number of computers in our class is not sufficient. We are more crowded. That is why we use a computer each three students sometimes.” This situation that LYL.ÖĞR (2) stated is a situation supporting the opinions of the teacher. So this draws the attention as an important point showing how much the rate between the use of computer and class size is efficient during the study.

The situation is not really different in Famagusta region. GMTMK.ÖĞR (1) stating young teachers exclusively make effort about the use of information technologies added that there are problems in using the

information technologies due to not only teachers that are teaching for a long time but also the problems existing in the school. “Our young teachers helps us to use internet continuously in classes. But the aged teachers cannot understand us well. They are not so good at the use of computers. While we can ask our young teachers questions over facebook, the same thing does not exist in the classes” GMTMK.ÖĞR (1).

4. THE RESULT AND SUGGESTIONS

The fact that young teachers especially have a positive point of view against the information technologies and they use the existing technologies actively are among the positive improvements. In order to use the information technologies in education actively, the pre-service and in-service training of teachers should be provided and this should be renewed periodically in the direction of these improvements. So as to use the information technologies in education for educational purposes, the necessary infrastructure should be created by the experts and it should be brought in teaching and learning environment.

If we should give an example for using the information technologies in formal education, we can talk about the use of internet in geography courses. For example, when we talk about our island and its regions, the students could see the course in some way practically and their knowledge is supported by visual information as a result of the usage of the application called “Google Maps”. It helps both to see the position of Cyprus in world map and simplify the situation of the students to have opinion on the matter exactly and practically about the “freedom of wandering” as the user wishes to on the map. Again thanks to the same program, the subject is ensured to be personalized by showing students images via not only distance but also satellite pictures from places where they live, so the students are ensured to show more interest in the subject.

If we should give another sample from maths course, it is the documentary or animations that could be shown for increasing the interest of the students to the course as a result of the use of information technologies. When it is explained what the abacus is in maths course, the students could have the chance to see visually and aurally the function of the mentioned object and its application thanks to a short documentary or animation that shows how to count by abacus, how the abacus has come to light and its history.

As a result of the interviews made, it can be seen that young teachers make effort so as to put into practice such applications, yet they cannot realize what they want exactly. The most important reason for that can be shown that the investments that are done in education are insufficient due to the fact that the technological infrastructure is continuously renewed. Furthermore, while architectural structure in our schools follow the renewed technologies, it poses impediments for the teachers and this leads to the idea that the Ministry of Education should carry out a study on the matter separately.

There are the followings among the things to do for increasing the efficiency in education;

- a) first of all to educate the staff continuously through in-service training,
- b) conducting more studies on the benefits of information technologies in education,
- c) making both infrastructural and architectural regulations quickly in order that the information technologies are used in schools more commonly,
- d) the changes to be done in accordance with the educational reform should be followed continuously and diligently.

A society of knowledge is the target. The dynamic structure of information technology entails this target to change and develop continuously. Among the factors to ensure reaching this target and chathing the developing targets in timely manner, there are financial and technological infrastructure as well as education which should not be omitted. The fact that having knowledge is important; globalisation; the rise of information sector; the efficiency of the civil society institutions and strengthening of organized society; coming to the center location of people; computerization; that lifelong learning is inevitable form the main features of the knowledge society which is perceived as the main objective of today’s institutional and social structures. For this reason, there is a need for mechanism for preventing the stability and transfer instantly the improvements in our country and around the world emerging in information technology to the educational system and managing level. In this context, the suggested management cycle model can be seen as follows by the application and usage of the information technologies in educational institutions (Figure - 1).

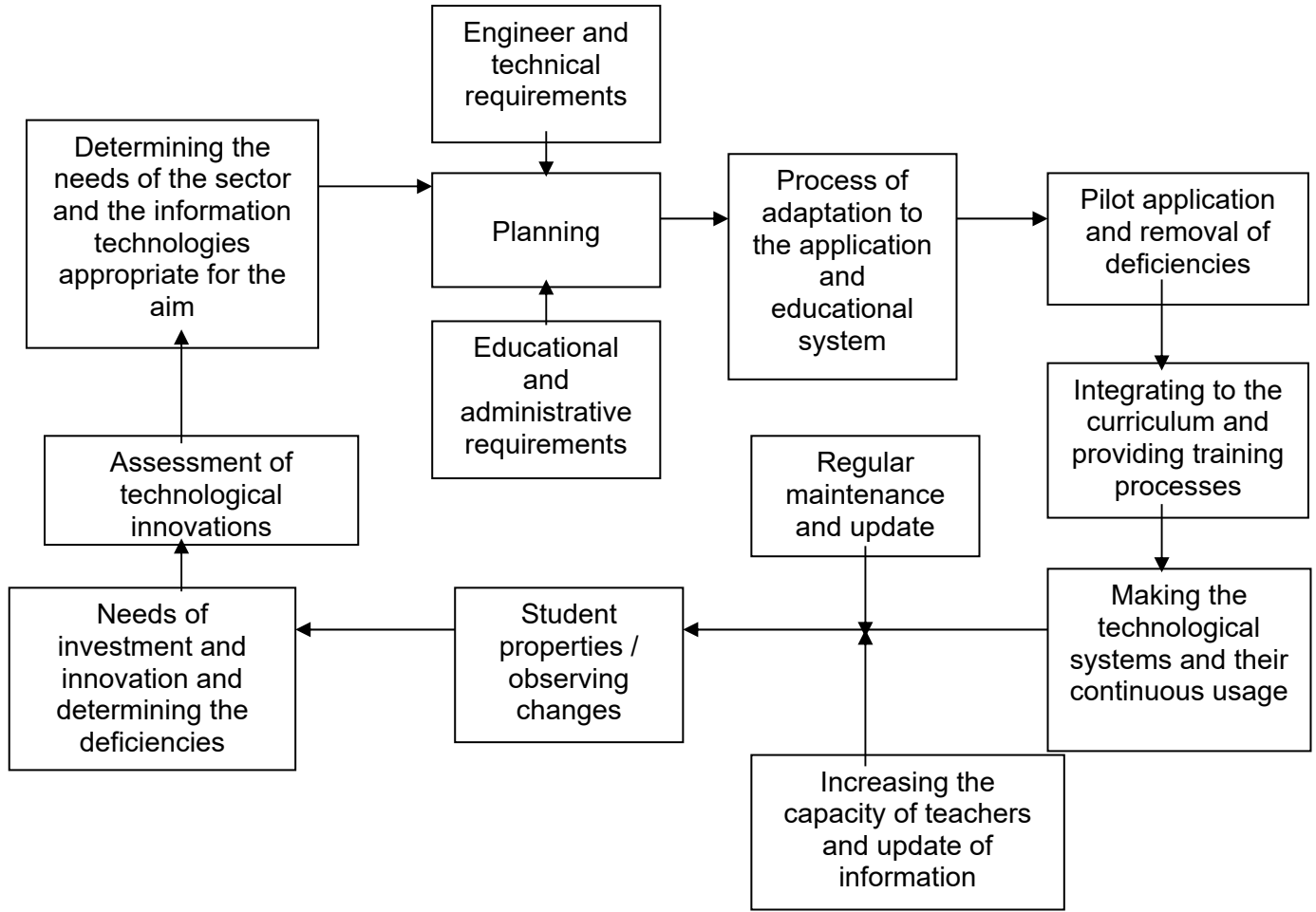


Figure 1. Suggested structure about the application of the information technologies and usage period

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Bilfen Learning Awareness Scale High School Form Validity-Reliability And Standardization Study

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1. INTRODUCTION

People receive, process, store, memorise and learn information in different ways from each other. These differences can be explained through the concept "learning styles " which was first put forward in 1960 by Rita Dunn. The purpose of determining the learning styles is to determine which of the learning methods is suitable for learners by taking into account the biological and developmental characteristics of them (Boydak, 2001). According to Dunn who made one of the most comprehensive description of the concept "learning style", learning style is the process which includes how a person / student starts to concentrate on, the road which is followed to perform learning (process), internalization of knowledge and recall of new-difficult information and this process is different for everyone. In other words, learning style is each student's using unique ways while preparing to learn, learning and remembering new and difficult information. To understand the learning style of a person his concentration, what is triggered by the environment and events that are happening and how he had kept the information should be viewed (Dunn and Stevenson, 1997; Geisert and Dunn, 1991).

Some schools of thought argue that cognitive style of a person is inborn, fixed and can not be changed. These types of schools argue that it is not possible for humans to thus being able to allow them to change their cognitive styles and so it is not also possible to adapt learning much more easily. However, some researchers claim that attitudes of the individuals can be modified in terms of thinking and learning. Accordingly, cognitive style reflects individuals' way of thinking and the process that is needed by the learner during performing the learning activities is learning style (Allinson and Hayes, 1996; Riding and Rayner, 1998).

There are many different approaches and classifications in the identification of learning styles. The main explanations are Dunn's, Honey's and Munford's, Felder Silverman's, Gracha Reichman's, Gregorc's, Butler's, Kolb's, and Herrman's ones and the Myers-Briggs's Type decisive approach, descriptions of the theory of multiple intelligences, and Ridings 's dimensional descriptions. Theoretical basis of the scale developed in this study is based on the scope of the Dunn and Dunn's learning styles and approaches. Dunn's learning styles model was founded on two basic concepts as cognitive styles and brain lateralization. In cognitive styles, the focus is on the people's way of thinking and his dependence on the field during the process of creating concepts. People's way of thinking is evaluated from impulsive end to the reflective end. As individuals may have one of these two extreme way of thinking, they may be somewhere in between these two. Field dependence and independence are related to the types of global and analytical thinking. These means two opposite poles. Ones who is located in one of the ends and have global thinking feature can think holistic and simultaneously by focusing on the relation between the constituent parts of a complement. Analytical thinkers on the other end as perceive the independent pieces of information in a sequential manner by separating it pieces. At the same time, Dunn's learning styles focus on individual preferences about the environment, the methods and resources. According to this learning styles is a developmental composition that is comprised by biological and personal characters. in the learning process while a media, method, etc. is good for an individual, for another it may not be good. Many people have certain preferences regarding learning styles. Learning style is a concept that includes how a person think and how she process data. It is influenced by the the environment, social groups and even the personality of the learner (Reid, 2007). Therefore it shows significant differences between individuals. How strong is the preference of the individual in this direction, so solid the strategy she has. When students are in environments, sources and methods that are suited to their learning styles, they can achieve greater success. Teachers can learn students' individual learning styles and use it as a basic criterion of their teaching methods. Likewise, students can also strengthen their own learning styles, they can develop them. When faced with a new and difficult academic material students can perform more effectively by using them (Dunn & Griggs, 1993).

According to Dunn, students have preferences related to stimuli in the environment during the learning activity for effective learning. Learning style, such as knowledge style for effective learning is as important as intelligence. Identifying the learning style of an individual and presenting opportunities accordingly prevent or minimize failure. Academic achievements of students with different learning styles increase in learning environments organized in accordance with their own learning styles (Cengizhan, 2007; Güven, 2008; Hasırcı, 2006). There are research results that coexistence of students in different learning styles and educational environment that is organized by taking this difference into consideration facilitates and enriches the students' learning and interaction among students improve their mental activity (Celik, Sahin, 2011). In this context Dunn's learning styles consists of 18 elements across five main areas (Dunn and Stevenson 1997; Geisert and Dunn, 1991, Dunn and Dunn, 1992, Zhang, Sternberg, & Rayner, 2011):

1. Environmental conditions (noise, light, temperature, design)
2. Emotional Conditions (motivation, persistence, conformity, configuration)
3. Sociologic Conditions (loneliness, authority, variety)
4. Physiologic Conditions (visual, auditory, tactile, kinesthetic / mobility, eating / drinking, time of day)
5. Psychological Conditions (global / analytical, reflective / reactive)

It is essential to use a method which can be used by individuals having different learning styles, because people's learning styles are different from each other (Dunn and Stevenson 1997; Geisert and Dunn, 1991). For example, some individuals are better at recalling the visual ones than verbal ones, some are highly tactual and their learning depends on touch and movement. Moreover, people's cognitive style is stable and consistent at any situation and area. In this case, it is said to be that the individual's cognitive style can certainly be estimated. Taking into consideration the learning styles s one of the main points in educational environments which holds individuality forefront and is based on equality. Studies reveal that when the strenghts of individuals are found and the education is designed according to these findings the success increases (Sadler-Smith & Evans, 2006; Zhang, Sternberg, & Rayner, 2011). According to Dunn's learning styles of each student must be identified by the learning styles inventory. definition of homework which is appropriate for learning process should be given to the student and the student should be encouraged to follow the given steps of learning. The results of this stage shoul db e evaulated in terms of attitude and continuity (Dunn and Stevenson 1997; Geisert and Dunn, 1991). This approach is highly related to the purpose of educational guidance and counseling andthis is also needed to provide effective counseling for learning consultants. according to the research which was conducted by Dunn and Ingham (1994) when students learn through their own learning styles, it is easier for them to remember what they have learned (for example, if the visual memory is more powerful, they remember better what they have learned in visual form) It ihas been detected that if the success of a student is low, appropriate choices in students' learning styles should be found, matched and consolidated, by doing this increase in long term and short term memory, vocabulary, reading, scientific and social studiescan be seen.It has been determined that when kinesthetic learning methods are used there is an increase in the success. Thus, each unit that deal with students in educational environment should know the students' learning styles and the curriculum should be designed by taking into account the students' learning factors and apprtoprite strategies should be determined to support the setudents. The scales and inventories that have been built with this propose are based on various theories. However, studies indicate that there are strong links between culture and learning styles (Charlesworth, 2008). Thus, rather than the adaptation of an foreign based inventory or scale, scales and inventories that are developed in the light of nternational literature and tested on the local samples are considered to give much more responsive and effective results.

2. THE STUDY

The aim of this study is to develop a valid and reliable evaluation instrument for determining the learning styles of secondary school students. This is an evaluation instrument development, on a scale development, validity, reliability and standardization study. In this context, this study aims to develop a valid and reliable evaluation instrument for determining the learning styles of secondary school students in Turkey. The research group consists of 1115 secondary school students who are studying in İstanbul during the first term of 2014-2015 academic year. Data were obtained from six different high schools (Science High School, Anatolian High School, Vocational School, Industrial School, Imam Hatip High School and Open High School). The students' 594 of them (%53,3) were female, 521 of them (%46,7) male; 245 of them (%22,0) 9th grade, 318 of them (%28,5) 10th grade, 275 of them (%24,7) 11th grade, 277 of them (%24,8) 12th grade; 523 of them (%46,9) private school, 592 of them (%53,1) private school students.

1.1. The Tool Used For Measurement (Developed)

As an application process, a study, including two parts, was made use of in order to determine students' personal information (such as gender, school/highschool types and grade level) and learning styles. Within the course of the compilation of the study, on the other hand, an investigation on the body of literature of previous research in and outside Turkey was realized added by a deep examination of the theoretical framework obtained from the other studies. Based on those scales and theoretical framework gathered from previous studies, a comprehensive item-pool, with 150 items in total, was created by the researchers. The draft of the measurement tool, with the items chosen as appropriate from the item pool, was presented to 11 experts for their opinion including specialists of developmental & learning psychology, assessment & evaluation and a philologist in order to estimate its construct and content validity and understandability in terms of its linguistic and expressive features. Having taken the expert views, necessary arrangements were conducted by the application of Lawshe analysis. In this stage, 16 items of the prepared scale were eliminated for having a low level of KGO. For its deeper analysis, a pilot application was made with a group of 98 secondary-school students to analyse its understandability, answerability and aim-relevancy features. Depending on the feedback of the pilot study, the last form of the measurement tool was arranged and prepared for its application.

The measurement tool was organized in the form of Likert type of scale. The rating of the scale was prepared as "1-strongly disagree", "2-disagree", "3-have no idea", "4-slightly agree" and "5-strongly disagree". An optical form was also developed to gather the data. The first form, with 134 items, was applied among 1161 students by the researchers. 1115 scales were used for analysis after having eliminated the incomplete and/or incorrectly-filled ones. The Exploratory Factor Analysis was applied to evaluate the instrument's construct validity as well.

The items prepared within the development phase of "Bilfen Learning Awareness Scale Highschool Form (BLAS)" was designated depending on 5 different learning areas which were based on the content of Dunn's learning styles. Each learning area was divided into subcomponents within itself and presented information in 21 different learning styles. The multidimensional form of the scale has the quality of facilitating the acquisition of information about students and different dimensions. The theoretical basis of these domains' and each field of interest were presented in the table below (Dunn and Stevenson, 1997; Geisert and Dunn, 1991, Dunn and Dunn, 1992):

Table 1.1.1: The Designed Theoretical Framework of Bilfen Learning Awareness Scale High School Form

Factor	Group	Explanation
Environmental	Noise Light Temperature Design	Questions including environmental factors; the preference of noise, light, heat and study design
Emotional	Motivation Persistence Conformity Configuration	Questions including the factors that facilitate studying and learning; conformity including person's motivation, persistence quality, rule and plan, constructing to study the studied subject.
Sociologic	Loneliness Authority Variety	Environmental preferences of a person affecting learning in a sociological context;; tendency to work individually or as a group, a preference of working with authority, a diversity that determines the need of using different ways and methods.
Physiologic	Visual Audial Tactual Kinesthetic Eating/drinking Time of day	The effects of physiological preferences on learning; tendency to learn visual, audial and/or kinesthetic, tendency to eat while studying and the period of time that he/she prefers.
Psychologic	Global Analytic Reflective Reactive	The effect of psychological factors on learning; global including the need of relating learned things with real life, the need of analytical resolution of the learned, the reflection the learned thing via not taking, listing etc. and reactivity measuring quick answering, fast solution need.

1.2. The Analysis of Data

In the anaysis of data, the calculation of item-total correlations, exploratory factor analysis, factor analysis, Cronbach Alfa analysis for internal consistency, item analysis (item-total and item-remainder analyses) and distinctiveness analyses were conducted respectively. Before factor analysis, item-total correlations were examined for total factor scores to determine the best measurer items for each subdimension using Pearson Product Moment correlation. Due to normal distribution, continuous variables and linear correlation assumption, Pearson analysis was preferred. In this regard, it is assumed that when an item-total score of an item was lower than 0,30; it did not measure the construct adequately with the other items in the related group.

Before conducting factor analysis, the convenience of data to factor analysis was controlled. For this reason, to control sampling adequacy and if factor analysis is interpretable, KMO and Bartlett test results were taken into consideration. Field (2005) has stated that KMO value that can take a value between 0 and 1 is interpreted as normal between 50 and 70; good between 70 and 80, very good between 80 and 90 and perfect above 90. Besides, it is indicated that the significance of Bartlett's Sphericity test is interpreted as the adequacy of sample size and correlation matrix.

In factor analysis, items were taken to Principle Component Analysis in the relevant structure over a single factorial model. Besides, unrotated component matrix was obtained. In this regard, items which took factor load less than, 30 were eliminated and the factor analysis was repeated. As a result of Cronbach Alfa analyses conducted for internal consistency as a part of reliability, it was considered adequate to obtain $\alpha > .70$ alfa value for each subdimension. Also in item analyses, each item's correlation with total score was examined with Pearson technique again when they were inclusive and exclusive to total score. In this context, finding a significant relationship was accepted as adequate for the acceptance of an item. Moreover in item and factor distinctiveness analyses, whether there was a significant difference between bottom and top 27% percentiles of group and all items and factor total scores was analyzed with Independent Samples T-test. For the significant results it was concluded that distinctiveness was provided. Obtained data was analyzed using "SPSS for Windows ver: 15.0" program, significance was found $p < .05$, other significance levels were also stated and findings were presented as tables in accordance with the purposes of research.

3. FINDINGS

To determine the construct validity of scale, exploratory factor analysis was conducted. For the factor analyses, a separate modular way was followed by taking Dunn and Dunn modal's each constructive differences into consideration. Within this context, a distinct factor analysis was conducted for each domain. This analysis provides the independent use of each modul of the scale. Before exploratory factor analysis, KMO (Keiser-Meyer-Olkin) and Bartlett sphericity values were calculated to determine the scale's convenience for Exploratory Factor Analysis analysis and the obtained results were presented below.

Tablo 3.1. Kaiser-Meyer-Olkin (KMO) and Bartlett's Tests

Grup	KMO	Bartlett	p
Environmental	,806	3194,600	,000
Psychological	,881	6449,831	,000
Emotional	,898	3488,482	,000
Sociological	,846	4326,541	,000
Physiological	,862	8860,289	,000

After these analyses, the step of total variance value determination was taken. For each module, principal component analysis and varimax rotation were conducted in a multi-staged way; these operations were repeated by adding items until there was no more item with $< .30$ factor load or taking load from more than one factor.

Table 3.2. Total Variance Explained For All Modules

Modules	Comp.	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
		Total	% of Var.	Cum. %	Total	% of Var.	Cum. %	Total	% of Var.	Cum. %
Environmental	1	3,229	20,181	20,181	3,229	20,181	20,181	3,229	20,181	20,181
	2	2,369	14,806	34,987	2,369	14,806	34,987	2,369	14,806	34,987
	3	1,810	11,315	46,302	1,810	11,315	46,302	1,810	11,315	46,302
	4	1,555	9,721	56,023	1,555	9,721	56,023	1,555	9,721	56,023
						
	13	,366	2,288	100,000						
Psychological	1	6,813	30,045	30,045	6,813	30,045	30,045	6,813	30,045	30,045
	2	3,056	10,088	40,133	3,056	10,088	40,133	3,056	10,088	40,133
	3	2,895	9,536	49,669	2,895	9,536	49,669	2,895	9,536	49,669
	4	1,217	9,195	58,864	1,217	9,195	58,864	1,217	9,195	58,864
						
	29	,415	1,430	100,000						
Emotional	1	4,330	28,824	28,824	4,330	28,824	28,824	4,330	28,824	28,824
	2	2,577	11,206	40,030	2,577	11,206	40,030	2,577	11,206	40,030
	3	1,651	11,177	51,207	1,651	11,177	51,207	1,651	11,177	51,207
	4	1,433	10,230	61,437	1,433	10,230	61,437	1,433	10,230	61,437
						
	18	,382	1,662	100,000						
Sociological	1	3,070	24,620	24,620	3,070	24,620	24,620	3,070	24,620	24,620
	2	2,718	22,944	47,564	2,718	22,944	47,564	2,718	22,944	47,564
	3	1,742	18,297	65,861	1,742	18,297	65,861	1,742	18,297	65,861
						
	15	,414	1,972	100,000						
Physiological	1	3,648	11,769	11,769	3,648	11,769	11,769	3,648	11,769	11,769
	2	3,008	9,704	21,473	3,008	9,704	21,473	3,008	9,704	21,473
	3	2,953	9,526	30,999	2,953	9,526	30,999	2,953	9,526	30,999
	4	2,239	7,222	38,221	2,239	7,222	38,221	2,239	7,222	38,221
	5	1,695	5,466	43,687	1,695	5,466	43,687	1,695	5,466	43,687
	6	1,546	2,987	50,674	1,546	2,987	50,674	1,546	2,987	50,674
						
	24	,290	,937	100,000						

Extraction Method: Principal Component Analysis.

In Table 3.2, factor loads for the all modules were given. It is found that total variance explained for all modules was greater than 50%; the lowest total variance was calculated in Physiological module with 50,74%. After these operations, item-factor distributions obtained with varimax rotation technique were presented as a table below.

Table 3.3. Rotated Component Matrix (Varimax) - 1

MODULES	Factor	Item No	Component			
			1	2	3	4
PSYCHOLOGICAL	Gl	030	,798			
	Gl	018	,764			
	Gl	026	- ,761			
	Gl	005	,758			
	Gl	014	,541			
	Gl	032	- ,537			
	An	027		,619		
	An	001		,613		
	An	013		,590		
	An	006		,481		
	An	008		,477		
	An	004		,475		
	An	003		,467		
	Pr	025			,651	
	Pr	011			,649	
	Pr	015			,631	
	Pr	023			,584	
	Pr	020.			,570	
	Pr	012			,515	
	Pr	007			,464	
	Pr	028			,366	
	Re	029				,642
	Re	031				,625
	Re	002				,567
	Re	009				,507
	Re	016				,505
	Re	017				,421
	Re	019				,403
	Re	021				,390

MODULES	Factor	Item No	Component		
			1	2	3
SOCIOLOGICAL	Lo	044	,661		
	Lo	047	,658		
	Lo	042	,621		
	Lo	046	,579		
	Lo	048	,483		
	Au	038		,659	
	Au	037		-,655	
	Au	036		-,564	
	Au	035		-,552	
	Au	045		-,512	
	Va	051			,735
	Va	050			,686
	Va	054			,584
	Va	053			,380
	Va	049			,379

As a result of the principal component analysis and varimax rotation technique, it was found that psychological module consisted of four and sociological module consisted of three factors. It was determined that all items' factor loads were greater than 30%.

Table 3.4. Rotated Component Matrix (Varimax) - 2

MODULES	Factor	Item No	Component			
			1	2	3	4
ENVIRONMENTAL	So	119	,849			
	So	123	,811			
	So	121	,809			
	Li	128		,796		
	Li	127		,722		
	Li	126		,715		
	Te	125			,785	
	Te	129			,774	
	Te	133			,769	
	Te	132			-,615	
	De	114				,831
	De	115				,759
	De	117				,625

MODULES	Factor	Item No	Component					
			1	2	3	4	5	6
PHYSIOLOGICAL	Vi	100	,689					
	Vi	095	,656					
	Vi	102	,650					
	Au	098		,645				
	Au	097		,618				
	Au	082		,613				
	Au	080		,569				
	Au	083		,511				
	Ta	094			,807			
	Ta	090			,804			
	Ta	093			,783			
	Ta	091			,748			
	Ta	106			,388			
	Ki	107				,878		
	Ki	104				,844		
	Ki	088				,800		
	Ki	086				,740		
	Ki	087				,699		
	I	089					-	
	I						,839	
	I	099					,637	
	I	109					,446	
	Ti	110						,834
	Ti	085						-
								,356
	Ti	111						,822
	Ti	112						,799

After the operations with principal component analysis and rotated component matrix, it was found that environmental module consisted of four, physiological module consisted of 6 factors. Besides, the factor loads of all items were found to have been greater than 30%.

Table 3.5. Rotated Component Matrix (Varimax) - 3

MODULES	Factor	Item No	Component				MODULES	Factors and Some Results					
			1	2	3	4		Factors	Cr. Alpha	İtem Total (Min)	Sig.	Test Retest (N=51)	Sig.
Emotional	Mo	068	,682				Physiological	Görsel	,730	,627	,000	,875	,000
	Mo	064	,681					İşitsel	,811	,782	,000	,569	,000
	Mo	065	,669					Dokunsal	,744	,653	,000	,732	,000
	Mo	063	,554					Kinestetik	,733	-,407	,000	,811	,000
	Mo	061	,546					Yeme/İçme	,818	,820	,000	,555	,000
	Pe	066		,781				Zaman	,751	,586	,000	,685	,000
	Pe	075		,712			Psychological	Global	,707	,437	,000	,826	,000
	Pe	062		,628				Analitik	,771	,483	,000	,544	,000
	Pe	057		,574				Yansıtan	,704	,442	,000	,629	,000
	Pe	060		,372				Tepkisel	,791	,424	,000	,545	,000
	Co	055			,778		Environmental	Ses	,795	,777	,000	,881	,000
	Co	078			,735			Işık	,785	,820	,000	,599	,000
	Co	074			,733			Sıcaklık	,782	-,397	,000	,821	,000
	St	077				-,786		Düzen	,720	,657	,000	,455	,000
	St	076				,652	Emotional	Motivasyon	,771	,571	,000	,612	,000
	St	072				,513		Sebat/azim	,789	,601	,000	,591	,000
	St	069				,460		Uyma	,706	-,322	,000	,499	,000
	St	070				,441		Yapılandırma	,719	,451	,000	,591	,000
Sociolo							Sociolo	Yalnız	,758	-,263	,000	,771	,000
								Otorite	,732	,592	,000	,704	,000
								Çeşitlilik	,779	,554	,000	,501	,000

After the principal component analysis and varimax rotation matrix, it was found that emotional module consisted of four factors. Besides, the factor loads of all items were found to have been greater than 30%. After these analyses, internal consistency analyses, item-total correlations and test-retest correlations were calculated for each factor. In this context, Cronbach's Alpha value for each module was calculated as $>.70$ while the lowest value was found as ,704 and the highest was found as ,818. As a result of item-total correlations conducted as item analysis and test-retest analyses, all values were found as statistically significant ($p>.001$). Obtained values showed that all factors' internal and external consistencies were acceptably reliable and also items contributed to the factors that they were in. Lastly, distinctiveness values were calculated and the results were presented below.

Table 3.6. Faktör Ayırdedicilik Değerleri

Modules	Factors	t	df	Sig.
Physiological	Visual	-65,230	600	,000
	Audial	-68,855	600	,000
	Tectual	-69,968	600	,000
	Kinesthetic	-60,243	600	,000
	Eating/Drinking	-82,376	600	,000
	Time of day	-62,866	600	,000
Psychological	Global	-61,738	600	,000
	Analytic	-52,686	600	,000
	Reflective	-61,734	600	,000
	Reflexive	-59,056	600	,000
Environmental	Noise	-78,989	600	,000
	Light	-70,142	600	,000
	Temperature	-52,763	600	,000
	Design	-69,727	600	,000
Emotional	Motivation	-67,833	600	,000
	Persistence	-65,662	600	,000
	Conformity	-57,776	600	,000
	Structure	-64,333	600	,000
Sociological	Loneliness	-54,419	600	,000
	Authority	-64,622	600	,000
	Variety	-59,487	600	,000

As seen in Table 3.6., as a result of the comparison made between low 27% end and the high 27% end groups, all factors' were found distinctive. These values proved that the factors could distinguish the items that did not have the relevant properties. Generally, all obtained values revealed that the scale could adequately measure high school students' learning awareness in a valid and reliable way. The scales modules, factors and a sample item for each factor were presented below.

Table 3.7. Sample Items

Modules	Factors	Sample items
Physiological	Visual	The most suitable way of learning for me is through visual channels.
	Audial	Auditory information is difficult for me to forget.
	Tactual	I learn better through experiences and trials.
	Kinesthetic	I prefer walking while learning a subject.*
	Eating/Drinking	I want to have something to drink while studying.
	Time of day	I can concentrate on my lessons best in the afternoons.
Psychological	Global	When I relate the subject I learned with my personal experiences, I recall more easily.
	Analytic	I prefer learning a subject step by step.
	Reflective	Before solving a problem, I review all probabilities.
	Reflexive	I want to reach a conclusion as soon as possible.
Environmental	Noise	Noise and sound from outside make it difficult for me to concentrate on the subject that I am studying.
	Light	I prefer studying in a dimmed room.
	Temperature	I feel uneasy while studying in a hot room.
	Design	While studying or reading on a subject, I prefer a sofa or a bed that I can lie on it.
Emotional	Motivation	I learn better when I decide to study on my own.
	Persistence	I prefer completing the present work before starting a new one.
	Conformity	Acting according to rules increases my concentration.
	Structure	I always need my teachers' guidance to study in an effective way.
Sociological	Loneliness	When I need to learn something new, I look for a place that I can study alone.*
	Authority	I prefer studying with a novice person.
	Variety	I use different ways to learn a new subject.

4. CONCLUSION

After the operations, an instrument consisting 134 items was reduced down to 99 items as the elimination of items. Results show that it is a multidimensional, valid and reliable inventory that has the quality of acquiring detailed information about learning styles of high school students. Validity and reliability scores demonstrated that the measurement tool can be used in the scientific determination of secondary school students' learning styles. After the analyses, it was seen that Bilfen Learning Awareness Scale High School Form is a measurement tool that basically has five basic scales.

Environmental: Noise, Light, Temperature, Design

Emotional: Motivation, Persistence, Conformity, Configuration

Sociologic: Loneliness, Authority, Variety

Physiologic: Visual, Audial, Tactual, Kinesthetic, Eating/drinking, Time of day

Psychologic: Global, Analytic, reflective, reactive

Acquired findings indicated that scales had required qualities to determine high school students' learning domains. In this scale, it was found that 8 items had negative load in a way that they were scored reversely in the related item group. These items must be scored reversely. As the number of items were not equal in all of the factors, it is not possible to make comparison in terms of total scores. To solve this problem and to make assessment more practical, after the addition of all of the given answers' scores in scoring, they were suggested to be divided into the number of items that those item groups consist. This implementation provided scores to range between 1 to 5, the lowest 1 and the highest 5, and facilitated making comparison between factors to

determine which learning style was dominant in students. There was no cutpoint in scoring, as the median was 3 and it gave an opportunity to make evaluation for all subscales in terms of being below and above 3 points. After the recoding of reversed items, just as the increase of score in the scoring of each factor indicated the increase of related characteristic, its decrease was interpreted as the decrease of related characteristic. For example, increase in the noise subscale score meant that a student preferred silence; whereas its decrease meant that a student preferred noisy environment.

This scale was constructed based on Dunn's learning styles' content (Dunn and Stevenson, 1997; Geisert and Dunn, 1991, Dunn and Dunn, 1992; Dunn and Milgram, 1993). In the related literature, it is generally seen that three learning styles come into prominence as visual, audial and kinesthetic (Boydak, 2001, Şimşek, 2002). In our country, when the scales constructed depending on Dunn's learning styles model are examined, Marmara Learning Styles Scale stands out. The scales secondary level form was held by Otrar (2007) and 9-11 ages form was held by Simsek (2007). There is another scale, Learning Styles Scale for Primary School Students that has been constructed in a suitable way depending on Dunn and Dunn's Learning Style Model by Otrar (Otrar, Gülten, Özkan, 2012) and Gokdag (2004) developed for visual, audial and tectual/kinesthetic perceptual learning styles of primary school students was constructed. BIG 16 Learning Styles Inventory developed by Simsek (2002), measures three learning styles as physical, audial and visual and it has been designed to determine learning styles of high school and university school students aged between 16-25. As it is seen, these scales were type of scales that were constructed based on visual, audial and kinesthetic/tactual basis of learning styles. These scales coincided with the physical dimension of Bilfen Learning Styles . However, BLAS consists of more dimensions in terms of learning styles.

BLAS's similarities and differences with the scales developed within the frame of other theoretic approaches can be examined. For instance, Maggie McWay Lynch Learning Style Inventory's adaptation into Turkish depending on the physiologic characteristics was made by Daghan and Akkoyunlu (2011) to the Comet's learning style sizing. This inventory consisting of three factored structure as visual, audial and kinesthetic seems to have similar psysical characteristics with BLAS's physical characteristics scale. Another study was done by Askar and Akkoyunlu (1993) in order to adapt Kolb's Learning Styles Inventory into Turkish. In Kolb's learning style inventory, learning styles were handled as a cycle and inventory helps the individual to determine where he/she takes part in this circle. This inventory has the quality of determining in which domains that a person takes part in diverging, assimilating, converging and accomodating levels. In BLAS which was developed depending of Dunn's learning styles has similiar qualities with psychologic and emotional factor scales. While Kolb's Learning Styles Scale is providing a suitable result for a person's choice of profession, BLAS can give hints about various dimensions such as student's learning styles, learning needs and his/her perception of multidimensional factors related to learning beyond the choice of profession. Gregorc Learning Styles Scale developed by Antony F. Gregorc according to Gregorc Learning Styles Model was adapted by Ekici (2002) into Turkish and its validity and reliability studies were conducted. In this model, perception, arrangement, appropriation and association were seen as the most important abilities and people were devided into two according to their perception abilities as concrete and abstract perceivers and their perceived data regulation abilities as random and sequential. According to this, in Gregorc Learning Style, there are four learning styles as Concrete Sequential, Abstract Sequential, Concrete Random, Abstract Random (Ekici, 2013). This structure of scale has similarities with BLAS's psychologic and emotional dimensions. Vural (2013) held construct validity studies of Grasha-Reichmann Learning Styles scale depending on the content of Grasha-Reichmann Learning Style. Within this framework, the scale has dimensions of independent learning style, dependent learning style, collaborative learning style, competitive learning style, participant learning style and avoider learning style. This structure of scale shows similarity with BLAS's emotional, sociologic and psychologic basic scales.

As it is seen, BLAS has an extended structure consisting scale variety that can be applied to high school students and learning domain, besides having similar subdimensions with various scales. Therefore, it presents a structure that is convenient for educational and vocational counselling of school psychological counselling service. With the multidimensional handling of learning styles as in BLAS it will be provided to gain insights such as the recognition of students' characteristics and needs, the recognition of students with low interest, accused of laziness and carelessness and students perceived with limited learning ability are actually the students who have not heard about learning styles and the students who were exposed to education in environments where their learning styles have not been taken into consideration (Gül, 2011; Boydak, 2001, Karataş, 2004). A qualified education teaching and learning environment is expected to be organized according to individual differences, taking learning styles into condideration and operating with education strategies. 21st century's modern and scientific educational environments cannot be thought to operate without taking this fact into account.

With this study it can be suggested that the multidimensional and extended form of this scale bring light to further studies. Also, with the determination of students' learning styles Turkey's different sosioeconomic and

regional results should be compared in terms of students' academic achievement, success, gender and family factor. In addition to the students' learning styles, efforts to develop an extended scale that put forward "cognitive style", "thinking style", "mind style", "mode of thinking" and "thinking style" (Zhang, Sternberg, & Rayner, 2011) will be important.

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Cavit Orhan Tütengil's Contributions To The Field Of Communication Studies

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ABSTRACT

The history of communications studies in Turkey does not date back to very old times. Just like in many countries, the field of communication studies in Turkey had contributions from the other fields of sociology and a literature has been constructed based on these studies. From this point of view, it is necessary not to ignore the fact that many intellectuals from different disciplines have carried out communication studies on a field, which had not yet been named, decades before producing studies specific to the field as of 1980s. Among the intellectuals mentioned within this context, Cavit Orhan Tütengil's contributions to the field of communication studies constitute the subject of this study. It is considered that this study will make significant contributions to the literature by revealing Tütengil's unrecognized contribution in the history of communication studies in Turkey by looking at his works.

INTRODUCTION

Today, communication education in the faculty of communication of many universities in Turkey has been given in undergraduate, master and PhD levels. Communication education started with the foundation of Journalism Institute at the School of Economics in Istanbul University in 1950, and at the Media Academy, which was the first institution to have given a four-year education, in Ankara University in 1965. Accepting 1950 as a milestone, as of today the history of communication in Turkey dates back about 60 years and the literature of the field has reached a certain background throughout the elapsed time until today. However, while mentioning the history of the field, it is necessary to take into consideration the specific studies carried out within different fields of social sciences in terms of communication studies due to the fact that communication is an interdisciplinary field, and unearth these studies.

Works of many intellectuals have been studied until today within the context of their contribution to the field of communication studies and these contributions have been mentioned. In this study, Cavit Orhan Tütengil's communication studies and the subjects related to the field of communication in his other works will be analyzed.

WHO IS CAVIT ORHAN TÜTENGİL?

He was born on 17 January 1921 in a town of Tarsus called Sebil as a son of a primary school teacher Ali Rauf. After graduating from Haydarpaşa High School in 1940, despite his right to enter the Faculty of Political Sciences with his ranking first, he chose the Department of Philosophy in the Faculty of Letters at Istanbul University and graduated from there in 1944. After a year from his appointment to Antalya High School, which is his first place of duty, he served as a soldier in Erzincan. After military service, he was appointed to Kepirtepe Village Institute first and then to Antalya Aksu Village Institute, and went to France for professional studies with the scholarship of Ministry of Education (1950-51) while continuing his service in Aksu Village Institute. He was appointed to Diyarbakır High School with his wife Şükriye Tütengil in 1952, after a year he became an assistant in the chair of Sociology in the School of Economics at Istanbul University. Having finished his doctoral studies with his dissertation called "Montesquieu's Ideas of Politics and Economy" in 1956, Tütengil became an associate professor in 1960 with his study called "Turkey's Highways in respect to Society and Economy". He went to England in 1962-63 academic year and worked in British Museum. He became professor in 1970 and he became a victim of an unsolved murder on 7 December 1979 when he was 58.

CAVIT ORHAN TÜTENGİL'S COMMUNICATION STUDIES

Emre Kongar generally embodies the topics on which Tütengil studied on four focuses:

1. Problem of Method
2. the Concept of Being Underdeveloped
3. Turkish Thinkers
4. Atatürk and his Revolutions

As a scientist, Tütengil focused on the concept of being underdeveloped which he considered the most important problem of the society as well as his methodological studies for developing social sciences, and he believed that we could shape the future through making use of this treasure by studying about our social, historical and cultural roots especially in his researches about Turkish thinkers. Another study field which he touched upon is his understanding of Kemalism; this topic and his 'theory of being underdeveloped' has the quality of two complementary ideas; with the theory of being underdeveloped he diagnoses the topic and finds the solution with Kemalism (Ş. Tütengil, 1981: 5-6). Stating through a political economy point of view that the concept of being underdeveloped is a social and economic situation, he expresses that if the studies on underdeveloped societies were only economy-based it would create a deficit and cause misunderstandings, thus economical problems should be handled within the context of sociology and culture (Tütengil, 1970).

Tütengil touched not only upon theoretical approaches in his studies, but he also made research on applied field studies. He made biographical studies while studying on the thinkers, used various statistical data and questionnaires while analyzing the concept of being underdeveloped and problems of villages, he carried out archive reviews about the media. After analyzing every kind of local and foreign resources about every topic he studied, he combined theory and research as he supported his assumptions with field studies.

Within the context of the topic of this study, it is seen from the bibliography listed below, which includes his studies related to communication field, that Cavit Orhan Tütengil focused on journalism and media activities.

Books

- 1966-Diyarbakır Media and Our Regional Journalism (first edition 1954)
- 1969-Turkish Journalism in England

Articles

- 1961-Analysis Method of Newspapers and Journals (Istanbul University Institute of Journalism Questionnaire and Research Bureau Publication NO. 1)
- 1963-Regional Media in Turkey and Diyarbakır Journalism (Journal of Turkish Harsi and Social Research Volume 38)
- 1968-Sakarya Media (Sakarya Social Research Center Series A, No. 8)
- 1969-Turkish Journalism in England from Neo-Ottomans till Today (Publication of Istanbul University Institute of Journalism No. 11)

Reproductions

- 1963-Turkish Journalism and Turkish Media in England
- 1965-Turki Journalism and Turkish Media Provincial Journalism in England
- 1966-Turkish Journalism and Turkish Media Provincial Journalism in England

Conference, Seminar, Symposium

- 1968-Regional Journalism in Turkey (Anatolian Media Seminar)

His Writings in Periodicals

- 1954-Art Pages in Newspapers (Varlık, 402, 1 January)
- 1958-Issues of our Journalism (Vatan, 28 March)
- 1959-Publications on regional media in various newspapers and journals in Turkey (School of Economics Periodical, XXI, October)
- 1960- Our Journalists on the 100th Anniversary of Our Journalism of Thought (Kitap Belleten, I/2 December)
- 1960-Methods of Analysing Newspapers and Journals (Vatan, 28 November)
- 1961-Regional Media in Turkey: Diyarbakır (Yearly, 2, 28 November)
- 1963-Notes on Turkish Newspapers and Journals Published in England (Kitap Belleten, I (New Series) September)
- 1963- Turkish Journalism in England (Vatan, 19-20 AUGust)

1965-Our Regional Media and its Problems (Cumhuriyet, 1 June)
1966-Journalism of Thought and Republic (Cumhuriyet, 20 May)
1968-Problems of our Media (Cumhuriyet, 28 April)
1968-Self-Assessment of the Media (Cumhuriyet, 4 June)
1969-Newspaper Prices and its Readers (Cumhuriyet, 9 April)
1970-Television Fly (Yeni Ufuklar, XIX/223, December)
1971-Institute of Journalism and its Problems (Cumhuriyet, 13 June)
1972-Problems of our Media (Cumhuriyet, 27 September)
1974-Our first Newspaper of Thought *Tercüman-ı Ahval* (Cumhuriyet, 10 May)
1977-Contemporary Radio- Principles of Television Broadcasting and its Importance for our Country (Milliyet Sanat Dergisi, 230, 6 May)

Among the above-mentioned list, it is necessary to mention those most comprehensive books related especially to the media. While one of the books which was published as a publication of School of Economics at Istanbul University where Tütengil was affiliated with is a study of local media touching upon the media of Diyarbakır, the second book is a study of Turkish journalism abroad which deals with a hundred years of Turkish Journalism activities in England between 1867 and 1967.

In his first book called **Diyarbakır Media and Our Regional Journalism** (1966), Tütengil explains why he chose Diyarbakır as:

Diyarbakır is one of the important centres of our cultural history. Beside the significant figures it raised, that it has an 84 year-old newspaper made us analyse the city in terms of its media history. (p. 5)

In this work, the writer presented the bibliography of Diyarbakır media by listing the places of publication, sizes, contents, mastheads, dates and periods of publication of the journals which was published in Diyarbakır such as Diyarbekir, Peyman, Dicle, Mücahid, Diyarbekirde Dicle, Yeni Dicle, Halk Sesi, Yeni Yurt, Halkın Dili, İç-Oğuz, Yeni Şark, Şark Postası, Demokrasiye Güven, Ümmid, Kelek, Sesleniş gazetelerini ve Kevkeb Medinho, Şifuro, Küçük Mecmua, Yeni Hilal, Talebe Mecmuası, Gençler Evi, Dicle Kaynağı, Diyarbekir Kliniği, Kara Amid, Dicle, Tıp Gecesi, Karacadağ, and included another bibliography related to national media studies.

In this work in which his evaluations related to national and local journalism activities are included, Tütengil states that a classification could be made among newspapers whether they are newspapers of cities or villages according to the place they are published; partisan, biased or independent newspapers in terms of their dependence on politics; as of their world views newspapers dependent on the past and facing towards the future, and he also mentions that it is early to put the developing newspapers into a categorization. In terms of the contents of national newspapers, that the number of foreign news is more due to the fact that it is easy to get news from the agencies, on the contrary few news on culture appear, preferring those who would like to reflect the events rather than the issues through resource dependence in the news and tendency towards tabloidization of newspaper contents (including many serials of novels and naked women pictures in the newspapers) are mentioned by the writer as his criticisms (pp. 33-35). On the other hand, basing on the approach that newspaper which is “a section of social life” is “a public school” (p. 34), he states that publishing a newspaper should be an appropriate combination of “doing business” and “carrying out public service” (p. 37). In addition, Tütengil says that young people who are raised in Journalism Institutes and Schools should be given opportunities of service with reference to the statement that “no good income comes without necessary investments” (p. 38).

About the supervision of media activities, the writer who says that it would be more efficient to carry out self-assessment with job organizations and necessary to expect everything in accordance with the laws instead of foreign intervention (p. 38), by touching upon the impropriety of the defence that “the public wants that way” within the relationality between monopolization of property structure and the state of tabloidization in newspaper contents, expresses that newspapers should boost the public as the 4th power and make the best of every line of the newspapers (pp. 40-41).

Stating the fact that a complete and comprehensive history of media and archive studies is necessary for making evaluations about the journalism activities in Turkey, Tütengil made evaluations towards the fact that it is possible for local media to develop as a newspaper of thought in response to the tabloidization in national newspapers, despite the characteristics such as national newspapers have convenience of distribution and they can be published outside of Istanbul.

Cavit Orhan Tütengil starts his other journalism study called **Turkish Journalism in England from Neo-Ottomans till Today** (1969) with an introduction as follows:

Turkish journalism outside of Turkey is a field upon which sufficient emphasis has not been put. In the second half of the 19th century, it has been seen that when the dialogues started by the

intellectuals in Tercüman-I Ahval and efforts of creating a public opinion were tried to be prevented, the struggle was transferred to the overseas. and in this respect he defines foreign journalism activities as ‘a political action which was tried to have intellectual content’ (p. 1).

The writer states that he meant the countries which have never been under the rule of Turkey before and remained outside the political borders of 1867 Turkey when he said “outside of Turkey”, and *Muhbir*, which was the first newspaper published outside of Turkey and has the signature of Neo-Ottoman Fraternity, was published in England as carrying out press activities was easier there. Despite the close relationship between the opposing movement of the period called Young Turks and French Language and Literature, the fact that French laws posed an obstacle and caused risks about publishing paved the way for this newspaper to be published in England.

In this work, Tütengil mentions the newspapers published between 1867 and 1967 such as *Muhbir*, *Hürriyet*, *Girit*, *İstikbal*, *Hayal*, *Hamidiye*, *Hilafet*, *Osmanlı*, *Dolab*, *Kürdistan*, *Selamet*, *Abdülhamid*, *Sadakat*, *Türk Sesi*, *Kıbrıs Türk Sesi*, *El-Hakikat* and Turkish newspapers published in England. Tütengil states that these publications were published by the journalists who ran away from Turkey, members of Turkish colony around big cities, institutions affiliated with Turkish government and members of private enterprises as they were against the regime of the day, and they had common characteristics such as financial difficulties, legal and political pressures towards the publishing houses, prohibition of releasing the papers in Turkey, publication of the same newspaper in different languages, change of discourse in the journalists because of the change in property structures and problems of technical team and equipment (p.109-115). Tütengil also says that, when compared to the examples in the world, the only way for those newspapers, which constructed a very rich cultural heritage, to make themselves accepted is possible through addressing those who look for the truth, touching upon social reality and enduring sacrifices in accordance with the aforementioned elements (pp. 116-117).

In many other works of Cavit Orhan Tütengil which do not have the quality of communication studies, the writer mentioned researches towards the field of communication and made evaluations towards those elements:

In his work called *Turkish Highways in terms of Society and Economy* (1961), he states that developments in highways opened up new horizons for the media industry thanks to the convenience in distribution and increase in circulation (p. 81), in addition, in his field studies related to the places where road conditions are good or bad, in accordance with the social and economic development criteria, he considers the number of publishing houses, local newspapers, newspaper sales rates and cinema as a variable (pp. 148-153).

In his book titled *Sociology of Being Underdeveloped* (1970), he touches upon one of the characteristics of underdeveloped countries that is ‘very fast social changes’ and presents ‘development of communication and transportation’ (and increase in the number of literacy rate, developments in education, gaining awareness and consciousness of the public through intellectuals) among the reasons of those changes (p. 130). Again in this book, in his evaluation of the primary subjects in the election campaigns of developed and underdeveloped countries in terms of political communication, he states the difference towards the fact that theological topics and personal accusations are touched upon in the underdeveloped countries while economic and social topics are discussed in the developed countries (p. 132).

The 90th question in Tütengil’s *Structure and Problems of Rural Turkey in 100 Questions* (1975) that is “*What kind of changes happened in 1962-1968 about making use of the mass media?*” and writer’s answer to that question shows that frequency of reading a newspaper, those who go to the cinema and basing on the numeric data showing the increase in radio audience from 1962 to 1968 are important indicators about making use of radio and cinema and his findings related to the fact that the rate of people who make use of the mass media increases as the level of socio-economic development of the regions improve are all evaluations of communication studies (pp. 158-159).

In “The Problems of Our Media” chapter of *Underlying Fracture* which is another book of Tütengil published in 1975, the writers state that with the developments in press techniques, newspapers spread extensively, newspapers with visual elements inside took the place of newspapers with written elements and these newspapers want to be like those with visual elements, regional media had a difficult position against national media, and expressed his criticisms by saying “*in company with technical developments, the biggest danger of this type of newspaper which maximizes the place of photos by dismissing ‘writing’, directing towards pretentious exaggerations with the help of lottery and coupons, excluding the ‘writer’ day by day is that it is free of problems and irresponsible*”. In addition, he finds pathetic that this type of media is supported by the readers who are described by Tütengil as having a mental laziness and business worlds (pp. 188-193).

CONCLUSION

Cavit Orhan Tütengil made significant contributions to the literatures towards communication studies intensifying in 1960s. Especially his journalism activities and his studies related to media history light the ways and keep lighting for many researchers. In addition, besides Tütengil's contributions as a researcher, he himself sometimes carried out these media activities. He published with his friends a journal called *Değirmen* in 1942 when he was a student in university and a journal called *Çizgi* in 1953 when he was a teacher in Diyarbakır.

His evaluations carried out within the conditions of the period presents the well-directed visions of today's current media problems. Topics such as supporting journalism education, local media's adopting alternative publishing and the necessity of discussing the problematic that demand should determine the supply in the national media constructs the focus of the discussions in the field even today. Besides Tütengil's direct contribution to the field of communication, his point of view in his studies with different titles which do not ignore the effects of the mass media upon society's improvement presents the importance he gives to the communication studies which have become the major point of interest of this age thanks to the new communication technologies of today.

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Cinema And Geography: A Theoretical – Practical Model (From Film To Lesson) For Learning Geography

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ABSTRACT

This paper assumes that school, while conducting experimentation activity, is committed to reorganizing education in close connection with the new modalities of learning and “knowledge” organization, as well as with the process of evolution / transformation of today's languages and technologies, keeping up with complex changes in cultural, social, political and economic aspects of modern society.

The cinema, through its art films, can be used as an extension of a specific subject of study, as a cultural vehicle, and as a means to conduct the learner to a logical-critical pursuit of knowledge, in tune with the demands posed by a good curriculum planning, the creation of motivation and interest in students, and the openness to disciplinary themes related to reality. It offers several paths for direct exploration and research, around which to organize ideas and new knowledge, developing cognitions of “the other” and “the elsewhere”, giving the opportunity to think about those stereotypes through which the image of “the other” is commonly represented and / or manipulated.

The methodological approach is primarily based on an interactive analysis and interpretation of a “far away” reality (Sierra Leone), yet close in terms of common contents. Among the cross-cutting objectives, particularly significant are the development and enhancement of language understanding and communication skills; of specific knowledge of socio-economic aspects, which have characterised the cultural and social development of various areas of the “global planet”; and of the underlying communicative and creative trends.

KEYWORDS: cinema, landscape , territory, geography teaching, education technology.

INTRODUCTION

The educational institution has always been engaged in the difficult task of having to contend with complex cultural, social, political and economic changes of our society, which has been experiencing “The Age of Access”, as stated by J. Rifkin in his essay (2000). Teachers are required to measure themselves on the grounds of both new knowledge and educational planning, re-organizing the teaching in close conjunction with new learning and knowledge modes, and with a process of evolution and transformation of languages and technologies. The spread of computer networks, as well as of a “knowledge globalization” require a school model that respects the intellectual quality of students by promoting experiences open to creativity, and democratically inspired by a free exchange of meanings and interpretations, that may guide them toward a fully educational success, first, and to a legitimate integration into the social and working world, later. More specifically, promoting motivation in the learner goes through the formulation of topics and areas that interest them closer, but also by practicing learning activities. It is believed, therefore, that the use of “filmic text, precisely because of its affiliation to a polysemantic language based on multiple forms of expression such as images, sounds and the word” may correspond to demands and needs of young people, and that using images may help them “learn better, have more motivation and more valuable results (...) addressing them in the direction of conscious choice, daily habit and critical reading” (Porcelli- Ferracin, 2000, p. IX-X).

The paper is structured as follows: the first section introduces the study conducted on a trinomial which connects cinema, geography and didactics. The second section describes the model adopted and designed for a particular learning path following different steps of a film analysis. The third section reports the activity included into the operational phase experimented within a laboratory, and is complemented by schemes, images and focuses. Finally, the paper presents findings and conclusions.

THE STUDY: CINEMA - GEOGRAPHY - DIDACTICS TRINOMIAL

The aid of the cinematic means is relevant in all subjects, but as Valussi states, “in the case of geography, this is able to radically transform the teaching (...) where a “geography of the far ” finds its best support in the film, which replaces the imaginary journey inspired by textbooks and illustrations with a real journey, and through which the learner sees and feels other environments and peoples ”(Valussi, 1965, p. 141, Migliorini 1947).

It must be said that the film, while representing a learning tool, as described in a previous article (Plutino, 2007), requires a teacher’s verification or “the fidelity degree to which it can represent a real-world referent ”(Dell’Agnese, 2006, p.65) to be transformed into such a didactic instrument. The film, therefore, is able to converge, synthesize (also by a progression of lessons) or be combined with the lesson as an integrative function, though “the film-lesson still proves to be the most effective aid ” (Valussi, 1965, p. 145-146). In a broad sense,

the cinema is a "hyper- place, a place of places, a space of spaces" (Brunetta, 1996, p. 25) with a duplication and revision of a real territory in a perceptual reality that can be considered as a form of disguised writing operating on space-time relationships of staging. The film seen as a document, geographic agent and narration suggests that its narrative core should directly concern the relationship of its characters with their lived space, and their identification with the represented place (Terrone, 2009). There is in the cinema and in films, what it said to be a geographic vocation, as each reproduced story is part of a territory, a city or a landscape that forms a background to the event being represented.

It could be asserted that the cinema resorts to geography, both in choosing external locations and in conducting a faithful study of the landscape to be realized on stage (e.g. the reconstruction of the city district of Five Points in Gangs of New York by Martin Scorsese) and also in a dual constraint where: "geographic elements influence the film production [...]the activity of filming influences the geographic space and its perception" (Oruenta –Valdes, 2007, p.408) and the place shown on the screen becomes, for different reasons, a potential tourist attraction and destination for movie-induced tourism (Fagiani 2009, Rondinone 2011).

The film then acts as a "*primum*" in relation to both knowledge and school cultural experience, in that the young people have made "real geographic experiences in front of big and small screens, acquiring concepts and prototypes that exist prior to systematic geographic lessons", which replace or supplement school information, so that "desert, grassland, ocean, mountains, cities, rivers, etc., have been seen (...) lived, through the mediation of cinema or TV, before school even talked about it. And what is more: what Karl Ritter called as the "geographic individual" (that is, a specific region or territory) in the cinematographic fiction was already "in continuous and necessary correlations with the parties", and with man in particular (Vacca, 1980, pp. 445-446). Through the filmic reading, the opportunities of geographic interpretation are amplified, and studies on the cinematographic role of landscape prove it (to name a few: Leone, 1996, Bignardi, 1994, Corna Pellegrini, 2003 Vitale, Arecco 2009, Bernardi, 2004), since the film as a privileged witness of the contemporary world (Dell'Agnese 2011, Dickson Bruckner 2010), reveals itself to be similar, in a way, to cartography, in the definition given by Farinelli of "reality reflection, camouflage product» (Farinelli, 1992, p.68) and, finally, the cinema contributes to the construction of a "sense of place", of identities, until it becomes an ideological vehicle (Aitken, 1994, p. 293).

THE MODEL: LESSON FROM A FILM ANALYSIS

Our attempt was to implement a laboratory on imagery, namely *lessons* that start from the imagery to turn it into scientific knowledge, based on significant learning, and enabling learners to become actors of their own learning. The model structure chosen for the learning path is divided into four main steps, as shown in the following table:

The path will follow four main steps:				
STEP	ACTIVITY	METHODS& TOOLS	TESTING& EVALUATION	SKILL GAINED
STEP 1: PREDICTING THE FILM'S CONTENT	❖ Careful observation	Active learning	Questions – Quiz	Being able to present a topic by making predictions
STEP 2: WATCHING THE FILM	❖ Watching the full length film			
STEP 3: AFTER VIEWING THE FILM: RECONSTRUCTING, ANALYSING, JUDGING	❖ Commenting the film on the spur of the moment; ❖ Interpreting the thematic content of the film; ❖ Understanding of geographic content; ❖ Understanding of social content.	Group and individual post-viewing activity; Collective brainstorming; Use of Interactive whiteboard (IWB);	Maps of characters, places, events and messages of the film; Creation of a synthetic map referring to the examined aspects.	Being able to express a personal point of view while confronting others on specific issues. Being able to express personal emotions and sensations through keywords.
STEP 4: BEYOND THE FILM: FOCUSES	❖ Localization of places shown in the film; ❖ Analysis of phenomena included in the film; ❖ Problem solving proposals; ❖ Creation of billboards.	Individual, group and collaborative activity within class group.		The student contributes ideas to problem solution.

According to the model reported above, below is a description of the activity included in the path.

Step 1: Predicting the film's content:

Motivating students to a cinematic viewing experience by stimulating their curiosity and creating expectation in the viewers, from the observation of:

- ❖ Key elements of the film (title, frames etc.) and, through a stimulating questionnaire (What is the film about? Where is the story set? etc.), the students are prompted to draw hypotheses and to imagine about what they are going to watch.
- ❖ This activity can be also integrated with other tasks, for example through the development of mental maps and questions-quiz related to the film central topic (Canova 2001, p.89).

Step 2: Watching the film

Step 3: After viewing the film: Reconstructing, Analysing, and Judging (Canova 2001).

This task has sub-steps:

a. Emotional response to the film seen / comments on the spur of the moment

What do the images evoke at a first emotional-empathic reading? To answer these questions, solicit students to participate in a collective brainstorming. All the impressions, emotions, sensations, ideas aroused by the film vision may be collected using an interactive whiteboard. They can be emotions, mental associations, protagonist roles, colours, sounds, meaningful sentences condensed into a keyword (Canova 2001, p.90).

What emerges from the brainstorming may be the starting point for a dual path:

- ❖ stimulating the discussion and a further reflection from what has emerged from the keywords;
- ❖ developing mental maps of some of the raised issues.

b. interpretation of thematic content/elements in the film

Creating **cognitive maps** on particularly meaningful groups related to (Canova 2001, p.91):

- ❖ *characters* (spotting the most important ones);
- ❖ *places* (recognising places /settings of the film and developing further maps);
- ❖ *objects* (often the presence of objects in films takes a symbolic value: it can be useful to try to explain each of them);
- ❖ *events* (finding events that are central to the film);
- ❖ *dialogues* (looking for metaphors);
- ❖ *film messages* (what it tells through implicit or explicit messages, what it teaches, and other reflection inputs)

c. Reading/ understanding of geographic content

Particularly important “observation cores” represented in the film can be:

- ❖ *natural environment*: morphology, hydrography, vegetation;
- ❖ *types of landscape* (urban, rural, mountain, hill etc.).
- ❖ *human environment*: population, language, religion;
- ❖ *local economy*: agriculture (planting, subsistence farming), sheep farming, fishing, mining, industries;
- ❖ *man-environment relationship*.

d. Interpretation of social content/elements in the film

The interpretation will focus on topics of greater interest, as emerged from the film vision:

- ❖ *social phenomena*;
- ❖ *problems related to specific geographical places* (wealth, poverty, education, illiteracy, diseases, wars, etc.).

Step 4: Focuses

This step could include the following:

- ❖ localization of the places shown in the film;
- ❖ analysis of represented phenomenon / phenomena;
- ❖ information search;
- ❖ proposals for the solution of a problem;
- ❖ creation of billboards summarizing the findings

As mentioned at the beginning of the section, the *lessons on imagery* have been successfully implemented. Both the theoretical model and the following operational phase, have been experimented within a class group of 22 pupils (15 females and 7 males) attending the fifth year of the primary school in Fonte di Roccadaspide (Campania region). The project has covered a period of ten weeks, for a total of 30 hours (3 hours per week).

THE OPERATIONAL PHASE

The film under review is *Blood Diamond* (2007), which reconstructs real events in the history of Sierra Leone in the late '90s. The country was ravaged by the civil war (where child soldiers were used) which triggered latent tensions and economic interests related to diamond companies. The rebels of the Revolutionary United Front (RUF) actually financed their war thanks to the smuggling of rough diamonds from mines located in the territory under their control, with the complicit indifference of the diamond industry and other involved states.

The film aims to raise awareness of a painful and burning reality, full of heavy human, political and social implications. The billionaire diamond trade from conflict zones has funded, and is funding this day, civil wars that in Africa since the early '90s have resulted in more than 3.7 million victims and millions of refugees in Angola, Liberia, Sierra Leone, the Democratic Republic of Congo and Ivory Coast. Recurring in the film are some glimpses of enchanting landscapes, such as beaches and villages that show a life marked by slow rhythms and genuine life values; the purity of the forest that is home to primitive forms of life in harmony with it; small oases stealing children to suffering and bringing them back to life, where solidarity reigns. All this is destroyed by man's violence and cruelty that raze all life forms, leading to destruction and dissolution. The film's director (Edward Zwick) combines social commentary with a "genre cinema" (action), and does not escape criticism nor the intellectual dimension of the film, which produces action and invites to reflection and empowerment of diamond consumer (educational aspect of the path.).

Film analysis scheme

The group analysis of the film "*Blood Diamond*", conducted as a post-viewing activity, was focused on the following specific elements:

1. Geographic analysis of natural environment (landscapes) and place:

- a. Learning geography of Sierra Leone;
- b. Enumerating natural environments shown in the film;
- c. Observing how they are represented, understanding their meaning basing on the character's psychology or the scene, whether they are functional to the scene itself
- d. Extrapolating symbolic values of the represented landscape or natural environment.

2. Analysis of phenomena represented in the film:

- e. Resource exploitation by the West world;
- f. The phenomenon of Child-soldiers;
- g. Guinea - refugee camp: 2nd largest in Africa;
- h. Protagonist's living conditions in the village;
- i. Comparison of the place before and after imprisonment;
- j. Social complaint: human rights violation of children and refugees;
- k. Reversal / repentance of the West world. Positive role.

The interpretation of the thematic content/elements investigated in the film was then expressed through the creation of **cognitive maps**, which depict and synthesize the most important "observed cores".

The following sections will show some images and charts implemented during the operational phase with particular focus on the film **geographic** and **social content** (see *figures 1 and 2*).

As envisaged by the model, the final step is addressed to the development of specific focuses related to the film content that in our laboratory have been devised into visual summaries or **billboards** as shown in *figure 3*.

Finally, some **children's drawings** have been included as an evidence of their dramatic perceptions and related representation of the world seen through the images (see *figures 4-5-6*).

Figure 1: Cognitive map 1

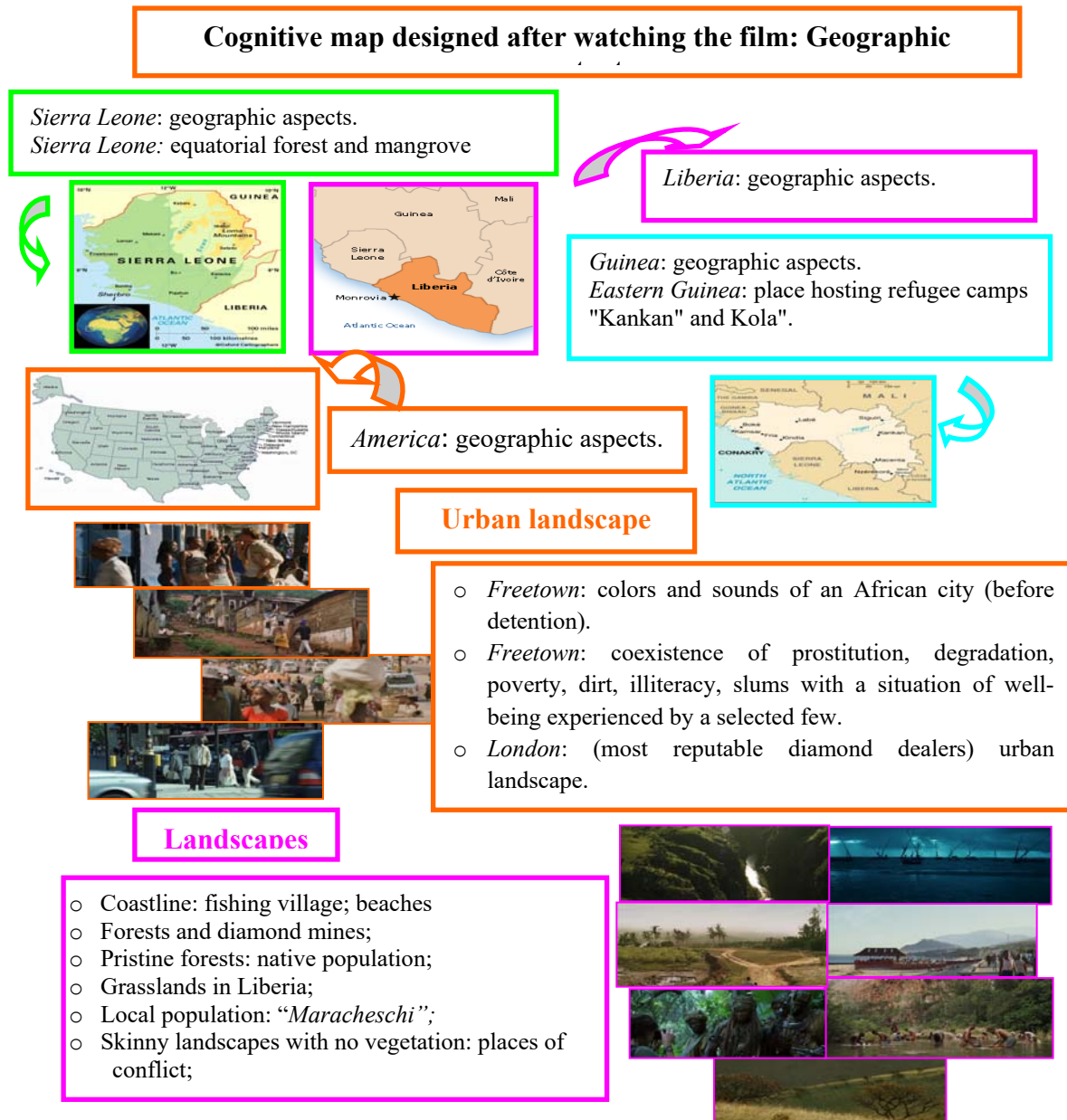
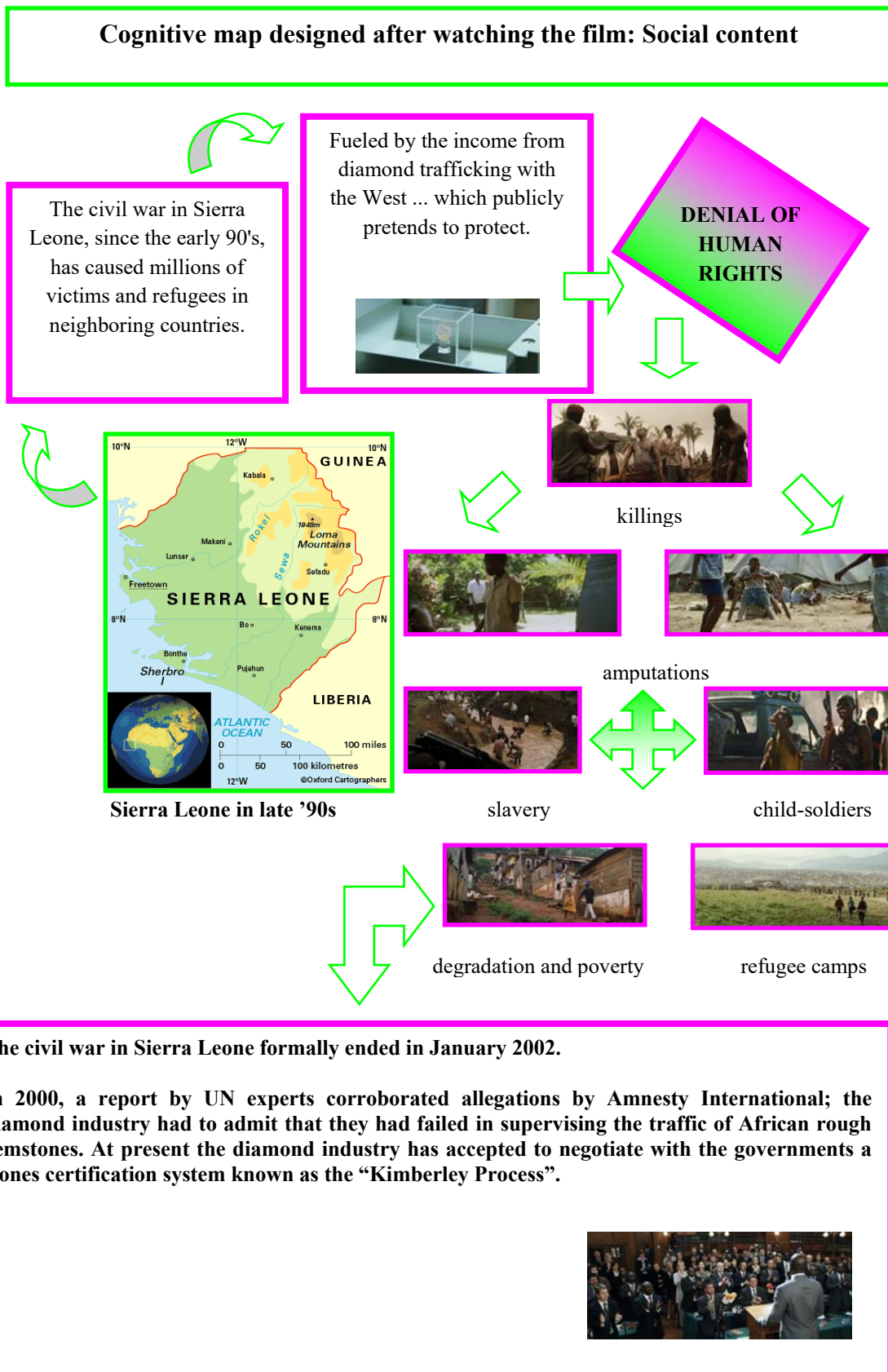


Figure 2. Cognitive map 2



Beyond the film: Focuses

Figure 3: Summary “billboard”

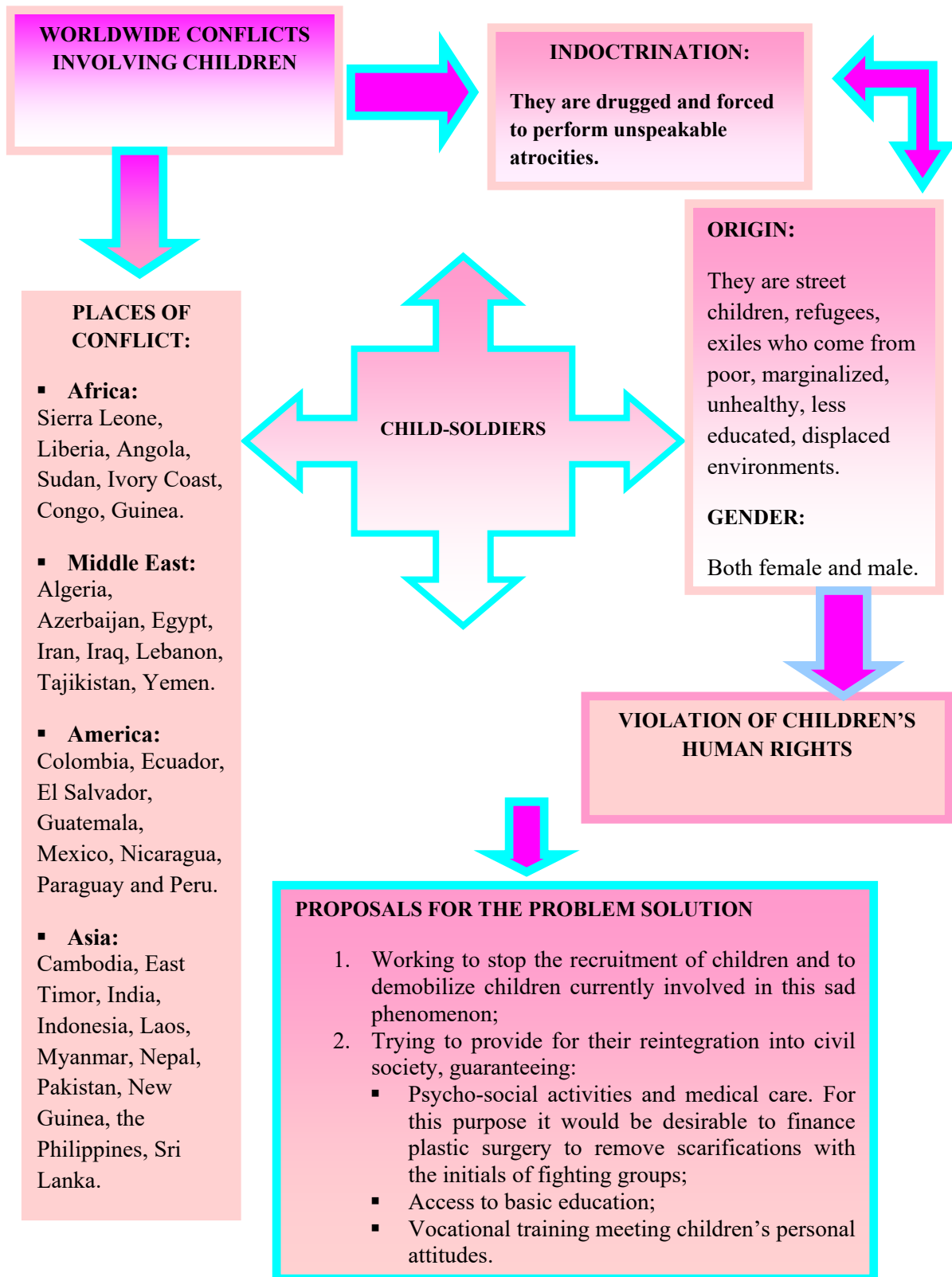


Figure 4. A glimpse of a village daily life: fishermen at work

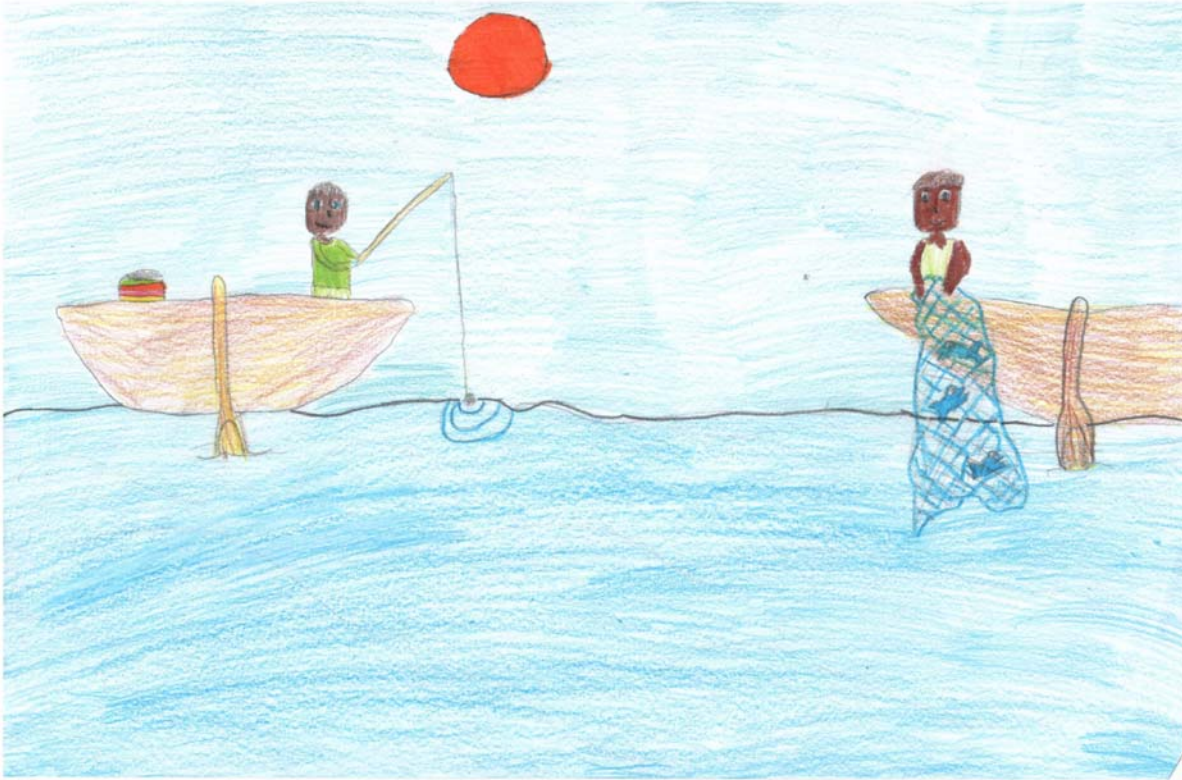


Figure 5. Cruelty and atrocities expressed by child soldiers, who kill and destroy with brutality and violence



Figure 6. Dwelling place of rebels. Filthy dark house, solely equipped with essential elements: a pool table to play with, a fridge with alcoholic beverages, another table on which to play cards.



CONCLUSIONS

The results have attested the validity of a teaching communication whose exploratory dimension has been centred on real life environments through a type of discovery learning and a method of problem solving and investigative procedures that made effective assimilation of content and geographical concepts. The proposal for an integrated, hologramatic didactics, which has offered a variety of accesses to different geographic content, has identified in the relational and experiential context, a real and meaningful learning, through a process of co-discovery and co-construction of knowledge, which sees teachers and learners joined in the research adventure. The publication of findings and the sharing of artefacts have also allowed the pupils to feel like being a real part of a never-concluded cultural process and to use and/or apply the learned knowledge and skills in other contexts.

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Comic Strip And Science Communication Scicom Narratives

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ABSTRACT

In Latin America the majority of studies on communication of science by means of the media are focused on newspapers and television programs, because they represent the most effective way –in terms of time and money—to study a mass communication medium. However, there are other important ways to communicate science, of which we have meagre information, or about which little has been reported. Such is the case of cultural narrative media like novels, short stories, theatre, comic strips, etc. Narrative knowledge is a legitimate form of reasoned knowledge; nowadays, many scientists acknowledge that narrative cognition generates useful and valid knowledge. Narrative is particularly important in Latin America, as it not only represents a vehicle for information for anyone who has left the classroom years ago and needs to be updated, but is also useful for teaching isolated groups with little schooling.

The importance of communicating science by means of narrative forms has been suggested by several authors (McKnight, 2010; King, 2007; Schank et al, 2002; Korkmaz, 2011; Frisch, 2010; Lanza and Negrete, 2007; Rios and Negrete, 2013). In previous work (Negrete, 2014), I have denominated the narratives designed to communicate science as **SciCom Narratives** where the acronym refers to Science Communication. In this research I propose that comics (a form of SciCom Narratives) represent an opportunity to communicate scientific information and present an example of the use of comics in communicating medical information about AIDS.

In Mexico comic strips are a narrative cultural medium that is deeply established in national culture, as it is the principal access to reading for millions of inhabitants. On the other hand, AIDS in Mexico has been considered as one of the country's major health problems. The aim of this paper is to analyze the narrative (and visual) structure of two of the most popular comic strips in the country, with the perspective of using this medium –that is already recognized as an effective communication channel with the public in general—to disseminate scientific medical information about AIDS.

INTRODUCTION

Narrative knowledge is more than an emotional expression; it is a legitimate form of reasoned knowledge. Bruner (1988) interpreted it thus, and defined the traditional mode of acquiring logical-scientific knowledge as paradigmatic cognition, and the knowledge acquired under the guise of a story as narrative cognition. Paradigmatic cognition has been continuously identified as the only cognitive mode for the generation of valid and reliable knowledge. However, although the concept of the existence of more than one mode of rationality has been ignored for a long time, in actual fact it has been part of human culture for centuries as, for example, in the Bible and the Koran (Lanza and Negrete, 2007; Polkinghorne, 1998). Now many scientists believe that both paradigmatic and narrative cognition generate useful and valid knowledge. They posit that both types are part of the repertoire of human cognition for the pursuit of reasoning, the representation of information, and the comprehension of reality (Gardner, 1983). While paradigmatic knowledge is retained in individual words that name a concept, narrative knowledge is preserved in stories with plots. Memories in narrative form retain the complexity of the situation in which the action occurred, along with its emotional meanings and motivating factors. The collection of experiences in narrative form offers a base for understanding new experiences of episodes of action by means of analogy (Bruner, 1986; Mitchell, 1981; Ricoeur, 1984).

We have plenty of examples of writers from the past who included science as a subject of their writings (H.G.Wells, Edwin A. Abbott, Arthur Conan Doyle, Primo Levi, George Gamow, Lewis Carroll, Anatoly Dnieprow and others), which shows the existence of the belief that science can be recreated within a narrative framework, and that this could be an appropriate vehicle for transmitting ideas, opinions, doubts and fears associated with the scope and reach of science. Nowadays, the idea that fiction and narrative can play a fundamental role in the intellectual evolution of the human mind is enjoying a comeback (Sánchez, 1998). Research in the fields of narrative and figurative language has spawned important conclusions concerning the importance of narrative cognition and its implications in education and communication (Negrete and Lartigue, 2004). According to Gardner (2001), in his theory of multiple intelligences, one of the ways in which complexity can be presented and communicated is by means of narration. Stories are attractive to people of all ages and

conditions. Narrative provides a precise tool with which to represent and transmit knowledge; it is an effective emotional detonator, a long term mnemonic structure, and an important reinforcement for learning (Negrete, 2005). The presentation of scientific information by means of short stories, novels, drama and comic strips should be considered as an important resource for the dissemination of knowledge, among the range of instruments at the disposal of science writers (Negrete, 2009).

One of the major problems faced by governmental institutions is to disseminate the programs and services they develop. The definition of public policy is hardly enough if the definition in question remains locked in a drawer or is announced by means of conferences or brochures, most of which are couched in technical and scientific terms, quite unfamiliar to the people who will benefit from them. Considering this, it is indispensable that, in parallel with the definition and implementation of public policies, knowledge gleaned from research should be made public in timely and appropriate ways to the people liable to benefit directly from it, by means of appropriate communication channels, in accessible language, with references to their everyday life, and containing familiar elements, with the aim of establishing identity and, consequently, creating meaning and promoting long term memory of that which is represented.

In the case of Mexico it is essential to recognize the level of illiteracy, and the scant interest in reading displayed by some segments of the population. Mexico has about 100 million inhabitants (INEGI, 2005). In terms of education, the majority of the population has gone no further than eighth grade of basic schooling: a mean of 7.6 in the case of males, and 7.1 for females (Ibid). Out of every hundred inhabitants over 15 years old, 11 women and 7 men are illiterate. UNESCO recommends reading at least four books yearly per person to guarantee an adequate level of culture and social development. In Mexico the average per capita reading is less than one book a year (Marcín, 2005). Other recent studies show that about 40% of the population over 15 years old read less than one book per annum (CONACULTA, 2004).

Although Mexico is a country in which the reading rate is low, if we take into account the total population we find that the absolute number of readers is considerable. What the Mexican public reads, by and large, are superficial and disposable texts (Malvido, 1993). Evidence of this can be found in the high press runs of magazines covering show business gossip, fashions, and comic strips with stereotyped storylines (sex, crime or pseudo westerns). These publications are read by an even greater number of readers than their press runs suggest, because each copy is usually shared (read) by several individuals (Ibid.).

Nowadays, comic strips are one of the preferred media and the principal access to reading for millions of Mexicans. In 2002 they represented 33.5% of total publications in this country (López, 2003). In 2003, 215,000 titles were published, with a total press run of 512 million copies (CANIEM, 2005). The most highly demanded editorial content in this market is that which deals with sensationalist stories, comics or love relationships. *Historia semanal* (Weekly story) and *El libro vaquero* (Cowboy book) (Figures 1 and 2) total, between the two, an annual print run of 41.6 million copies (López, 2003), thus being two of the five weekly magazines with the greatest circulation in Mexico (Gutiérrez, 2001).



Figure 1 – Cover and inner page of an issue of El libro vaquero.



Figure 2 – Cover and inner page of an issue of Historia semanal.

The fact that comic strips already have a great appeal among a broad sector of the population makes them a very attractive medium to try and reach numerous segments of society. For example, in 2000, the Economy Department used a comic strip as a medium to publicize its Microcredits program and the requirements for applying for this type of loan, by means of two stories that reflected everyday life situations. In 2004, on the basis of an analysis of communication strategies designed for the migrant community, the Foreign Affairs Department established as a priority in the development of its information campaigns, the design of a comic strip that would enable the Mexican migrant community in the United States of America to become familiar with the programs and services offered by the Mexican consular network. With the support of the O'Farril Group (editors of *Historia Semanal*), the brochure *Guía del migrante mexicano* (Guide for the Mexican migrant) was distributed jointly with the regular issue of the magazine. The cost of its distribution was about 1.20 Mexican pesos (the equivalent of ten U.S. cents). Although the impact of this publication wasn't assessed in depth, *Historia Semanal*

reported that the print run of copies that included the *Guía* was totally sold out, and this can be considered as an indirect and tentative measure of the popularity and success of the campaign.

AIDS, together with excess weight and diabetes, has been considered a national security issue in Mexico (SSA). More than 90,000 accumulated cases were reported in 2004 (Censida), and it is estimated that one in every 333 persons is infected (SSA). Preventive medicine is essential to improve the quality of life of the population and to face the problem posed by the high cost of treatment. If we are capable of designing and opting for a tool that is suitable for transmitting medical information by means of a “product” that achieves a positive impact and stimulates individuals to avoid risky practices, we will contribute significantly to social welfare. If comic strips applied to the dissemination of science prove to be effective, this model could be reproduced and spread to other areas of health (such as excess weight and diabetes) with a favorable cost/benefit ratio.

GENERAL OBJECTIVE

Analyze the two most popular comic strips in Mexico, with the aim of utilizing this already familiar and effective communication medium to disseminate scientific medical information among the general public.

METHOD

I analyzed both narrative and visual aspects of the comic strips.

Narrative

Using Propp’s method (Propp, 1932), enriched by other elements proposed by contemporary authors (Atkinson, 1990; Landau, 1984; Harré et al, 1999), I identified the most common narrative structures used in *Libro Vaquero* and *Libro semanal* in terms of functions, spheres of action, plots and characters. Propp suggested that fairy stories (and I extend this to narrative in general) can be understood using four principles: 1) the functions of the characters are stable elements in a story; 2) the known functions within a story are finite; 3) the sequence of the functions is normally the same in any story; 4) stories are of a determined type, according to their structure. According to Propp, functions are acts, episodes, or apparition of several types of characters. He proposed that fairy stories are based on 31 functions (acts or episodes) that I summarize in Table 1.

Not all stories include all the functions proposed in Propp’s classic work (1932), but the ones that are normally incorporated will appear in the order in which they are listed in Table 2. In any superficial review we can recognize the basic structure in famous short stories and novels, such as Cervantes’ *Don Quixote*, Mary Shelley’s *Frankenstein*, Wells’ *The Island of Doctor Moreau*, and George Orwell’s *1984*, and also the structure of short stories, like *The Crabs take over the Island*, by Anatoly Dnieprov, and *Nitrogen*, by Primo Levi. In a Proppian analysis, the functions are carried out in seven “spheres of action”: the villain, the provider, the assistant, the princess and the father, the dispatcher, the hero and the false hero. The functions and spheres of action make up an ordered whole. Their presence or absence in any story enables the plots to be classified. The plots can adopt one of four patterns: development through struggle and victory, development through the accomplishment of a difficult task, development through both previous categories, and development through neither of them. Therefore, the important point in Propp’s proposition is that, although any character can be involved in any sphere of action, and several characters can be involved in the same sphere, we are always dealing with discernable and reiterated structures (Hawkes, 1977). Proppian analysis has been used to study a range of different narrations, not only fairy stories (Landau, 1984; Harré et al, 1999).

	Function	Description
I	Absentation	Family member absents him/herself
II	Interdiction	An interdiction is made to the hero
III	Violation	Hero violates interdiction. Villain appears
IV	Reconnaissance	Villain or hero attempts reconnaissance
V	Delivery	Information about victims is delivered to victims
VI	Trickery	Villain attempts deception of victim
VII	Complicity	Victims submit to deception
VIII	Villainy	Villain causes harm to family members
IX	Mediation	Misfortune or deficiency is made known
X	Counteraction begins	Hero agrees /decides on counteraction
XI	Departure	Hero leaves home
XII	Donor's first function	Hero is tested
XIII	Hero's reaction	To donor
XIV	Provisional receipt	Of magic agent
XV	Guidance	Spatial transfer of hero is made to vicinity of object of search.
XVI	Struggle	Hero and villain are in direct combat
XVII	Branding	Hero is marked
XVIII	Victory	Villain is defeated
XIX	Liquidation	Initial misfortune or deficiency is made good
XX	Return	Hero returns
XXI	Pursuit	Hero is pursued
XXII	Rescue	Hero is rescued from pursuit
XXIII	Unrecognized arrival of hero	At home or in another place
XXIV	Unfounded claim by false hero	Hero is at home
XXV	Difficult task	Proposed by false hero
XXVI	Solution	Task is achieved
XXVII	Recognition	Hero is recognised, often by special sign
XXVIII	Exposure	False hero is exposed
XXIX	Transfiguration	Hero is given new appearance or possessions
XXX	Punishment	Villain is punished
XXXI	Wedding	Hero marries, ascends throne or is rewarded

Table 1. Fairy tale functions proposed by Propp (1968)

Visual

To study the visual style and language of these two popular comic strips, I analyzed their content according to, for example, the total number of illustrations, number of images per page, number of characters, images dedicated to sensuous encounters, images with nudity, etc.

RESULTS

Narrative structure of Libro vaquero and Historia semanal

Both comic strips exhibit similar structures in terms of dramatic structure, plot, characters and spheres of action and functions, which can be summarized as follows:

In both comics, in a vast majority of cases, the narrative takes the form of a love story. Adhering to Propp's classification, the plot is of the "development through struggle and victory" and "development through accomplishment of a difficult task" types. The hero is involved in different adventures (generally, in *Libro vaquero* it is about direct confrontation and conflict with an opponent, and in *Historia semanal* it concerns the resolution of diverse problems in a working environment). The hero always achieves his objective. His goal is always an important task linked to recovering territories, wreaking revenge, or attaining justice at work.

Both comics exhibit a linear structure. The conflict is established and develops linearly, with a beginning, a development and a conclusion. Occasionally, flashbacks are included in the narrative to explain the reasons for revenge or the problem in question. All the classic components of stories with closed endings are present:

beginning, development and ending (no comic includes an open ending). The story is generally told by an omniscient narrator.

According to Propp's classification of spheres of action, the characters can be classified as follows. The main character (a cowboy or office worker) is the "hero", charged with accomplishing something or obtaining the hand of the "princess". The "king" is the boss at the workplace or the father of the princess, who makes a request (or entrusts a mission) to the hero. A friend (man or woman) represents the "helper", who accompanies the hero on the mission and also warns him of the difficulties involved. In some cases the helper is the princess herself. On the one hand, the characters that surround the hero can be considered as the "providers"; in this sense, they are the owners of the resources needed by the hero to complete the task or mission; and, on the other, as "villains", as in some cases they make the hero pay for the resources he needs. The "villain" can be a man or a woman whose objectives are contrary to those of the hero. In comics, the villains are presented as despicable because their motives are always associated with evil (Table 2).

Characters	Spheres of Action
Main character	Hero
Friend (either sex)	Helper
Antagonist (or antagonists)	Villain
The woman who is to be rescued or won	Princess
The boss at work or the father of the princess	King

Table 2 – Characters in *Libro vaquero* and *Historia semanal*, according to the spheres of action proposed by Propp.

In terms of Propp's functions, the narrative structure of these comics can be summarized as follows: The hero has a problem to solve (mediation). The hero travels to the place where the problem must be solved (normally another town, or his workplace, or maybe the antagonist's home) (Departure and guide). The main character faces the difficulties that stand between him and achievement of his goal (strife). The hero wins the battle against the villain, obtains what he was seeking (victory) and returns to his town or his job (homecoming). Finally, he is recognized as a hero (honors) and he marries or initiates courtship with the princess (marriage) (Table 3).

Functions	Description
Mediation	Misfortune or shortcoming is made known
Struggle	Direct combat between the hero and the villain
Departure and guidance	The hero leaves his home or is transferred to the vicinity of the object of his quest
Victory	The villain is defeated
Homecoming	The hero returns
Honors	The hero is vindicated, frequently by a sign
Marriage	The hero marries, ascends to the throne or receives prize

Table 3 – Structure of the comic according to Propp's functions.

<i>Libro vaquero</i>	mean	<i>Libro semanal</i>	mean
Total number of dialogue lines	409	Total number of dialogue lines	395
Dialogue lines by omniscient narrator	131	Dialogue lines by omniscient narrator	154
Dialogue lines by hero	77	Dialogue lines by hero	187
Dialogue lines by incidental characters	201	Dialogue lines by incidental characters	222
Dialogue lines with sexual content	10	Dialogue lines with sexual content	8
Dialogue lines on love	14	Dialogue lines on love	39
Total number of images	222	Total number of images	216
Total number of images depicting sex	4	Total number of images depicting sex	22
Total number of images of male nudes	4	Total number of images of male nudes	7
Total number of images of female nudes	8	Total number of images of female nudes	3
Total number of attractive female images	20	Total number of attractive female images	20
Number of images per page	2	Number of images per page	2

Table 4 – Analysis of images and dialogues of both comics

In both comic strips the sex and the love story play a central role in the development of the plot (and images content) (Table 4). It is reasonable to infer that it is precisely this trait that makes the story attractive to readers. It is worth mentioning that one of the principal differences between *Libro vaquero* and *Historia semanal* is that in the former the images depicting sex are more explicit, while in the latter the story seems to depend more on a romantic approach both in the images and the dialogue.

FUTURE WORK AND RESEARCH

The following stage of this research project is to generate a collection of comic strips, all illustrated, carrying the same information about AIDS, but with different plots and illustrations. To emulate the style and language of the comics I have analyzed, the design of the new strips will abide by the narrative and graphic elements that have been identified in this study as unique characteristics of *Libro vaquero* and *Historia semanal*. The new collection of comic strips about AIDS will be tested and compared using the RIRC method that I designed for the assessment of narrative texts with scientific content. The RIRC method explores the effectiveness of a narrative (and other formats) in communicating scientific information using four independent memory tasks to assess learning (Negrete, 2010). This method assesses an individual's ability to retell, identify, remember and contextualize scientific information presented to them in narrative form. The input consists of a qualitative complex stimulus (a story narrative or another text format) and the measurement is performed using questionnaires. Appendix shows some images of the first models of comic generated for this research.

Once the comic strips thus generated in this research project have been tested and assessed according to the RIRC method, it is expected that they will be published jointly with one or several issues of *Libro vaquero* and/or *Historia semanal*. Finally, if and when they are published, I expect to measure their mass impact on the population that consumes this type of product.

CONCLUDING NOTES

Comic strips are a cultural medium deeply embedded in Mexican culture. They could be an interesting vehicle and an opportunity for disseminating science, as they embody a mass communication medium that includes forms of narrative and graphic representation. The story and the images expedite the learning process, thanks to the built-in patterns individuals possess regarding both languages (i.e., information previously acquired concerning the reading of images, narrative structure and their meanings), as well as the emotional responses that visual and narrative resources evoke. Furthermore, images and narrative act as mnemonic elements that take up their abode in long term memory, thus contributing to learning.

In Mexico, AIDS has been termed a national health issue. There are simple ways of preventing contagion, and comic strips represent a medium in which information this information can be presented in a context of everyday life, thus facilitating comprehension and learning by the general public of the basic facts of this disease.

Concerning the analyses of *Libro vaquero* and *Historia semanal*, it is possible to conclude that they coincide surprisingly well with the structures described by Propp for fairy stories. Both comics exhibit similar structures in terms of dramatic construction, plot, characters, spheres of action and functions. Analysis of the narrative lines of these popular comics suggests that a simple structure, with few variations, offers the most effective way of constructing attractive comic strips and communicating medical information to a numerous segment of Mexican public with a low educational level. The explanation of this seems to be that, notwithstanding that the population has little formal education, it can resort to certain patterns (knowledge previously acquired, possibly by reading this popular medium) that enable it to decipher and glean meanings from simple narratives and unexceptional pictorial representations, thanks to the fact that the information provided has been set in an everyday context, familiar to the reader.

In this research I propose that comic strips can be used as a tool to communicate scientific medical information to the general public in a way that is more effective than the classical paradigmatic representation. In the case of Mexico, comics constitute a unique opportunity to communicate scientific medical information to a broad segment of the population, which is very difficult to access by means of other media, and for whom comics have become part of their everyday life.

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Comparative Study On The Engagement Of Students With Autism Towards Learning Through The Use Of Mobile Technology Based Visual Schedule

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ABSTRACT

Visual schedule module has been developed by researchers in order to lessen children with autism's reliance to adults. Children with autism have problems in self-management due to the executive dysfunction they were facing. However, conventional activity schedule consumes time and efforts to be prepared despite needing storage for the large quantity of image analogs. As computer instructions have shown positive effects in educating the children with autism, digital visual schedules seem like a good way to ease the use of visual activity schedule. Thus, this study aims to investigate the potential of digital visual schedule applications to Malaysian autistic users and will be significant in designing appropriate instructional program for the development of children with autism. A total of 20 samples participated in the field experiment to determine their motivation and engagement towards a visual activity schedule application.

INTRODUCTION

Organisational skill is an important skill for an individual to execute typical daily tasks as an independent individual. Autistic individual, on the other hand, due to the deficit in EF, find it challenging for them to carry out their daily living tasks and self-manage without relying on instructions from parents, teachers, instructors or caregivers. The study aims to examine the use of digital-based visual activity schedule in educational settings and the opportunity and suitability in using it in both school and home settings. Therefore, the study hopes to be able to provide with additional literature evidence in order to improve the children with autism's quality of life and self-determination from the aspect self-reliance and organisational skill. With the blooming innovation of technology, TSMT like smartphones, tablets and iPad has offered children with autism with more options of tools to aid them as a digital learning assistant instead of depending solely on adults to give them instructions or showing them what to do. Operating as a digital support, children with autism may improve their self-determination in carrying out their daily life independently while reducing reliance their to adults. However, no matter how effective the tool is, as majority of the researches were made in western countries, there may be gaps that differ the users of different part of the world. Therefore, in the coming research, the study is looking into the potential use of this digital-based medium in the Malaysian scope of study. Hence, future study will look further onto the prospective of Malaysian users for the digital-based visual activity schedule that was embedded to a common and practical mobile technology such as tablets and iPad. This study will be a significant attempt to design any appropriate instructional program for the development of educational environment for autistic individuals. Studies have also suggested that computer-assisted instructions, especially one with visually rich elements, are effective in engaging children with autism in teaching and learning (de Urturi, Zorrilla, & Zapiain, 2011; Frauenberger, Good, Alcorn, & Pain, 2013; Munoz, Barcelos, Noel, & Kreisel, 2012). Many studies discuss ways to enhance children with autism's quality of life and self-determination in skills that were affected by executive dysfunction (Happé, 1999; Kamaruzaman & Azahari, 2014; Koyama & Wang, 2011; McKone et al., 2010; Milley & Machalicek, 2012; Ozonoff, Strayer, McMahon, & Filloux, 1994; Uphold, Douglas, & Loseke, 2014). In this paper, the use of visual schedule to improve the quality of life of children with autism and its state of the art will be discussed. This study will be significant in order to design appropriate instructional program for the development of children with autism.

REVIEW OF RELATED STUDIES

Despite the variation of the symptoms of autism, it has been established that children with autism were deficit in three areas. The areas of deficiency of children with autism are Theory of Mind (ToM), Executive Functioning (EF) and Central Coherent (CC) (Freeth, Sheppard, Ramachandran, & Milne, 2013; N. M. Rani, Legino, Mudzafar, & Kamaruzaman, 2014; Rasche & Qian, 2012). Thus, due to

these three deficits, it is challenging for them to carry out their daily life. The three deficits of children with autism affect them in terms of social skill, communication skill and imagination (Avramides et al., 2012; Freeth et al., 2013; Razali, Toran, Kamaralzaman, Salleh, & Yasin, 2013). Baron-Cohen (2001) defines ToM as the ability to infer full range of mental states that causes action. The repetitive behaviour is the result of children with autism's executive impairment. On the other hand, CC is known as the ability to process information as a whole coherent meaning (Freeth et al., 2013). EF is the ability to plan and strategise in reaching certain objectives and the ability to compromise and adjust the objectives as necessary (Freeth et al., 2013; Happé, 1999; Ozonoff et al., 1994; N. M. Rani et al., 2014). EF is an important element for an individual as organisational skills are necessary for one to carry out his or her daily tasks independently. Children with autism were poor in organisational skills and self-management.

Individual with autism have often been designated as visual thinkers (Murdock & Hobbs, 2011). Visuals increase children with autism's ability to communicate and slowly decrease the reliance on adult prompting. Studies have suggested that children with autism react better through visual supports such as in visual cues, visual activity schedules and picture exchange communication system (PECS) (Bryan & Gast, 2000; Liu & Breslin, 2013; Murdock & Hobbs, 2011; Nurdalilah Mohd Rani, Rahman, & Kamaruzaman, 2015). With the many successful evidence-based visual activity schedule module, this method has also showed its significance being embedded to digital-based.

Visual activity schedule is a schedule consists of a sequence of visuals that portrays individual activities in a sequence as they are planned to occur (Carson, Gast, & Ayres, 2008). It comes in a variety of formats depend on the suitability with the child. Visual activity schedule combines visuals such as photographs, images or drawings in sequential format. These visuals are patched to a board in sequence using Velcro straps so it can be easily repealed and reattached. The images were arranged in a sequence of activity instruction. The activity that has been done will be removed from the 'to do' activity and the child will focus on the next activity in the line.

The usage of PDA has shown its usefulness for some researches. It is found that user with autism demonstrate the increase of independent task completion after in intervention had been introduced using the device (Ferguson, Myles, & Hagiwara, 2005). Another study using PDA have resulted in an increase in independent homework behaviour by adolescent with autism in three school settings (Muhamad Fairus Kamaruzaman, 2016; Myles, Ferguson, & Hagiwara, 2007). The usage of PDA had also highly motivated the user and expanded its use beyond the scope of the study (Kamaruzaman & Zainol, 2012). The uses of PDA have also found to demonstrate significant improvement in self-estimation of occupational performance in everyday life tasks and in satisfaction with performance (Gentry, Wallace, Kvarfordt, & Lynch, 2010).

In the study using a digital-based visual activity schedule, participants were able to work ahead without waiting for teacher's instruction much the same way as typical students would proceed on their own (Hirano et al., 2010). The transitioning was improved as the teachers appreciated when the students learning to go straight towards their desk after from activities outside of the classroom (Hirano et al., 2010). Digital-based visual activity schedule was able to view positive impact on students' behaviour and that includes time-on-task and attentiveness, known to be two prerequisite skills for learning (Zamfir, Tedesco, & Reichow, 2012). The device has been confirmed to be useable by teachers within the confines of school setting to positively impact student behaviours that support academic and other important school related outcomes (Zamfir et al., 2012). One study had demonstrated the ability of students with developmental disorder (DD) to operate and customize the schedule according to their own choice of exercises (Uphold et al., 2014). The use of digital-based visual activity schedule was revealed to be able to provide children with ASD with a relevant task-management support in mainstream environments, such as classroom (Fage et al., 2014).

METHODS

The study is being carried out using qualitative study. This study is taking into consideration into the involvement of planning and organising using digital-based visual activity schedule that would hopefully enhance the quality of life and self-determination of children with special needs, in this case, children with autism. The theoretical study begins in with collecting and reviewing past and related researches. Samples involve 10 students diagnosed with autism of public schools in urban area and another 10 students with autism of public schools from suburban areas. The schools involved in the study were Sekolah Kebangsaan (SK) Raja Muda (Integrasi), Shah Alam and SK Puncak Alam 1. The

schools' status of city or rural was determined at the district office of education (PPD) in Shah Alam. Samples of SK Raja Muda (Integrasi) were labelled as Group A and samples of SK Puncak Alam 1 were labelled as Group B.

Field experiment to students in public schools through the use of FTVS in carrying out tasks assigned to them. Every student was required to complete a total of four tasks, which they have already mastered. These tasks include alphabetical activity, mathematical activity, creative arts and playtime. The students' engagement was analysed based on certain visible values that includes positive attitude, anxiety, confidence, interest, cooperation, engage in task performance, motivation, ability to perceive message, interaction with the application, and anticipation in action while performing the assigned task. Each visible value is recorded either as 'strong', 'present', 'less' or 'none', which then scored as 3, 2, 1 and 0 respectively to indicate stronger and weaker reaction.

FINDINGS

A mobile application was selected for the field experiment. First-Then Visual Schedule (FTVS) was installed in Samsung Galaxy Tab 4 to be used by the participants. FTVS was selected because this application contains multiple formats of customisable visual schedule for the users to choose based on what which format were they used to. This application adapted the conventional visual schedule into digital mobile application for ease of use. Occupied parents and educators do not have to print out, cut out or laminate the pictures or think about how to store the images nor do they have to think of an easy way to search for it later.

Table 1: Shows the engagement in task performance of students with autism of Group A while using FTVS.

Note: Strong = 3, Present = 2, Less = 1, None = 0

<i>Values/Participant</i>	A1	A2	A3	A4	A5	A6	A7	A8	A9	A10
Positive Attitude	3	3	2	2	3	2	2	3	2	3
Anxiety	0	0	0	0	1	0	2	0	0	0
Confidence	3	1	3	3	3	3	2	3	2	3
Interest	3	3	2	2	3	2	2	3	2	3
Cooperation	3	3	3	2	3	2	2	3	2	3
Engage	3	3	3	2	3	2	3	3	2	3
Motivation	1	2	2	3	3	2	2	3	2	2
Perceive	3	3	3	3	2	2	3	2	2	2
Interaction	3	2	3	2	2	2	2	3	2	3
Anticipation in Action	3	3	3	3	2	2	3	3	2	3

From the table, it can be seen that all students showed positive attitude towards the FTVS application with five out of them showed a very obvious positive attitude towards the application. Out of ten students, only two of them showed slight sign of anxiety while using the application. However, most of the students do not seem to have problem with their confidence, as seven of them seem to have a very high confidence level in performing the tasks. All of the students were seen to show interest in the application the first time it was introduced and continue to be interested during interaction with the application. The students showed average motivation in performing the tasks from instructions given through the application. Nonetheless, the visual instructions given through FTVS were understandable and students were able to perceive the message given. Students were also very anticipated in performing the tasks. Overall, samples in Group A gave a very positive response towards FTVS. Only one or two of them showed anxiety, lack of confidence, and lack of motivation while interacting with the application to complete the given tasks.

Table 2: Group B's engagement in performing tasks while using FTVS

Note: Strong = 3, Present = 2, Less = 1, None = 0

<i>Values/Participant</i>	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10
Positive Attitude	2	2	3	3	3	2	0	2	2	3
Anxiety	1	0	2	0	0	1	3	1	0	1
Confidence	3	3	2	2	3	3	3	1	1	2
Interest	2	3	2	2	2	2	0	1	2	2
Cooperation	2	3	2	2	2	3	0	2	2	2
Engage	2	2	2	2	2	2	3	2	2	2
Motivation	1	1	1	2	1	2	0	1	2	1
Perceive	2	3	2	3	2	2	3	2	2	2
Interaction	2	3	2	2	3	2	1	2	2	2
Anticipation in Action	2	3	2	3	2	2	1	2	2	2

Table 2 shows how participants in Group B that represents suburban area engage with their activities using FTVS application. From the table, positive attitude towards the application seems average and one student did not at all showed a positive attitude towards the application. The level of anxiety, although were not too high in number, still showed quite a worrying value with six of them showed at least slight anxiety. Despite the amount of anxiety showed, the participants showed a good level of confidence in tasks performance. Group B's motivation, however, were quite low with one sample who was not motivated at all during interaction with the application unless she was offered a her favourite reward. Interaction with the application was also good assisted with understandable visual that had made them able to perceive message given. This had lead to anticipation in action while performing the tasks.

Table 3 compares the engagements between samples from urban area and suburban area based on the result from both public schools and Figure 2 shows its difference of numbers between the two groups through every visible values. The difference in the findings is discussed thoroughly in the given grafts as shown in the figure. Even though the difference was not too broad, the environmental factor and exposure may be the cause of the gap.

Table 3: Score comparison between Group A and Group B in task performance engagement

<i>Values/Group</i>	A	B	Difference Number	in Comparison
Positive Attitude	25	22	3	A > B
Anxiety	3	9	6	B > A
Confidence	26	23	3	A > B
Interest	25	18	7	A > B
Cooperation	26	20	6	A > B
Engage	27	21	6	A > B
Motivation	22	12	10	A > B
Perceive	25	23	2	A > B
Interaction	24	21	3	A > B
Anticipation in Action	27	21	6	A > B

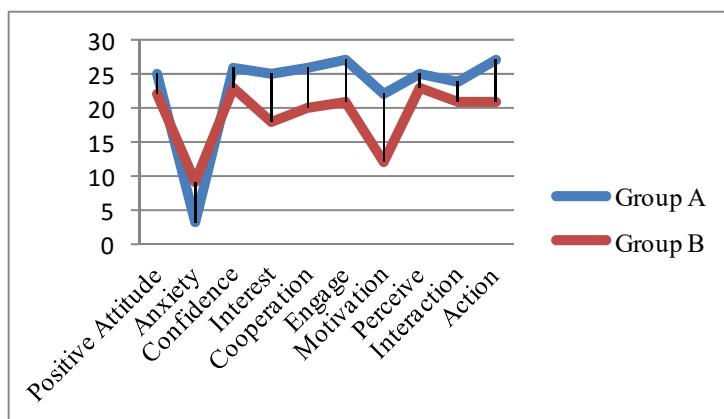


Figure 1: Difference in scores between Group A and Group B

As indicated in Figure 1, Group A seem to have performed a little better than Group B through every value. Samples from Group A showed that they have less anxiety as a group and were way more motivated in tasks performance than Group B. From the aspect of perceiving information, samples from both groups did not show much difference although Group A is better in understanding the visual instruction.

In terms of interest, too, Group A seems quite highly interested in the application while Group B was not too overwhelmed with the introduction to such application. Values like cooperation, engagement, and actions, although may seem to have quite a difference in the scores, they may still be considered within acceptable range. The rest of the other values such as confidence, perceiving information as well as interactions only showed slight differences although Group A had higher scores.

DISCUSSIONS

For some reason, children with autism's educational environments in Malaysia has been developing and evolve within conventional method despite the established findings that verified the effectiveness of digital medium in engaging and teaching children with autism. Although the effectiveness of visual support has been widely established, most visual supports were paper-based the preparation consumes time and efforts as well as requiring space to store the large amount of analogue images. PDA and digital-based visual activity schedules have shown significant convenience to individuals with ASD and their caregivers in enhancing children with autism's self-determination and independence. Digital-based medium may ease the use of traditional visual activity schedule for individual educational plan (IEP) by cutting the time and energy in preparing the tangible product. Visual activity schedule, when embedded into digital application, may be practical for student, educators and parents in both educational settings and home setting.

Students from urban area had shown a better motivation and engagement may be due to the environmental exposure in the way of life in their areas. Based on observations made during the first phase of the research, students from SK Raja Muda (Integrasi) were more exposed to learning through ICT compared to students in SK Puncak Alam 1. Thus, students from SK Raja Muda (Integrasi) showed better reactions toward the mobile application that was introduced to them. Lifestyle and family background may have effect on these findings too as the two groups reside from different family backgrounds with presumably different lifestyle. Lifestyle in one district may differ from the other too, so it could also be one of the factors.

The students' motivation showed the greatest difference in numbers. Although there are students from the suburban area that are quite motivated in interacting with the application, most of the students were not very much the same. On the other hand, students from urban area seems to be very motivated in engaging with the tasks while using the application. Still, students from both areas showed very good interaction with the ability to process information given through the application into action. Altogether, the samples from both areas were well engaged in the assigned tasks and response towards the application was well accepted. This study may be significant to design programs that will benefit the students from both areas.

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Conceptions Of Learning In Accounting

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ABSTRACT

The purpose of this study is to explore the conceptions of learning exhibited by accounting students in higher education context. The research approach is qualitative and the research method used is phenomenography. The data of the study is collected from 10 diaries and 14 interviews. The analysis uses a theoretical framework designed by Entwistle (2007) for classifying the conceptions of learning. The results reveal that there were two elements present at the same time: learning in the absolute sense, i.e., the experience of learning, and learning in the relative sense, which could be called the professional or expertise level.

1. INTRODUCTION

The conception of learning as such can be seen having importance on experiences in learning. However, there is no single generally accepted definition of learning. Differences between the traditions and constructs emerge both from theoretical backgrounds and from methodologies. Nonetheless, all traditions agree that experience is an important component of successful learning. No matter what the perspectives and scientific backgrounds are, there are certain common elements that they each would define as learning: something happens to the student and leads to change in behaviour. (Heikkilä & Lonka 2006; Marriott 2004.)

A conception of learning is defined by Tynjälä (1997; 1999) as a coherent system of knowledge and beliefs about learning and related phenomena. Research on conceptions proceeds along two broad lines: cognitively oriented studies of mental models and experientially oriented phenomenographic studies. Cognitive studies seek to uncover mental representations and changes in them. Phenomenographic research aims at capturing the different ways in which people understand and describe phenomena. In the background of many studies of conceptions is Piaget's assumption that conceptional learning resembles the development of scientific theories. It might be assumed that if students' everyday experiences of learning and studying are based mainly on situations that reflect the behaviourist view of learning, students' conceptions of learning develop in the same direction. Similarly, a learning environment based on the constructivist view may influence the students' views of learning in the direction of constructivism.

The constructivist view of learning is not a unified theory. Instead, it can be seen as a collection of diverse dispositions having some general common features. The theory assumes that the learner has a set of experiences. The model is based around the actions a learner takes to reorganize new information and beliefs into an understandable format. Learning is not seen as a passive receiving of information and knowledge cannot be simply transmitted to the learner. Instead, learning is achieved when the learner creates new internal meanings from newly presented information. Learning is a process of developing connections and new understandings rather than memorizing content. The learner's previous conceptions and beliefs about the topic create dissonance. This dissonance is resolved as new models are created to explain the incongruities in the learner's prior knowledge and understandings. Constructivism requires students continuously to develop their knowledge and understanding as they explore real-world problems for the first time. Learning is contextual in nature. Students taught with constructivist negotiate meaning from divergent perspectives to solve a problem. Teacher's role is to pose problems in realistic, meaningful contexts and to model behaviours that facilitate and ensure that learners attend to inconsistencies and errors arising in their mental representations. The teacher thus becomes a coach rather than a presenter of knowledge. (Smith 2004; Springer & Borthick 2004; Tynjälä 1997.)

Constructivist learning theory applies to learning at all ages but it seems to be especially suitable for advanced learners such as higher education level students. Since higher level educational institutions are communities for producing knowledge, it would actually seem paradoxical that instruction and student learning in a higher level educational institution would be dominated by the knowledge transmitting paradigm on learning accompanied by reproductive assessment methods. (Tynjälä 1997.)

Phenomenographic research deals with the content aspect of learning. Learners' conceptions of what learning actually is are considered crucial for the way in which students experience learning, and thus for what approach students adopt in specific learning tasks. Whatever phenomenon or situation people encounter, it is considered possible to identify a limited number of qualitatively different and logically interrelated ways in which the phenomenon or the situation is experienced or understood. In subsequent studies this recurring principle has been applied also outside the educational context. (Marton 1994b.)

Learning is considered a function of both student and context. There is a well-established and substantial body of research which supports the contention that students' approaches to learning are related to their conceptions of learning and their perceptions of teaching context. These approaches determine the quality of the learning outcome. Two major lines of research have contributed to this finding: phenomenographic research focusing on ascertaining students' conceptions and approaches to learning and the qualitative differences between both conceptions and approaches, and inventory-based research on students' orientations to studying. (Lucas 2001.)

Learning implies that the learners develop capabilities for experiencing situations and phenomena in certain ways. For every kind of situation and phenomenon it is possible to identify a limited number of different ways a situation or phenomenon can be experienced. The differences can be understood as critical aspects that define the situation or phenomenon as experienced. Therefore, students can be prepared for the unknown variation of situations in the future through experiencing variation in their education. (Bowden & Marton 2004.)

Indeed, a conception of learning encompasses an element of what, i.e. the object of learning, and an element of how, i.e. the way of going about learning or aspect of learning. In reality, students' descriptions seldom capture both dimensions. Building on the theories of Säljö, refined later by Entwistle, conceptions of learning can be described as a construct consisting of six different levels that create a hierarchy:

1. the increase of knowledge,
2. memorizing,
3. acquisition of facts and procedures that can be retained and used in practice,
4. abstraction of meaning,
5. interpretative process aimed at the understanding of reality, and
6. changing as a person. (Entwistle 2007; Lord & Robertson 2006.)

The first three categories position learning as something that is external to the learner. Learning is seen as a reproductive, functional, instrumental and quantitative process. Learning either just happens, or it is done by teachers and thus leaves a very passive role for the learner. The latter three categories that can be considered constructivist highlight the personal aspect of learning. Learning is something a student does in order to understand the world. Research has also shown that conceptions of learning are not stable characteristics of students, but the conceptions change over time and with different learning experiences as students proceed through their studies. (Byrne & Flood 2004; Lord & Robertson 2006.)

The first two and last two levels are usually relatively easy to understand and they are familiar. However, the two levels in between, i.e. the comprehension-learning level, are also crucial. Comprehension involves translation, interpretation and connecting newly learned and previously learned materials. At the rote level, students can recall the teacher's definition of a concept, but at the comprehension level, they develop their own meaningful and correct definitions, explain ideas and their importance and learn how to make predictions based on understanding ideas. This is the first step into critical thinking. One implication of the constructivist view of learning is that the development of students' conceptions of the phenomena studied is seen as a central learning outcome. (Brightman 2006; Tynjälä 1999.) According to Lindblom-Ylänne and Lonka (1999), many studies on learning have evidenced that the core concepts of learning are that knowledge and cognitive strategies are constructed by the learner, and that learning involves qualitative modification, not just the accumulation of new information in memory.

The purpose of this study is to find out how accounting students understand the conception of learning in the context of higher education and how the different conceptions can be classified. The research question is: What are the conceptions of learning of accounting students? The research method is phenomenography. It is a research approach designed to answer questions about thinking and learning. Phenomenography is concerned with the subjective study of human experience. It focuses on the different ways in which people experience, see, perceive, apprehend, understand and conceptualise various phenomena.

These different ways of understanding, or conceptions, are represented in the form of categories of description. A conception is the basic unit of description in phenomenographic research. (Marton, 1994a ; Marton & Pong, 2005.)

This article is constructed as follows. After introduction there will be the description of data, research method and analysis in chapter two. Chapter three handles the results and in chapter four there is a discussion.

2. DESCRIPTION OF DATA, METHOD AND EMPIRICAL ANALYSIS

Phenomenography can be classified as empirical study. The researcher is studying the awareness and reflection of the subjects. Phenomenography falls within interpretive research. It aims to describe experience collectively rather than individually and to focus on the differences rather than the similarities in this experience. Conceptions are regarded as being context-dependent and relational. (Leveson 2004; Lucas 2001; Marton 1994a.) The aim of phenomenographic research is to map the variation in ways of experiencing. What is important is the nature of the variation instead of how common or representative an experience is. The researcher must set aside any presuppositions about the nature of the phenomenon. It is also impossible to construct hypotheses or interpretative categories in advance or try to sample the material. Through exploring the different ways of seeing a phenomenon, a fuller understanding is developed. The variation becomes the object of research. Outcomes are represented as different ways of experiencing the phenomenon that include the structural relationships. (Lucas 2001; Tempone & Martin 2003; Åkerlind 2005.)

Individual interviews have been the most used method for collecting data but there are also phenomenographic studies where group interviews, observations, drawings, written responses, historical documents, artefacts and observations have been used as the main source of information. The number of interviewees is usually not very big. The individual is not the unit of analysis because it is possible that the same participant can express more than one way of understanding the phenomenon. (Marton 1994a.)

The data for the study was collected from two kinds of sources: 10 diaries in writing and 14 both group and individual interviews. The writing of learning diaries happened in a longer period of time (3-4 months). After the preliminary analysis of the diary data, five group interviews were recorded. There were always three people participating in a group except for one group that consisted of two people, so that the number of interviewed was 14 people in total. The sample in a phenomenographic study should be chosen for heterogeneity rather than for representativeness. This means that phenomenographic research outcomes do not enable generalisation from the sample group to the population represented by the group, because the sample is not representative of the population in the usual sense of the term. (Åkerlind 2005.) The interviews lasted from half an hour to one hour. The questions were semi structured and they had been formulated on the basis of the findings from issues that were raised in descriptions, or in prior interviews or in prior studies of the same kind. In the course of the interview, the researcher also questioned about new issues that were brought about.

The analysis process is iterative. It usually starts with a search for meaning or variation in meaning followed by a search for structural relationships between meanings. In the early phase, reading through transcripts should be done as with a high degree of openness for different interpretations. Subsequent readings are more focused on particular aspects. However, later readings are still open to new possible interpretations. Data is sorted and resorted, comparisons between the data are done and categories of description and defining relations between the categories are developed. The important point is the search for key qualitative similarities within and differences between the categories. (Åkerlind 2005.)

The first way of reducing the data is to distinguish between what is immediately relevant. This relates to the way of experiencing the phenomenon. The second step is to identify distinct ways of experiencing the phenomenon based on similarities or contrast effect. Then focus is shifted from the relations between the expressions to the relations between the groups. This is done in order to establish the critical attributes of each group and the distinguishing features between the groups. The researcher develops the set of categories of description. Using these categories of description it is possible to characterise the variation in ways of experiencing and understanding a phenomenon. There are logical relations between the categories of description. As they represent different capabilities for conceptualising the phenomenon, a hierarchy can be established. This complex of categories of descriptions is the outcome space. The categories of description and the outcome space are the main results of a phenomenographic study. (Marton 1994a.)

The analysis started with a search for meaning or with a search for variation in meaning. At this point, the main purpose was to find out what could possibly emerge from the data. Any predetermined ideas were dropped as much as it is possible to do so and the first reading was done with an open mind without any attempt to foreclose anything. The main point was in identifying similarities and differences in diaries

and interview data and the possible relationships between categories as a set rather than individually. Then it was supplemented by a search for structural relationships between these meanings.

The amount of material in one interview was very big. This is why excerpts or utterances that seemed to contain the key aspects that also were present in the larger transcript were selected, while irrelevant or redundant parts of the data were rejected. The number of interviews was restricted for the same reason. The whole readings process was iterative. The first readings were kept as open as possible. The analysis started with a search for meaning supplemented by a search for relationships between meanings. Then the emphasis was more focused on particular aspects. Even at this point, any new interpretations were considered possible. The material was sorted and resorted many times while the categories were developed and redeveloped at the same time. The main emphasis was in the search for key similarities within and differences between the categories. This meant that the quotes or utterances were grouped and regrouped according to similarities and differences on the basis of different criteria. This was done as long as the rate of change became very small. These selected quotes finally represented the data that was used for next analysis.

The next step was to look for a meaning that could be revealed by the quotes. This interpretation phase was also iterative and had to be done many times from different perspectives, because there were so many aspects present at the same time that looking at them all at once would have been impossible. The utterances were put in categories using the chosen theoretical model on the basis of their similarities.

3. RESULTS

In the learning diaries and interviews students defined what learning in general means to them. The variation in descriptions ranged from a mere accumulation of knowledge to more complex and abstract conceptions of learning. The way students experience learning are characterizations focusing on a certain aspect they consider important. For some students, regardless of what kind of wording they choose to express their definition of learning, learning represents knowledge and information that accumulates in function of time being spent in the education. In other descriptions there is the element of understanding added in learning definitions, which can be interpreted so that the student is not concentrating on the amount of facts and knowledge only, but also adding some personal processing or input. These descriptions very often introduce the concept of understanding, which in turn easily becomes opposed to the concept of rote learning. The higher levels of learning can be described as constructivist levels because they contain features that are in line with the constructivist learning theory like the elements of applying information, understanding the relationships between practice and theory and relating information to what the person already knows in advance. It seems plausible that any other key conceptions present in a learning process will be influenced by the fact how students understand learning. The learning conception thus has influence on how the roles of the learner and the teacher are seen.

FIGURE 1 Example of analysis

Increase of knowledge	Memorizing
<i>Learning is accumulation of new information.</i>	<i>Learning means that you know things deeply. If you have read and know by heart and you can repeat the whole book but you don't understand – it's not learning. It's memorizing.</i>
<i>Learning is about increasing awareness of things.</i>	<i>Good learning is about understanding, not just rote learning. You understand why you calculate it in a certain way and where everything comes from, not just by heart.</i>
Acquisition of facts and procedures that can be retained and used in practice	Abstraction of meaning
<i>Learning means that you are able to apply... and use the knowledge in different ways.</i>	<i>In a good learning situation theory and practice are combined and you understand why something is calculated a certain way.</i>
<i>Learning means that you learn new things deeply and can apply in practise if necessary.</i>	<i>Learning is about understanding new things. And that you can connect them with what you know already.</i>
Interpretative process aimed at the understanding of reality	Changing as a person
<i>Learning is realization and getting an experience of understanding. And a feeling that... like that you all suddenly use terms that once were double Dutch to you... I remember when I started here I understood nothing of anything but soon I realized I used the same terms and understood them all.</i>	<i>When I had completed accounting courses I finally dared to participate in the board of our housing co-op. Without these studies I wouldn't have had the courage.</i>
<i>Completing this grade I have learned plenty of new things. It's more about integrity, different standpoints and levels of observation.</i>	<i>I learned that I can learn new things.</i>

When defining learning in accounting on a general level, the learning definitions as such did not always necessarily reach the higher definition levels, but when describing the outcome of learning accounting at least at some point of time in the future or finally at the end of studies, it was easier for the informants to reach higher and more abstract definition levels. This can be interpreted so that even if the students' present conception of learning lacked sophistication, they were aware of more complex levels of learning and could see them developing in themselves in the course of time spent in higher education – or that they kept that as their ambition while recognizing that they had not yet attained that level.

Any individual's conception of learning is likely to have an influence on their perception of the key elements in learning. Basically, learning could be defined as changes in capabilities for experiencing and being aware of the object of learning. In this case the object of learning is accounting. The data also shows that, for students, learning something new about themselves or recognizing changes happen in the course of the studies was a key aspect of good learning. Also, students, when describing positive and good learning experiences, emphasized their willingness to learn for reasons that had something to do with their own personal development. This can be interpreted so that the upper the students had climbed the learning conceptions classification, the bigger their level of satisfaction was. Also, their ability to analyse themselves as learners and their ability to recognize the changes increased.

Defining the conception of learning as such was not the only important issue in learning. Also, it was important for the students to monitor the learning on the relational level; to define the acceptable level of learning as comparing to the level which students felt they should have acquired at that

specific point of their studies. The definitions varied as well as the attitude towards the possible deficiency experienced. If the acceptable level of learning was experienced inadequate, it could be a constant source of worries or it could be a fact that just had to be accepted being part of the learning process. In the definitions of learning there were two elements present at the same time: learning in the absolute sense, i.e., the experience of learning, and learning in the relative sense, i.e., the level of learning as comparing to what the learners believed they should have attained at some specific point in their studies or relative to outside expectations. This could be called the professional or expertise level. The former one can be seen linking to students' conceptions of what learning actually means to them. The latter one is more related to their conceptions of what they suppose learning means on the professional level and to external expectations concerning accounting expertise. This result can also be connected with motivational aspects. Learning in the absolute sense can be seen as having connections with intrinsic motivational aspects whereas learning in the relative sense can be interpreted as having connections with extrinsic motivational aspects.

The data shows that despite good experiences in explicit content learning, there may be huge deficiencies experienced in practical skills learning. Since there is knowledge that represents different levels of complexity and there are learning conceptions that also represent different levels of complexity, it can be assumed that these two depend on each other. In order to be able to master more complex knowledge students must at the same time develop more complex conceptions of learning.

4. DISCUSSION

If the definition of learning is not in line with constructivist conceptions of learning that are the three latter levels of Entwistle's (2007) model, it may have effect in how students experience learning of accounting and what their learning behaviours are like. If the students had proceeded to upper levels of learning conceptualizing, it seemed to increase their ability to analyse themselves as learners and to see the changes happening in themselves as learners. This awareness increases the ability of self-regulation in the learning process.

At the point when students are studying accounting, it is easier to master explicit knowledge, but practical knowledge is still on its way to develop. However, the answers show that students had formed a conception of practical knowledge they should attain, but since it represents a higher form of knowledge, probably requiring a more complex level of learning as well, it had not yet developed to its maturity. Self-regulative knowledge seems to be an important mediator in helping students to move from declarative knowledge levels towards practical knowledge levels.

Lucas (2001) states that the learning approaches are related to the conceptions of learning and perceptions of teaching. Thus, on the basis of these different notions of learning it can be stated that the ultimate aim in learning should be towards the top of the learning classification, taking into account that it might be necessary to go through the other steps or some of the other steps as well before this becomes possible. The first three levels describe learning as accumulation of factual information whereas the three upper levels describe learning as a process where students acquire knowledge they can use and apply in the future. The upper levels represent the meta learning level where students are aware of their learning and able to bring appropriate cognitive strategies in the learning situation and monitor their progress towards the established goals. Only the three upper layers represent learning as it is described by the constructivist learning theory.

The discrepancy between absolute and relative learning can be explained by the fact that knowledge manifests itself in many ways in learning situations, and some forms of knowledge are more easily attainable than others. Tynjälä (1999) says that expert knowledge includes formal or declarative knowledge, practical knowledge, and self-regulative knowledge. Such explicit and factual knowledge has traditionally played a major role in education, and as such it constitutes the core of professional competence. Practical knowledge, often called procedural knowledge, manifests itself as skills or knowing-how. While formal knowledge may be described as universal and explicit, practical knowledge is personal, intuition-like and difficult to be expressed explicitly. Self-regulative knowledge consists of meta-cognitive and reflective skills that individuals use to monitor and evaluate their actions.

The learning conceptions ranged from the very bottom level conceptions concerning increase and memorization of knowledge to more complex level conceptions concerning acquisition and abstraction and also to higher level conceptions including interpretation and personal change levels. The three last mentioned can be considered being relevant in the constructivist learning view. If learning is defined as abstraction, interpretation and changing as a person, as it is in constructivist categories, then it inevitably has some implications on how we define the learner and how we see learner positioning in

the learning process. Constructivist learning theories assume that a learner cannot be a passive recipient of information, but rather an active and participative partner in the learning process; someone who consciously takes well-grounded decisions concerning his own learning process.

However, it was not only learning in the absolute sense of the phenomenon that was seen important in the light of the data. In addition, learning on the relative level, i.e. in comparison with what we could call the expert or professional level, was an important part of the learning descriptions. The results of this study suggest that there could be a discrepancy between these two learning experiences. It is possible that personal learning experiences as such are good, but this does not yet necessarily guarantee that the students would judge themselves as being on the required level of expertise needed, for example, for working life purposes. Since the aim of accounting education is to produce future employees for a variety of accounting tasks, educators need to be able to improve the learning experiences also from the professional point of view. This is especially important because the standing of educational institutions with regard to society and business life has experienced a change towards a much less isolated position; educational institutions are expected to produce prospective work force for expert tasks and educational institutions' whole existence depends on their ability to fulfil this task given to them. It is thus possible to conclude that learning in the absolute sense is a necessary condition for good learning experiences but it is not a sufficient condition. In addition, good learning experiences with regard to the professional expert level are also needed.

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Design Of Open Content Social Learning That Increases Learning Efficiency And Engagement Based On Open Pedagogy

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ABSTRACT

Due to the rapid growth in Internet resources, mobile technologies and social media, teaching and learning are increasingly adapting to the notion that 'content is open; learners are social'. The learning materials are open but effective learning is challenging due to the explosion of unstructured content on the web. The effectiveness of learning on the web largely depends on the relevancy of the content and the learner's engagement. This paper's objective is to develop an Open Content Social Learning(OCSL) system, to compare different pedagogical strategies and algorithms on improving effective learning. This paper proposes an enhanced learner-centered online learning experience by matching the content based on learning goals, historical learning preferences and behaviors from other learners with similar goals to increase the learner interaction and engagement.

INTRODUCTION

Open Educational Resources (OERs) are teaching and learning materials that anyone can use and share freely, without charge. Since first being coined by UNESCO in 2002, the term Open Educational Resources has evolved to meet the fast pace of the change and the diverse contexts in which it has now been used (Bossu, Bull, & Brown, 2012). The worldwide OER movement is rooted in the idea of high quality education at no cost. The Cape Town Declaration (2007) states that “Educators worldwide are developing a vast pool of educational resources on the Internet, open and free for all to use. These educators are creating a world where each and every person on earth can access and contribute to the sum of all human knowledge. They are also planting the seeds of a new pedagogy where educators and learners create, shape and evolve knowledge together, deepening their skills and understanding as they go.”

Open learning enables learners to be self-determined and interest-guided. Stacey (2013) educators to “Go beyond open enrollments and use open pedagogies that leverage the entire web not just the specific content in the MOOC platform”. Learners are often unable identify which material is needed, useful, and required at their level. Hence, open content learning design must assimilate the material from various sources and provide a new pedagogy that is appropriate to the needs of today's learners (Smyth, Bossu & Stagg, 2015). This paper explains the design for an Open Content Social Learning (OCSL) system that leverages Open Content to deliver an adaptive and personalized experience accounting for the pedagogical needs of the learners and similar learners and the need to recommend learning activities in a pedagogically effective order.

RELATED RESEARCH

Learner's experiences with open learning do not always contribute to effective learning because some traditional pedagogical strategies are still being used. Over the past decade, researchers have investigated different pedagogical strategies for making the online learning environment effective. Sathiyamurthy & Geetha (2012) state that “The effectiveness of an e-learning system for distance education to a large extent depends on the relevancy and presentation of learning content to the learner”. In a recent study, Kim & Reeves (2007) showed that the increase in online courses has definitely helped to reach millions of learners, but the educational effectiveness of online courses is a subject of debate. Learning must be personalized based on the learner's goals and style and compared with “learner-like” learners (individualized and collaborative) as well as adaptive learning resources (organized and filtered), while considering motivation and engagement tools (Cheung, Lam, Szeto, & Yau, 2008). The goal of the adaptive presentation is to adapt the content to the user's goals, knowledge, and other relevant information. The architecture for an Adaptive Hypermedia System adapts the content of a hypermedia page to the user's goals, knowledge, preferences, and other user information for each individual user

who is interacting with the system (Stern & Woolf, 2000).

Another aspect of effective search and personalized results is consideration of the learner's profile. All learners are unique; no two will achieve the same learning outcomes across a range of subject areas. Clear guidance can be provided on the diverse learning needs of each student by collecting and continuously updating metadata that is stored for learners in user profiles. Chan (2000) describes that implicit profile creation based on observations of users actions has been used in more recent projects and describes the types of information that is available. This model considers the frequency of visits to a page, the amount of time spent on each page, how recently a page was visited, and whether the page was bookmarked. Paireekreng & Wong (2010) observe that prior knowledge of each learner's activity and an effective user profile is required for personalization. M.P. Cuéllar, M. Delgado, and M.C. Pegalajar (2011) have considered social networks to be a type of Learning Management System (LMS). Social Network Analysis (SNA) is conducted for teachers, learners, learning resources and their interactions. Vassileva, J. (2008) emphasizes that the two main goals of the design of social learning environments should be making them learner-centered and making learning more gratifying. In recent research, association rule-mining algorithms have been used to solve the problem of web page recommendations. A web usage log is used in adaptive association rule-based web mining, which attempts to personalize the results.

Research shows that effective learning requires the following:

1. Learner centric adaptive learning by personalizing with relevant content based on the learner's goals, style, habits and prior knowledge;
2. Learner centric social learning based on the goals, learning style and behavioral patterns of similar learners;

Current Open Content Learning systems include: OER Commons (Yoav Yair 2014, D'Antoni, S 2009), isseek.org (Bansal 2013), Project MERLOT (Malloy & Hanley 2001; Hanley 2015), OCW (Vahdati 2015) and mooc-list (Holotescu, Grosseck, Cretu & Naaji, 2014). Most of these systems are not personalized and do not provide adaptive content. Learners use these platforms as content viewers, and there is no engagement. They do not offer personalized content based on a learner's goals and prior knowledge. To overcome these limitations, the proposed work is to develop an Open Content Repository by consuming the OER content and personalizing the learning experience based on the learner's goals and activities and similar learners' learning activities.

Another aspect of effective search and personalized results is consideration of the learner's profile. All learners are unique; no two will achieve the same learning outcomes across a range of subject areas. Clear guidance can be provided on the diverse learning needs of each student by collecting and continuously updating metadata that is stored for learners in user profiles. Chan (2000) describes that implicit profile creation based on observations of users actions has been used in more recent projects and describes the types of information that is available. This model considers the frequency of visits to a page, the amount of time spent on each page, how recently a page was visited, and whether the page was bookmarked. The user's learning behavior is used to create user profiles in several systems. Paireekreng & Wong (2010) observe that prior knowledge of each learner's activity and an effective user profile is required for personalization. Open pedagogy could be considered to be a blend of personalized adaptive design, algorithms and technologies, and networking among learners, which makes the learning process effective and engaging.

OPEN CONTENT SOCIAL (OCSL) SYSTEM

This section summarizes the general overall system architecture and design of OCSL before discussing the individual modules in detail. OCSL is a personalized learning system represented in figure 1 uses complex algorithms to automatically learn a learner's interests with respect to learning activities. It then makes highly personalized content recommendations based on the goals, past activity and similar learners' activities.

Figure 1. Overview of the Learner-Centered Learning Experience leveraging Open Content.

Research shows that most of the Open Content learning platforms currently use standard search techniques by combining conventional information retrieval techniques that are based on page content, such as word vector space (Salton, & McGill, 1983), with link analysis techniques based on the hypertext structure of the Web, such as PageRank (Brin & Page, 1998) and HITS (Devi, Gupta, & Dixit, 2014). The PageRank algorithm (Brin & Page, 1998) attempts to provide an objective estimate of the Web page importance. However, the importance of the Web pages is subjective for different users. The true relevancy of a page depends on the interests, goals and existing knowledge of the individual users; a global ranking of a Web page might not necessarily capture the importance of a page for a given individual user. OCSL expands the scope of the search to generate more personalized results and greater learning engagement using the following two modules:

A. Offline Process:

1. The content manager reads the content (Crawling, API calls, Streaming API).
2. The content classification engine analyzes the content.
3. The system sends 20% of the content to the Natural Language Processing NLP API.
4. After categorization, the content is verified by Amazon Mechanical Turk through APIs.
5. The remaining 80% of the content is classified using the Naïve Bayes classifier (Patil & Pawar 2012) algorithm.
6. Once the content is classified with attributes (meta-data), it is loaded into the content index.

The content index indexes the attributes and stores it inside the Apache Solr container. This content index is updated periodically through an offline process.

2. Online Process:

1. The learner inputs his/her goals, learning style, and relevant content.
2. The pedagogy engine formulates the query to retrieve content in three ways, depending on the historical information and the learner's goals:
 - a. Conventional search using an inverted index and page ranking algorithm.
 - b. Improved results based on the Content Hierarchy and Learner attribute-based Matching (CHLAM) of the OCSL system.
 - c. Superior results based on CHLAM and Similar Learners Attribute-based Matching (CHSLAM) of the OCSL system.
3. Filter the content results.
4. Implicitly capture the learner's activity and use it as a feedback loop to apply to the learner's profile attributes.

Each module performs its defined function and exchanges information with other modules, as shown in figure 2.

Figure 2. System Architecture of the OCSL Work

The role of content discovery is to crawl open content from the Internet, i.e., the World Wide Web and social media, and to locate content to present to the user. The content manager is configured to collect content from three sources: 1. Crawling OER content sites 2. Streaming API against social media platforms 3. API calls against learning platforms such as MERLOT (Hanley, 2015), OER Commons, Gooru learning.

Content clustering entails grouping similar uncategorized documents together based on similarity measures. Content classification categorizes and organizes content by combining multiple methods of context-sensitive analysis. The clustering engine consumes content from multiple sources (Nutch Crawler, Federated API search, and Streaming API for social media feeds) and performs the following steps:

1. Alchemy's machine learning APIs (Quercia, Askham, & Crowcroft, 2012) are used for categorizing the content. OCSL uses the Taxonomy API to perform classification. The Entity API calls fetch the desired Internet web page, normalizes it, and extract named entities, topics, and other content.

- a. http://www.alchemyapi.com/api/taxonomy_calls/urls.html
- b. <http://www.alchemyapi.com/api/entity/urls.html#rurl>

Using the Taxonomy and Entity API, content metadata is updated in the Solr content repository.

2. As recommended by Wang, Kraska, Franklin, & Feng (2012), OCSL leveraged a hybrid human-machine approach in which machines are used to perform an initial, coarse pass over all of the data, and people are used to verify only the most likely matching pairs. OCSL integrates with the Amazon Mechanical Turk API to verify the classified content.
3. Using the Apache Mahout framework and Naive Bayes classifier algorithm (Patil & Pawar 2012), OCSL automatically classifies documents using a training set developed from the previous two steps. The training set includes documents that are already associated with a category. Using this set, the classifier determines, for each word, the probability that it reflects a document that belongs to each of the considered categories. To compute the probability that a document belongs to a category, the classifier multiplies together the individual probabilities of having each of its words in this category. The category that has the highest probability is the category that the document is most likely to belong to.
4. OCSL updates the content index engine with all of the taxonomy attributes (URL, content category, content sub category, content type, last modified, and many more).

The Dynamic Query Formulator is the core component of the OCSL system design. Most conventional search engines function with a search query that is limited and not as good as searching by phrases. The pedagogical engine uses a dynamic query formulator algorithm that was developed through this research to navigate a

learner's learning experience by analyzing his/her user interactions and prior learning knowledge on any given topic. The OCSL pedagogical engine also dynamically generates a query based on similar learners' learning experiences.

Learner Attribute-based Matching (LAM) enhances the conventional search experience by building a user profile to provide more personalized search results based on learning style, type of content, recent activity, content categories, or other interests of the users. To build an intelligent pedagogical learning engine based on attributes, this system ensures that both users and documents are tagged with the same types of attributes. We are implicitly and explicitly collecting information from learners about their learning behaviors, learning goals, and other criteria. Basically, the pedagogy engine is responsible for figuring out both the most appropriate way to construct the queries and which data to use in them to optimize the relevancy of the learner's learning experience. While a conventional search engine builds a sparse matrix of terms that are mapped to documents in the content index, OCSL enhances the design to map the user's behavior to those documents. The Learner Attribute-based Search enables the system to classify users and content into a hierarchy that goes from more general to more specific categories, but it is further possible to query this hierarchy and apply a stronger relevancy weight to more specific matches:

Learner Profile:{

MostLikelyCategory:"engineering.computerscience.artificialintelligence",

2ndMostLikelyCategory:"engineering.computerscience.datastructures",

3rdMostLikelyCategory:"engineering.mathematics.algebra", ... }

First, each category from a learner's profile can be broken into three terms in the query, with each term corresponding to a level of specificity in the classification:

(engineering.computerscience.artificialintelligence vs. . engineering.computerscience.datastructures vs. engineering.mathematics.algebra).

Second, each term is assigned a different query weight, with higher weights assigned to more specific terms. This arrangement serves the purpose of boosting the more specific (and presumably better) matches higher in the search results. Third, there are three distinct sets of queries, which correspond to the three potential classifications that are listed on a learner's profile:

(engineering.computerscience.artificialintelligence, engineering.computerscience.datastructures, engineering.mathematics.algebra).

The end result is that by using query weights on terms that combine a measure of their probability (most likely to least likely) and their specificity (most descriptive to least descriptive), a fuzzy query can be constructed to match documents that match any of the criteria; at the same time, it boosts documents to the top of the search results that match the best combinations of those attributes within the hierarchy.

The query parameter also allows the author to weight the fields differently. This parameter can be used to make a query match in one field more significant than a query match in another field.

$$qf = field_1^{v_1} + field_2^{v_2} + \dots + field_n^{v_n}$$

where qf is the Query Fields, and v is the weight for each field, based on the learner's goals and interests as calculated and applied dynamically. In our approach, we personalize PageRank scores by assigning weights to the fields based on matched goals and activities based on the learner and similar learners. At the query time, the user's profile matches with the corresponding personalized values.

By mapping the learning behavior of users to documents, OCSL system is effectively creating links in the index between documents. Klačnja-Milićević, Vesin, Ivanović, & Budimac (2011) recommended that similar users learn similar content, which means that documents that are mapped to similar users are likely related. To make use of these relationships to recommend learning items to a new user, we find other similar users and recommend other items. OCSL provides a mechanism to form a social network among the learners who have similar learning interests, preferences, and learning experiences based on the data collected. A learning group in OCSL is a group of learners who share common learning goals and mutually recommend learning content that meet those goals. OCLS uses User-based Collaborative filtering and Item-based Collaborative filtering (Drachslar, Hummel & Koper, 2008) to filter the learning content and recommend learning activities in a pedagogically effective order.

To evaluate our design, we conducted a Web crawl against Open Educational Resources (OER) and implemented a dynamic query formulator engine. We performed an experimental study that focused on Science, Technology, Engineering, Mathematics (STEM) engineering students. Our study explored the results of the

following three algorithms, to validate the idea of effective learning by personalizing the content results. The study lasted for almost three months. Learners were grouped into 15 groups.

1. Algorithm 1 – Basic search using inverted index and page ranking conventional algorithm
2. Algorithm 2 – Search based on the Content Hierarchy and Learner Attribute-based Matching (CHLAM) of the OCSL system
3. Algorithm 3 – Search based on CHLAM and Similar Learners Attribute-based Matching (CHSLAM) of the OCSL system

We asked each learner to use our OCSL system after they entered their goals and profiles into our system. We did not provide any information about the main goal of the system. The learners were expected to use the platform and learn based on their choice of preferences. A results page was shown with the recommended content based on the three different types of algorithms mentioned above. Figure 3 is a screen shot of the OCSL system.

Figure 3. OCSL System screen shot

TESTING APPROACH AND RESULTS

Comparing search results and recommendation systems is difficult. The best way to experiment with different relevancy parameters is to run A/B experiments that randomly divide users into groups over the same time period, with each group interacting with a different algorithm. Another common method for measuring the relative performance of algorithms involves generating test data and performing comparative analysis using the generated log data (Khosla, & Bhojane, 2013). To experiment with learning activities in detail, behavioral patterns were extracted from the log files and user activity database table.

There are two aspects of a search result set that determine the quality of the results, the precision and recall, as Powers and David (Powers & David, 2011) suggest. Precision is the fraction of the retrieved documents that are relevant. A precision of 1.0 means that every result that is returned by the search is relevant, but there could be other relevant documents that were not a part of the search result.

$$precision = \frac{|\{relevant\ documents\} \cap \{retrieved\ documents\}|}{|\{retrieved\ documents\}|}$$

Recall is the fraction of the relevant documents that are retrieved. A recall of 1.0 means that all of the relevant documents were retrieved by the search, irrespective of the irrelevant documents also included in the result set.

$$recall = \frac{|\{relevant\ documents\} \cap \{retrieved\ documents\}|}{|\{relevant\ documents\}|}$$

If all of the documents are retrieved, then the recall is perfect but the precision may not be good. On the other hand, if the document set contains only a single relevant document and that relevant document is retrieved in the search, then the precision is perfect but again the result set may not be good. This relationship shows a trade-off between the precision and recall, in which they are inversely related.

The F-score is a measure of a test's accuracy. It considers both the precision p and the recall r of the test to compute the score:

$$F_1 = 2 \cdot \frac{precision \cdot recall}{precision + recall}$$

In this approach, we can take previously saved user behavior data from log files and test how well each of the candidate algorithms predicts the results that were previously acted on by the users. In the case of OCSL, we take the list of search results for every search or recommendation run for the user and plot them in aggregate on a precision versus recall graph, showing whether the algorithm made the correct prediction based on the user's historical behavior. For example, the correct prediction might be defined in terms of which learning materials a user consumed, and thus, any query model that resulted in higher precision and recall for that learning content would be considered to be a better algorithm.

We analyzed the system logs and calculated the Precision, Recall and F-Score based on the learner's activity for each algorithm. In the following results table, each row indicates the aggregated result of a group of learners who interacted with the system. The Learning activity indicates the number of times each learner interacted with the system. The Total recommendations show the number of learning (retrieved) documents that were displayed to the learners, while the Total documents indicate the possible number of documents (relevant documents) that were related to the search.

Group #	# of interactions	# of recommendations	Total no. of documents	Precision	Recall	F-Score
1	12	510	17519	0.0235	0.0007	0.001368981
2	7	2939	15090	0.0024	0.0006	0.000927337
3	4	722	17307	0.0055	0.0002	0.000462127
4	9	560	17469	0.0161	0.0005	0.001029866
5	38	103	16993	0.0367	0.0024	0.004462451
6	35	146	17883	0.2397	0.002	0.003906686
7	99	172	17857	0.5756	0.0056	0.011026955
8	32	660	17369	0.0485	0.0019	0.00367795
9	4	459	17570	0.0087	0.0002	0.000455224
10	24	1609	16420	0.0149	0.0016	0.002918998
11	20	830	17199	0.0241	0.0012	0.002323015
12	77	876	17153	0.0879	0.0047	0.008937899
13	32	137	17892	0.2336	0.0018	0.003570632
14	30	168	16344	0.0178	0.002	0.003664306
15	51	80	17949	0.6375	0.0028	0.005666667

Table 1. Conventional search using an inverted index and page ranking algorithm

Group #	# of interactions	# of recommendations	Total no. of documents	Precision	Recall	F-Score
1	123	810	17219	0.1519	0.0074	0.014185215
2	160	616	17413	0.2597	0.0094	0.018209754
3	140	439	17590	0.3189	0.0081	0.015792442
4	120	218	17811	0.5505	0.0068	0.013384641
5	230	443	17586	0.5192	0.0132	0.025819488
6	230	266	17763	0.8647	0.013	0.025565498
7	211	612	17417	0.3448	0.0124	0.023939188
8	227	389	17640	0.5835	0.013	0.025409974
9	211	411	17618	0.5134	0.0121	0.023669303
10	220	409	17620	0.5379	0.0126	0.024663677
11	166	260	17769	0.6385	0.0094	0.018511291
12	121	120	16829	0.1008	0.0077	0.014277286
13	177	934	17095	0.1895	0.0108	0.0204956
14	156	303	17726	0.5149	0.0089	0.017447713
15	110	900	17129	0.1222	0.0067	0.012761761

Table 2. Search based on the Content Hierarchical and Learner Attribute-based Matching (CHLAM) of OCSL

Group #	# of interactions	# of recommendations	Total no. of documents	Precision	Recall	F-Score
1	298	330	17699	0.903	0.0169	0.033116631
2	199	260	17769	0.7654	0.0112	0.02215049
3	82	76	17953	1.0789	0.0046	0.009093429
4	120	140	17889	0.8571	0.0067	0.01332667
5	310	311	17718	0.9968	0.0175	0.034390947
6	215	217	17812	0.9908	0.0121	0.023853109
7	120	124	17905	0.9677	0.0067	0.01331484
8	307	330	17699	0.9303	0.0174	0.034099745
9	111	101	17928	1.099	0.0062	0.012306669
10	130	150	17879	0.8667	0.0073	0.014437226
11	144	166	17863	0.8675	0.0081	0.01599378
12	168	172	17857	0.9767	0.0094	0.018640777
13	141	146	17883	0.9658	0.0079	0.015645806
14	318	320	17709	0.9938	0.018	0.035280413
15	119	120	17909	0.9917	0.0066	0.013201686

Table 3. Search based on CHLAM and on Similar Learners Attribute-based Matching (CHSLAM)

Figure 4. Precision values for Conventional, CHLAM and CHSLAM of OCSL algorithms

Figure 5. Recall values for Conventional, CHLAM and CHSLAM of OCSL algorithms

Figure 6. F-Score values for Conventional, CHLAM and CHSLAM of OCSL algorithms

The data in the table represents aggregate precision and recall calculations that are based on the learners in 15 different groups. Table 3 shows that the learning groups that used OCSL with the CHSLAM algorithm had an effective learning experience by interacting with the system more than the user groups that used the OCSL with the conventional and CHLAM algorithms. The precision is calculated as $(\# \text{ correct matches}) / (\# \text{ total results returned})$, and the recall is calculated as $(\# \text{ correct matches}) / (\# \text{ correct matches} + \# \text{ missed matches})$. Although the precision and recall are not perfectly negatively correlated, there is a natural tension between the two in such a way that improvements in one often lead to declines in the other. The data from the table can be easily turned into a graph. All three tables are generated as graphs in Figure 4, Figure 5, and Figure 6, which show that the CHSLAM algorithm of OCSL generates improved results. The F-score shows an absolute score for an algorithm that strives for good balance between the precision and recall. Figure 6 shows that the learners engaged more successfully based on the CHSLAM algorithm compared to the CHLAM and conventional algorithms. The F-Score can be interpreted as a weighted average of the precision and recall, where an F-Score reaches its best value at 1 and worst at 0. The average F-Score value for conventional algorithm was 0.0034, and for CHLAM algorithm it was 0.0190 and for CHSLAM algorithm it was 0.0203. Based on the tests, CHSLAM algorithm yielded better F-Score results. To obtain a subjective evaluation of the OCSL system, we organized a non-mandatory questionnaire that collected information on learners with respect to the main features of the system. More than 65% of the learners reported that the system recommended personalized results and was able to focus on the correct content. Overall, the system showed remarkable improvement in self-learning. The learners were able to focus more time on studying the correct content and less time on searching for the content.

CONCLUSIONS

We presented a design and implementation of an end-to-end implementation model and conducted several experiments to test our system. Our system starts with a clustering engine that processes the content from various OER sources to properly map it to the taxonomy we built to support STEM (science, technology, engineering, and mathematics) content. It then generates personalized search results based on the content hierarchy (e.g., content type, content category) and learner attributes (e.g., learning style, recent activity). We took the learner experience from the logs and database and plotted them in aggregate on a precision versus recall graph, which showed whether the algorithm made the correct prediction based on the learner's historical behavior as well as similar learners' learning behaviors. Here, the precision and recall are not perfectly negatively correlated; there is a natural tension between the two in such a way that improvements in one often lead to declines in the other. We found that a search that was based on the historical learning of learners and similar learners' behaviors (CHSLAM of OCSL) yielded better F-Score results compared with the conventional search as well as a search based only on Content Hierarchical and Learning Attribute-based Learning (CHLAM). In the future, we plan to expand the system by creating peer groups with complex algorithms by leveraging similar learners' data from OCSL. We will explore extending the personalized mechanism and pedagogical aspects of OCSL to increase the engagement of learners by having the influencers and mentors interact with the peer group.

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Detail In Architecture: Between Art And Craft

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ABSTRACT

Architectural detail represents an important part of architecture. Not only can it be used as an identifier of a specific building but at the same time enhances the experience of the realized project. Within it lie the signs of a great architect and clues to understanding his or her way of thinking. It is therefore the central topic of a seminar offered to architecture students at the Brno University of Technology. During the course of the semester-long class the students acquaint themselves with atypical architectural details of domestic and international architects by learning to read them, understand them and subsequently draw them by creating architectural blueprints. In other words, by general analysis of a detail the students learn theoretical thinking of its architect who, depending on the nature of the design, had to incorporate a variety of techniques and crafts. Students apply this analytical part to their own architectural detail design. The methodology of the seminar consists of experiential learning by project management and is complemented by a series of lectures discussing a diversity of details as well as materials and technologies required to implement it. The architectural detail design is also part of students' bachelors thesis, therefore, the realistic nature of their blueprints can be verified in the production process of its physical counterpart. Based on their own documentation the students choose the most suitable manufacturing process whether it is supplied by a specific technology or a craftsman. Students actively participate in the production and correct their design proposals in real scale with the actual material. A student, as a future architect, stands somewhere between a client and an artisan, materializes his or her idea and adjusts the manufacturing process so that the final detail fulfills aesthetic consistency and is in harmony with its initial concept. One of the very important aspects of the design is its economic cost, an actual price of real implementation. The detail determines not only the physical expression, it becomes the characteristic feature from which the rest of the building is derived. This course motivates students to surpass mere technical calculations learned from books towards sophistication and refinement, pragmatism and experimentation, and encourages a shift from feasibility to perfection.

INTRODUCTION

"I do not want art for a few, any more than education for a few, or freedom for a few...What for do we have art if it cannot be shared?"

William Morris

'Arts and Crafts' art movement originated in Great Britain in the late 19th century as a backlash against the Industrial Revolution and its material and moral consequences of propagating machinery and machine production. The movement celebrated medieval, especially Gothic, artisan work and the return to manual production - craft, which alone was able to breathe life into manufacturing. Its leaders believed in a society that would bring benefits of their work to everyone equally, whether they were rich or poor - everyone had the same right to enjoy beautiful things. Their passion for equality was also applied to their approach to work; during construction the architect received the same respect as a craftsman as all work was equally important. Today, the opposite is often reality: the architect is in a position of a drafter with a honorarium below average. It is a consequence of large development corporations who at the behest of large profits look for ways to save money and forget the building's architectural value. Apartments in Medlanky, Czech Republic, are a living testament.

The main protagonist of the Arts and Crafts movement was William Morris. His followers were concerned about the negative social and aesthetic impact of the Victorian urbanization. The roots of the movement lay in the writings and work of architect and designer Augustus Welby Pugin (1812-1852) and

the Victorian artist and critic John Ruskin. His main book 'The Seven Lamps of Architecture' and 'The Stones of Venice' equate the quality of design to the quality of the society that produces it. He outlined an analogy between the decline and fall of the Venetian Empire and the socio - aesthetic changes in Victorian Britain. He called for the rejection of increasing material concerns of contemporary society and a return to dignified work in the preindustrial times.

Arts and Crafts contained a set of common principles. These included honest use of materials and construction methods as an antithesis to the use of new imitation materials and processes, inspiration by nature which is seen in the decorative motifs, and general commitment to the principles of craft rather than the industrial production. Followers of the movement founded small workshops in contrast to industry, revived old techniques, and honored humble household objects used before the industrial revolution. Arts and Crafts, as we understand it, is not an artistic style, rather it is a method of how we should look at art and make it accessible to wider audiences. Arts and Crafts emphasized *how* the work was created, rather than on its shape and function - many products contain, for example, obvious traces of hammer demonstrating authenticity and the use of manpower in conjunction with centuries-old tools. The motto of Arts and Crafts was 'Head, Hand and Heart' which explained the keywords to understanding their artistic movement - the head was embodiment of creativity and imagination, hand expressed skill and craftsmanship, and heart reflected the honor and love.

William Morris, the founder and main leader of Arts and Crafts, was not only an excellent painter but also designed textiles, stained glass and wallpaper, wrote books about the movement and held frequent lectures. Oscar Wilde contributed to the advancement of the movement, who during his travels across America in 1882 visited more than 120 cities delivering his insightful and rousing lecture 'The Practical Application of the Principles of the Aesthetic Theory's House Exterior and Interior Decoration, With Observations upon Dress and Personal Ornaments' (1882). One of the best architectural example of the movement is the Red House, Bexleyheath, Kent (now in Bexley), England, designed by Philip Webb for William Morris.

In general, details are used to identify important buildings and intensify the experience of space. Frank Lloyd Wright was known to have wanted to control every detail of his building, not just concerning the structure or architecture, but also his own custom furniture. This ensured that each element of the design worked together to create an aesthetic harmony with his original concept.

Architectural detail, honored by the Arts and Craft movement, can be highlighted in various ways: by a specific plot placement (*genius loci*), disposition, or by the actual architectural space. Architecture becomes perfect and complete only when the construction and detail support and highlight central design idea. 'God is in the detail', probably the most famous quote from equally famous architect Mies van Der Rohe, speaks for everything.

Today, this approach to creating detail is disappearing. Industrial production of specific building elements puts the architect in a decorator position where the architectural detail is selected from a product catalog; the detail is not created, only applied. The architect does not communicate with a craftsman and does not equal the importance of both professions. He or she does not select honest materials or even the best technology. The head, hands and heart are not reflections of creativity, skill, honor and love, that has died. Laziness and convenience replaced creativity, skill was replaced by industrial production, and honor and love disappeared without trace. The architect is not an architect anymore but a decorator.

Our approach at the Institute of Architecture is to implement a change at the very beginning of studies. Whether an architecture student eventually becomes an architect or decorator is the choice of the student. I dare say that none of us wants to be a decorator, but that is the harder path. Many architects do not strive to create detail but when they encounter it in a catalog, they adopt it and thus allow themselves to be manipulated. They consume products without prior motives. Their actions may cause unexpected consequences but they do not feel any responsibility because they are easily seduced by comfort when they find enticing information.

It is in detail that you recognize not only a good architect but also the method of reasoning. Therefore, the students in our seminar thoroughly study atypical details of the world's architects and apply

their acquired knowledge to their own proposals. The methodology is, in addition to practical exercises, supplemented by series of lectures, where the architectural details are supported by instruction in materials science and production: how particular materials are used, processed, which technology to use. Our course 'Architectural Detail' is ultimately part the students' bachelor's thesis allowing the students to bring the blueprint drawings of their detail into life through the production of a physical model. Based on their design drawings the students choose appropriate craftsmen, production process technology, and material. They are present during manufacturing and correct their proposal to scale with the actual prototype. We view it as a preparation for real life, where the architect stands somewhere between a client and an artisan. The architect materializes client's idea only through a close collaboration with the craftsmen ensuring aesthetic consistency with the primary design.

STUDY

Students learn theoretical thinking of domestic and foreign architects who, if they want to break into technical detail, must become designers first and find a common ground with a variety of crafts. The students then apply this analytical part to their detail proposal during their studio design class. The methodology of our course "Detail in Architecture" includes practical exercises supplemented with series of lectures. Topics of these lectures include analysis of various architectural details as well as new and unusual materials and technology. Some of our previous topics included contemporary detail in architecture, Arts and Crafts, Avant-Garde, properties of materials and their expressive possibilities, traditional and new materials, cladding, balconies, loggias, expansion joints, roofs, porches, windows and sun visors, doors, gates, shop displays, landscaping, roads, paved areas, fencing, columns, pillars, walls, partitions, ceilings, floors, joints bearing structures, stairs and elevators, built-in fixtures, visible technical building equipment, media distribution.

During practice sessions students work out various tasks: the first graphics sheet introduces the detail of the building or an architect, and is processed digitally. Second task is to study the historical detail without a specified author, for example as in forging functionalist windows or a Gothic window and its partitions, and is processed in the form of architectural sketches. The third task is to consider a dialogue between architecture and art, or a work of art in architecture. The aim of these tasks is to acquaint the students with the theoretical thinking of the architect.

Architectural detail is also part of the students' thesis. Besides giving the students an opportunity to select their own materials and production process and establishing a close relationship with either a manufacturer or a craftsman, the students are urged to consider economic aspect of production and the final cost of detail implementation. Detail does not only determine the material expression of the construction but also the final cost. Its quality and sophisticated embodiment are characteristic features which shape the entire project, and therefore have an important place in the design process. This class leads students to discover their inner ingenuity and sophistication free from mere technical calculations studied from books, it leads them to pragmatism and experimentation, and creates a shift from simple feasibility to perfection.

CONCLUSIONS

Our architectural ancestors realized that the relationship between a problem and its solution lies not only in the chosen architectural form and technique, which they perfected and passed from father to son, but also in a timely order of material application. Speculations that negate the need to know our history and argue the unfeasibility of using ancient practices to solve modern day problems are not appropriate. Sometimes seemingly intractable challenges are eventually solved with a simple approach. We are grateful for the rich heritage of our ancestors and at the same time advance our understanding of architecture further. Architecture is in the detail. An uncomplicated detail is better than one requiring demanding solutions that lead to loss of identity, a challenging design, and high cost. In other words, complications often equal wastefulness.

"God is in the details" .. In conclusion I dare to paraphrase the quote of the renowned architect Ludwig Mies van der Rohe: If God is in the details then why not preach 'religious enlightenment'. This enlightenment has been praised by our students themselves as well as practicing architects who often select their future colleagues select from among our students.

‘Every architecture detail created by an individual is unique. The moment a detail becomes universal it becomes obsolete and must therefore always be different, made irreplaceable.’

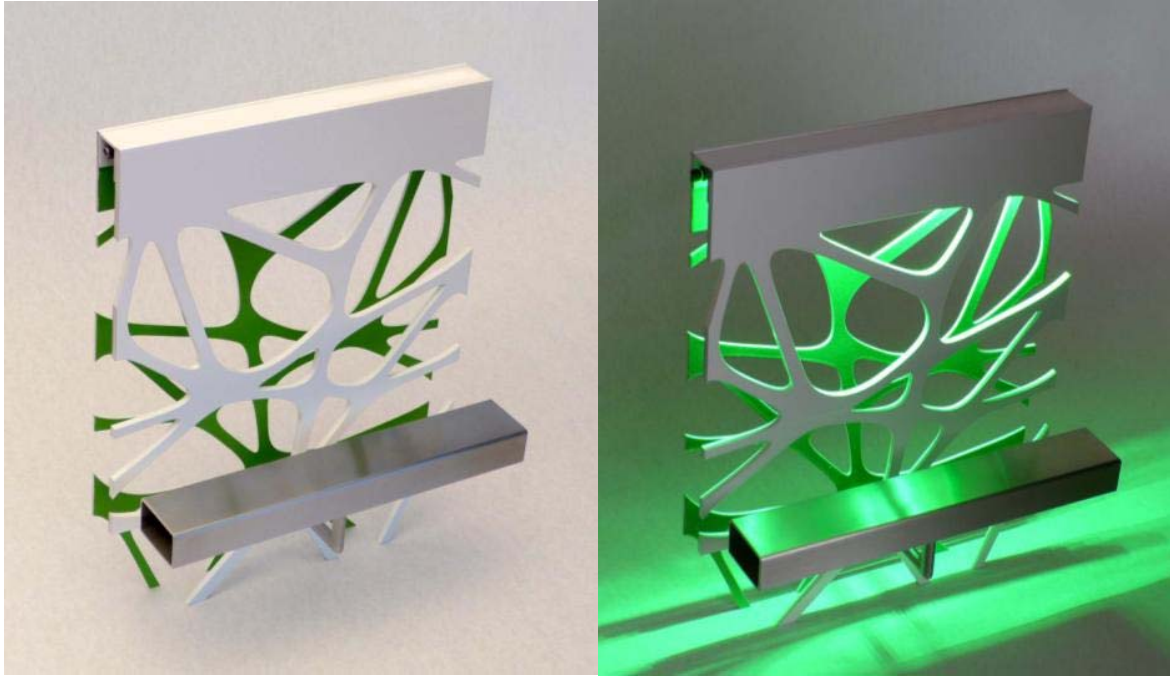
Juraj Dulencin



Fragment of the façade / *wood, stainless steel - inox* / student Michal Bělovský



Fragment of the staircase handrail / *maple, glossy varnish* / student Inka Matoušková



Fragment of the staircase handrail / *painted steel, stainless steel - inox, led light* / student František Novák

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Development Of Project-Based Blended Elearning Courseware Model For Enhancing Teachers' Ict Skills In 21st Century

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ABSTRACT

The objectives of this research were to: 1) develop the e-Learning Courseware Model of Project-based Blended Learning for development of ICT skills for teachers in the Office of Basic Education Commission Schools. The research sample included of 40 teachers in 8 schools in Nakornnayok Province in Thailand. They were using stratified sampling technique from 4 districts. The research instruments composed of ICT for Teacher in 21st Century Model (ICT4T-C21), the basic data survey forms for teacher and model evaluation form for experts. This research methodology composed of 3 steps. There were the synthesis of courseware development of teachers' ICT skills on project-based and blended learning, survey the readiness and facilities of teachers for Online Learning, ICT4T-21C Model development, and focus group interview that purposively selected 8 representative experts in educational technology and instruction. Statistics were analyzed by percentage, mean, standard deviation, and qualitative content analysis. This study revealed the following research findings: 1) the results of survey and analysis of teacher readiness on project-based blended learning including face to face and online learning were mostly possible in their office and home, 2) the ICT4TC21 was constructed with main 3 components which were ICT skills of teacher in 21 century, project-based learning, and blended learning, and 3) results of the expert's focus group interview showed the results of expert's evaluation on the ICT4T-C21 Model were found appropriately at a good level.

Keywords: Project-based Learning, Blended Learning, Model Development, ICT Skills, 21st Century.

INTRODUCTION

In nowadays, the technology is emerged and grew fastly but education could follow new technology very slow due to the teachers and learners could not learn a huge of knowledge. Teachers must have skills to learn the information technology faster, as well as the facilitators for managing the learning process to follow up the technology and innovation transferring. Blended learning are a great way to initiate an organization into e-learning. Using blended learning benefits the learner, the training staff and the organization's bottom line. Blended learning allows organizations to gradually move learners from traditional classrooms to e-learning in small steps making change easier to accept. Working in a blended environment enabled instructors and instructional designers to develop the skills needed for e-learning in small increments (Driscoll 2003). As well as the Project-based Learning (PBL) is an innovative approach to learning that teaches a multitude of strategies critical for success in the twenty-first century. Students generally work in small, collaborative groups in the project-based learning model. They find sources, conduct research, and hold each other responsible for learning and the completion of tasks. Essentially, students must be "self-managers" in this approach to instruction. (Mergendoller, J. & Thomas, J. 2000). The teacher training in ICT skills possibly integrated using both blended learning and project-based learning for enhancing the competence of teacher under the eLearning Courseware.

In Thailand, Office of Basic Education Commissions have a policy for in-service teacher training project on ICT Learning Enhancement for Teacher but a problem of teachers occurred when teacher were leaving their class to train outside their schools. So, they could not maintain full-time class teaching along the whole period. This problem brings about the idea of using blended learning for training teachers by using eLearning Courseware to enhance the teachers' ICT skills in 21st Century. The project-based learning process also could come to integrate the learning process, so that they could do the learning and teaching innovation practicing by group collaboration in school and home to match with their teaching current subject. Consequently, they could avoid for leaving their class presence. This research, therefore would to develop the model to train teachers' ICT skill in 21st Century in

Nakornnayok, a central Province in Thailand in the first phrase. The appropriate model would be used for developing eLearning Courseware for training teachers and investigating the effectiveness of this eCourseware with the teachers in the next phrase.

THE STUDY

The research sample included 40 teachers in 8 schools in Nakornnayok Province in Central Thailand. They were sampling from 4 districts by using stratified sampling technique: Muang, Ongkarak, Ban-na and Pakphee District. The sample was selected from 2 schools in each district, so the sample composed of 40 teachers from 4 districts. The research instruments composed of: 1) ICT for Teachers in 21st Century Model (ICT4T-C21), 2) two basic data survey forms for teachers and the computer Lab of each school and network services unit in 8 schools, and 3) an evaluation form for the experts in participating of the Focus Group techniques by 8 experts. Data were analyzed by percentage, mean, standard deviation, and qualitative on content analysis.

The ICT4T-C21 Model was developed in the first phrase by synthesizing the engaged theory and the output of the surveys on 4 aspects. There were ICT for Teachers in 21st Century, eLearning Courseware development, Blended Learning, and Project-based Learning. Then, the ICT4T-C21 Model was created as the prototype model. After the focus group among the experts had been conducted, the model was evaluated by using the specific evaluation form. Then, the researchers had revised model for using with the teachers in the next phrase.

FINDINGS

The result of the survey from the teachers in the respective school of Nakornnayok Province revealed that the readiness and needs of the teacher participating in e-Learning project concerning training schedule should be in the office day or during summer vacation. Training venues could be at school or the other places where they could use computer and internet. They needed to learn ICT and practicing in various topics as this follows: internet searching, media design, the communication systems and the computer application; teaching and learning innovation mostly in the modern technology and the data collection on the information technology, ICT skills development, how to use the program in searching and social network. The teachers mostly required to learn in the information literacy, information accessibility, credibility evaluation and how to use and manage the information in their life style and their careers.

The result of the survey about the teachers' ICT skills by self-assessment in the respective school showed ICT skills of the teachers that they had almost these following competencies in moderate level such as how to use communication and network connection (3.05), ethical and law in accessibility (2.95), how to use technology for research system approach, evaluation and information communication (2.90). Moreover, ICT skills of the teachers on innovation in each competencies revealed that the innovation creation (3.00), Innovation development (2.97), and innovation evaluation (2.85). This data implied what they should to train about ICT skills for teaching and media production techniques.

In case of computers and internet connection, half of the schools had upper 30 computers in school. Almost of them could use the internet connection from private Internet providers. Internet speed was mostly in moderate level and some school had a problem in unstable internet.

ICT4T-C21 Model Development

ICT4T-C21 was a Model which the researcher team had developed from the research synthesis and basic survey results. The model had been revised after focus group by experts. The main purpose of this model was to find out how to train teachers to use ICT in teaching and learning in 21st Century. Teachers would be able to enhance their skills to design the pedagogical techniques, and the instructional media to apply ICT with the learner's characteristics both in individual and group collaboration through eLearning courseware. They could learn by self directed experiences, group dynamics and hand on practicing. Therefore, learning with ICT supported could be applied for life-long learning. The new learning strategy would combined the new media and eLearning methods in which face to face and online learning would be employable under projected-based learning.

This model, therefore brings about the blended learning integration with e-learning courseware by using project-based learning technique to develop teachers' ICT skills. It would be new effective learning format in combination the face to face and electronic media under online and offline learning. The current teachers could learn continuing wherever in school and their home whenever they could learn. Consequently, it was not any

problems for them to leaving from teaching responsibilities in class.

Figure 1 showed results of ICT specification in the teaching and learning process of teachers and learners in 21st Century. The process of Learning was combination of project-based learning and Blended Learning (**PBL + BL**). Blended Learning plus project-based learning on the e-Learning Courseware were the key performances in developing teacher ICT skills to construct learning of the students in 21st Century. This ICT4T-C21 model, therefore composed of 3 main components. There were ICT skills for teacher in 21st Century, Project-based Learning (PBL), and Blended Learning (BL) for ICT skills development under this following formula.

$$\text{ICT4T-C21} = \text{PBL} + \text{BL} (\text{F2F} + \text{OffLL} + \text{OnLL})$$

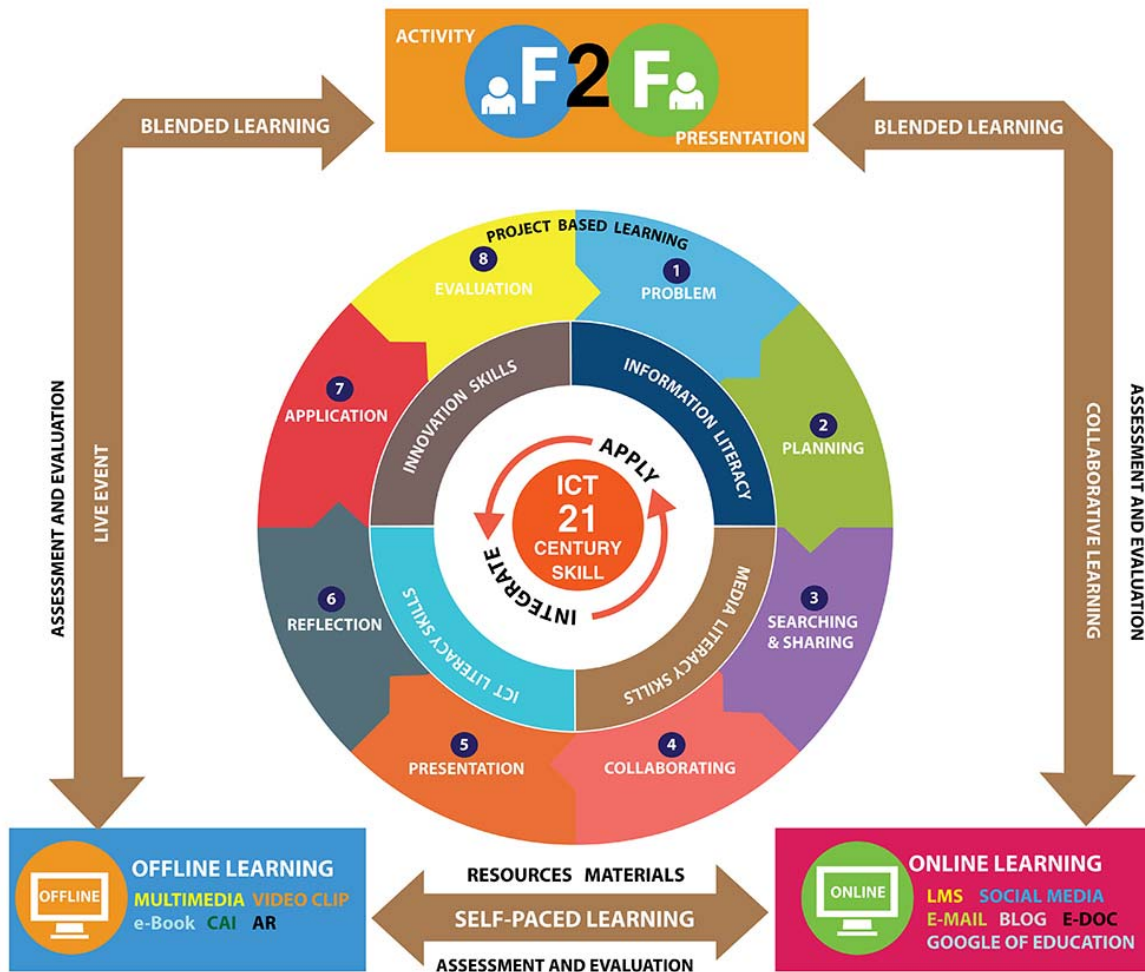


Figure 1 ICT4T-C21 Model for learning ICT in 21st Century

Component 1: the ICT Skills for Teachers in 21st Century



Figure 2 Component 1: ICT Skills for Teachers of ICT4T-C21 Model

Figure 2 showed the **Component 1**, ICT skills for Teachers in the 21st Century which presented four Teacher's ICT skills (IMII), teachers and students should have the skills in hardware and software utilization to update the technological advancement. Especially, the various applications which were useful for their careers would affected to ICT skills of the students in every levels because teachers' ICT competency would applied to the students in developing and using innovation, including how to use some devices and tools sufficiently in each substantial subjects. This components would composed of four teachers' skills. These were information literacy skills, media literacy skills, IT literacy skills, and innovation skills. Teachers could integrate and apply for using these four skills in their life styles and careers. **Skill 1 Information Literacy** composed of accessibility information, credibility assessment and information usability. **Skill 2 Media Literacy Skill** composed of media construction, message design, media analysis, ethic and law. **Skill 3 Information and communication technology literacy skills** composed of ICT accessibility, communication network and connectivity, system approach and evaluation. **Skill 4 Innovation Skills** composed of teaching and learning innovation construction teaching and learning innovation development, and evaluation.

Component 2 Project-based Learning (PBL) for ICT Skills Development



Figure 3 Component 2: Project-based Learning (PBL) for ICT Skills Development of ICT4T-C21 Model

Figure 3 showed the **Component 2** Project-based Learning (PBL) for ICT skills development. Project-based learning could applied the media using both online and offline to facilitate and strengthening ICT skills through project assignment by group working of the learners. This component required the project-based learning process of 8 steps applied to the scientific methods. The learners had to understand the principles and steps of learning project management of face to face (F2F) and online media application both online and offline learning. The process of project-based learning in component 2 was designed for group activities as this follows: 1) problem selection, 2) project planning, 3) teaching and sharing, 4) collaborating, 5) project presentation, 6) project reflection from works, 7) project application, and 8) project evaluation.

Component 3 Blended Learning



Figure 4 Component 3: Blended Learning (PBL) for ICT Skills Development

Figure 4 showed the process of blended learning between online and offline environment. Teaching under offline situation, the learners could not connect to the computer network, or internet accessibility, therefore they were in the non-accessible network environment. Learners might get the electronic media on mobile formats, for example handy drive, CD, DVD, multimedia, video clip, electronic book, CAI, Augmented Reality (AR), infographic with still and animation. On the other hand, the blended teaching may be use online learning media. In this situation, learning systems in multimedia on internet and social media were used for searching information and knowledge and exchangeable information unlimited time and location. Eventually, online media utilization for learning ICT of teachers had to compatible with the network and the learners. Blended Learning for this model integrated online and offline media by using Learning Management Systems (LMS) as the central connection through synchronous and asynchronous learning.

In conclusion, this model appointed that the learning systems on blended learning and project-based learning for teachers must have the assessment and evaluation in every steps both in formative evaluation and summative evaluation. In formative evaluation process, teachers could be applied into 3 steps. There were assessing the learning environment, planning and designing blended instruction and constructing and testing the blend. For summative evaluation, could be applied to find out the final output and outcome in ICT skills. Tools and techniques could be applies as tests, quizzes, exercises through observation and level of satisfaction.

The Focus Group Results on the ICT4T-C21 Model

From the focus group activities of 7 experts, they had recommended about ICT4T-C21 Model that the model should explained more on learning management plan, content, learning activities, management tools, and assessment tools of the program. Moreover, the appropriate teacher groups to sharing experiences among them should be arranged in the PBL. The skills measuring instruments had to construct by using criterion scale with rubrics score techniques.

In case of offline and online eLearning courseware design, the experts pointed that face to face activities might be integrated into the workshop training techniques and the engaged online resources to teach how to apply the appropriate tools for learning such as Google app for education and mobile application for teachers. The formats of online learning should be clear on the learning objectives, contents in each learning units and communication activities among the participants. Most of experts accepted that the ICT4T-C21 Model was overall acceptable and appropriate at a high level.

CONCLUSIONS

From the basic surveys to the teachers in schools belong to the Office of Basic Education Commission revealed that they needed the good quality of computer and internet utilization for courseware learning and ICT practicing for skill development. Most of them needed to training on ICT skills, especially the media production with more internet stable requirement in school. They were ready to learn in school-based and home-based training as BL process and they needed to work on a group project-based learning for ICT in school office and home. The ICT4T-C21 that composed of 3 components, ICT skills for teacher in 21st Century, Blended Learning and Projected-based Learning in the eLearning Courseware integration were acceptable by the experts to use for eLearning Courseware design in next phase.

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Discussing The New Audience In Turkey In The Example Of University Youth: An Area Study

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ABSTRACT

Change of point of view related to visual quality has made explicit the intervention and participation of the audience towards technological developments and cultural structures revealed by the change in technology. The new audience has become an identity which sends limited messages to a homogenous audience in temporal terms, gives feedbacks to TV channels, beyond the individual displaying an active cognition towards the message; transforming his targets of previous periods due to numerous messages and resources into the power of interpretation, choosing his own messages, pointing out the subjectivities between the sender and the receiver by separating from the whole. For that reason, in this study, by looking through the perspective of the audience answers have been looked for about how they received broadcast contents of a new generation born into a commercial and thematic broadcasting especially after 1990, around which contents they contrite on, from which aspects they differentiate from the traditional audience. The questionnaire which has been prepared within the scope of an area study towards the crowd called “New Audience” has been applied and their tendencies have been pointed out.

KEYWORDS: Television, New Media, New Audience

INTRODUCTION

When we define the concept of communication as the individuals who would like to get into an interpersonal relationship, and as an integrated expression of their cultures and the situation that they are in; it has been seen that the dominant one in ways of communication is mass media, the dominant one in manners of communication is target-oriented approach. The fact that it is visual quality which gains today’s communication paradigm a socio-cultural quality results in a transformation of symbols, products and individuals into a mediated message. In today’s world, where consumption has become visual and symbolic, the position of media against power and authority has been presented as an undeniable fact. However, contrary to that assumption, politicians have been using media to manipulate public opinion, business world encourages the use of media as a way of marketing and purchasing through advertisements and social power actors try to activate media as an element which makes free time seem ideological and colonizer. Beyond all these, media, with its attributed characteristic called the ‘forth power’, expresses that it inspects authority groups and plays a balancer role between the powers for the sake of public opinion and civil society. But today, being under the domination of visual quality the manner of media that is presenting the audience and being put into the social relations functions for the benefit of dominant relations.

The fact that individuals establish the objective conditions of social environment they live in with their own acts and in return their orientation with the determination of their behaviours and opinions by those structures they established in the level of practical consciousness are important with regards to making sense of the new audience coming with the visual quality. Developments in communication technologies enable new flows and access opportunities besides traditional one-way information transmission, and it subjectifies the content by coalescing with sense-making. (Livingstone, 2005:17)

Traditionally, although media has been considered one of individual’s socialization means throughout almost the entire twentieth century, in today’s world, new communication technologies have been read as a part of individualism and subjective psychology. This has been the first discussion point that established the concept of the new audience: the audience, by getting free of objectivity in respect to socio-psychological aspect, has stepped in a process of becoming an actor which has been put into a specific position. In Morley’s terms “the notion of mass culture in the shape of audience who passively consumes belongs to the past”. In addition, audience ethnography-reception studies has come out as a stance against not only Durkheimian concept of system which is internally self-sufficient and the expression of collectivized individuals emerging from cultural values, but also the structuralist approach which assumes that the meanings of the texts are within those texts. Reception studies often emphasize that the issues such as semantic discussions and shifts have nothing to do with the absolute social groups, and that they occur according to different context and situations. Beyond all these, that which text or which part of the text the audience encounters on TV and chooses to be interested in, and they create their own meaning sets by this way have become prominent in the discussions of new audience.

DISCUSSING THE NEW AUDIENCE IN TURKEY IN THE EXAMPLE OF UNIVERSITY YOUTH

Beyond all the interpretations that define physical and spiritual conditions, university youth which we can define as the natural extension of industrialization process has appeared in the last century as a new social category with the result of urbanization, educational reforms and cultural developments. In pre-industrial societies, children, teenagers and adults were living in the place, carrying out similar activities and duties in daily life and the teenagers were like miniature versions of adults in the society. As a result of industrialization and urbanization processes, activity and behaviour spaces of teenagers and adults started to become separate. This transitional process which has been defined as a threshold between childhood and adulthood can progress slowly or fast according to existent social and economic conditions (Neyzi, 2004). For example, it is known that city-dwellers and educated class experience a longer period of youth; in relatively poor and countryside areas transition from childhood to adulthood is shorter in Turkey.

According to modernization sociology, youth is a process in which the individual prepares for his/her future adult life and tries to connect with extensive socio-cultural structure and set of values. The role of academic education in individual's foundation of connection with his society is an indisputable fact. University education will, on the one hand, prepare young individuals for professional life by educating them about the subjects that the society needs, on the other hand, it will become a source for mental transaction –and social transformation- by creating an appropriate discussion platform for social development. The society young people are living in is sensitive to these necessities related to constructing youth politics and family's behaviours in daily life, equally, young people's fulfilling their developmental duties becomes easy. (Atikkan ve Tunç, 2011; Onat, 2010; Toruk, 2008) The approach of modernism towards the youth –especially young people at university- as an autonomous period puts young people in a process of having their own culture. This, in a sense, has come out of the necessity that young people would like to express themselves; because youth is a period when the necessity of identity achievement is intense. The fact that young people are intentionally kept apart from society's production and decision-making process in this same period made it inevitable for them to construct protest sub-culture groups which are reorganized outside of youth's dominant cultural taboos (Ercins, 2009). The practice which directs the youth transformed into sub-culture groups and is efficient upon their behaviours is university education. In Europe and United States, especially after the World War II, that university education became available for every segment of society enabled the break of discussion taboos and helped people coming from different economic, social and political ranges construct a common meta-structure. Since the second half of the 1960s, youth culture has been shaped rather around the cultural movements against the dominant political actors. During the period after 1980, youth made a claim to global discussions such as postmodernism, feminism and eco-criticism, and started to adopt a new strategy which carried their own stance and agency from the streets to the electronic communication channels. From the point of view of twenty-first century's youth, having high qualities of communication technologies and using media is as important as – maybe more important than- participating in academic education processes.

AREA STUDY: FINDINGS AND EVALUATION

Within the scope of the carried out area study, that research population is too big to measuring the statistics caused pursuing non-parametrical measures rather than parametrical scaling. The fact that the research design has been built upon the assumption that is “the main population of the new audience is the university youth” made it obligatory to include only those young people who are still continuing their university education. Participation of formal education students who are continuing their 4-year under-graduate programs in the area study which was assumed to be directing the new audience group has been grounded on; students of associate degree programs, open university education and different distance education programs were not included in the sample. Accepting the fact that the level of homogeneity is high in the topics of university youth's watching habits and the way they use media, it has been calculated that in order to have a 95% of validity level (research population) among 4 million respondents in 5% of confidence interval, the sample should include 384 subjects. (NCS Pearson, 2013) As 563 volunteer students of undergraduate programs from different cities have been included in the study sample between 24 January and 12 March, (simple coincidental sample) sample validity in terms of statistics has been exceedingly achieved. The descriptive characteristic of the area study requires to be designed as a survey search (survey based on quantitative measurement) and university youth's watching habits to be executed through the prepared questionnaires. (TÜİK, 2013)

All 563 participant students of the area study are university students, 340 of them are male (60.4%), 223 of them are female (39.6%). Average of age is 21.3, subjects range between 18 and 35. 7 participants are 18 (1.3%), 72 of them are 19 (13.2%), 141 of them are 20 (25.8%), 102 of them are 21 (18.6%), 98 of them are 22 (17.9%), 62 of them are 23 (11.3%), 34 of them are 24 (6.2%), 19 of them are 25 (3.5%), 4 of them are 26 (0.7%), 3 of them are 27 (0.5%), 2 of them are 29 (0.4%), 1 of them is 30 (0.2%), 1 of them is 34 (0.2%), 1 of

them is 35 (0.2%) and 16 of them did not answer the question. Looking at the marital status of the participants, 561 of them said they are single and 2 of them said they are married. All the participants stated their profession as 'student'.

Within the scope of the area study, university students have been asked about how many hours on an average they watch TV per day; 531 students answered this question. The period of time university students watch television programs is 2 hours 47 minutes on an average per day. Similarly, they have been asked about when they most often watch TV during the day; 58.72 of 547 students who answered this question stated that they watch TV between 21.00 and 24.00 which is also called 'the prime time'. The average time of participants' watching TV is seen in Table 1, the period of time they mostly watch V during the day is seen in Table 2.

Table 1. Daily Average TV Time Tracking of Research Group (N=56)

Daily Average TV Time Tracking	Frequency (Frekans)	Percent (%)	Daily Average TV Time Tracking (Hour)	Frequency (Frekans)	Percent (%)
1 hour	142	26.7	6 hour	15	2.8
2 hour	117	22.0	7 hour	5	0.9
3 hour	107	20.2	8 hour	4	0.8
4 hour	95	17.9	10 hour	1	0.2
5 hour	43	8.1	12 hour	2	0.4

Table 2. The Most Frequently Watching TV Time Period of Research Group in Day (N=563)

The Most Watching TV Hours	Frequency (Frekans)	Percent (%)	The Watching Most TV Hours	Frequency (Frekans)	Percent (%)
06:00-09:00	8	1.5	18:00-21:00	127	23.2
09:00-12:00	25	4.6	21:00-24:00	321	58.7
12:00-15:00	23	4.2	00:00-03:00	23	4.2
15:00-18:00	18	3.3	03:00-06:00	2	0.4

While 24.7 % of the area study participating of university students said they regularly follow TV programs (139 participant), 75.3 % of student (424 participant) stated that they couldn't follow regular programs. 559 of students had responded to questions most preferred kind of TV programs, the preferring to programs are shown distributions frequency in table 3.

Table 3. Most Preferred Type of Program TV of Research Group (N=563)

Program Type	Frequency (Frekans)	Percent (%)	Program Type	Frequency (Frekans)	Percent (%)
News programs	204	36.5	Competition programs	21	3.8
Spor programs	101	18.1	Open Session	11	2.0
Series	98	17.5	Art and Culture Programs	9	1.6
Movies	45	8.1	Magazine programs	6	1.1
Music programs	35	6.1	Reality Show	4	0.7
Entertainment programs	25	4.5	Total	559	100.0

Field research within the scope of university students whether you watching television alone with other people? directed question, 559 students (99.3 participant) in graded scale are shown given their responses distribution in table 4.

Table 4. Watching Experience of Television Programs (N=563)

Statement	Frequency (Frekans)	Percent (%)
Always alone	23	4.1
Most of the time alone	93	16.6
Sometimes alone sometimes with others	318	56.9
Most of the time along with other people	114	20.4
Always along with other people	11	2.0
Total	559	100.0

Research group directed who determines preferences for television programs at home? To question responded 511 university students (%90.8).

Table 5. The Preferences of Television Programs Regarding Makers (N=563)

Statement	Frequency (Frekans)	Percent (%)
I define myself	346	67.7
My parents define	95	18.6
My friends define	41	8.0
My siblings define	27	5.3
My partner define	1	0.2
My children define	1	0.2
Total	559	100.0

556' s of university students the scope of research expressed the view "*There are a place indispensable in our live*" related to judgment. The frequency distribution of the opinion the study group are shown in table 6.

Table 6. Place in Daily Life of Television (N=563)

Judgment	Frequency (Frekans)	Percent (%)
Strongly agree	39	7.0
Agree	135	24.3
Undecided	75	13.5
Disagree	198	35.6
Strongly disagree	109	19.6
Total	556	100.0

Table 7. Contribution of Personality Development to Television Programs (N=563)

Judgement	Frequency (Frekans)	Percent (%)
Strongly agree	15	2.7
Agree	184	33.1
Undecided	113	20.3
Disagree	156	28.1
Strongly disagree	88	15.8
Total	556	100.0

556's of university students in research group stated view "*I watch on television mobilization my desire to be like characters of television programs*" related to judgment. The frequency distribution of the opinion the study group are shown in table 8.

Table 8. The Role of Transfer Character Television Programs (N=563)

Judgement	Frequency(Frekans)	Percent (%)
Strongly agree	17	3.1
Agree	117	21.0
Undecided	60	10.8
Disagree	219	39.4
Strongly disagree	143	25.7
Total	556	100.0

557's of university students in research group stated view “ *Television programs help to me determing my lifestyle*” related to judgment. The frequency distribution of the opinion the study group are shown in table 9.

Table 9. The Effect on Lifestyle of Television Programs (N=563)

Judgement	Frequency (Frekans)	Percent(%)
Strongly agree	7	1.3
Agree	145	26.0
Undecided	93	16.7
Disagree	217	38.9
Strongly disagree	95	17.1
Total	557	100.0

Table 10. The Impact of Preferences on Eating and Drinking Television Programs (N=563)

Judgement	Frequency(Frekans)	Percent(%)
Strongly agree	7	1.3
Agree	170	30.5
Undecided	56	10.1
Disagree	204	36.6
Strongly disagree	120	21.5
Total	557	100.0

Table 11. The impact on Dressing Preferences of Television Programs (N=563)

Judgement	Frequency (Frekans)	Percent(%)
Strongly agree	14	2.5
Agree	230	41.3
Undecided	52	9.3
Disagree	171	30.7
Strongly disagree	90	16.2
Total	557	100.0

Table 12. The Impact on Emotional Relief of Television Programs(N=563)

Judgement	Frequency (Frekans)	Percent(%)
Strongly agree	24	4.3
Agree	187	33.6
Undecided	91	16.4
Disagree	166	29.9
Strongly disagree	88	15.8
Total	556	100.0

556's of university students in research group stated view "*I watch television to increase level of education and knowledge*" related to judgment. The frequency distribution of the opinion of the study group are shown in table 13.

Table 13. The role of Individual Happiness of Television (N=563)

Judgement	Frequency(Frekans)	Percent(%)
Strongly agree	26	4.6
Agree	110	19.7
Undecided	114	20.5
Disagree	173	31.1
Strongly disagree	134	24.1
Total	557	100.0

Table 14. The Role on Individuals Psychological Distress and Contribution Leisure Time to Case Television(N=563)

Judgement	Frequency (Frekans)	Percent (%)
Strongly agree	119	21.4
Agree	294	52.7
Undecided	34	6.1
Disagree	55	9.9
Strongly disagree	55	9.9
Total	557	100.0

Table 15. The Role of Education and Knowledge Level of Television Programs (N=563)

Judgement	Sıklık (Frekans)	Yüzde (%)
Strongly agree	32	5.8
Agree	220	39.6
Undecided	72	12.9
Disagree	143	25.7
Strongly disagree	89	16.0
Total	556	100.0

557's of university students in research group stated view "*I watch television to learn about the facts* related to judgement. The frequency distribution of the opinion of the study group are shown in table 16.

Table 16. The Role Access Fact of Television(N=563)

Judgement	Frequency (Frekans)	Percent (%)
Strongly agree	32	5.7
Agree	234	42.0
Undecided	77	13.9
Disagree	128	23.0
Strongly disagree	86	15.4
Total	557	100.0

540's of university students in research group stated view shaped expressed and as open end by categorized “*_____ Television programs effect my preferences regarding to choose*”. The frequency distribution of the opinion of the study group are shown in table 17.

Table 17. The Role of Social Statute on preferences Television Programs Open End Data(N=563)

Category	Frequency (Frekans)	Percent (%)
Nobody Effect My Preferences	212	39.3
Publicity And Advertisement	61	11.3
My Social Environment	56	10.4
The Subject Experts	56	10.4
My Friends	42	7.8
My Parents	42	7.8
My Siblings	18	3.3
Famous People	16	3.0
Rating Rates	15	2.8
My Partner/My Darling	12	2.2
Other People	8	1.5
My Children	2	0.4
Total	554	100.0

Table 18. The Role of Social Statute on Preferences Television Programs (N=563)

Judgement	Frequency (Frekans)	Percent (%)
It always effect	30	5.4
It frequently effect	150	27.1
It sometimes effect It doesn't' t sometimes effect	172	31.0
It doesn't' t always effect	105	19.0
It never effect	97	17.5
Total	554	100.0

555's of university students in research group stated view “*My past experiences effect my preferences regarding to television programs*” related to judgement. The frequency distribution of the opinion of the study group are shown in table 19

Table 19. The Role of Past Experiences on Preferences Television Programs(N=563)

Judgement	Frequency(Frekans)	Percent (%)
It always effect	24	4.3
It frequently effect	152	27.4
It sometimes effect	220	39.6
It doesn't t sometimes effect		
It doesn't t always effect	78	14.1
It never effect	81	14.6
Total	555	100.0

554's of university students in research group stated view “*Television Programs have a content of make gender based discrimination*” related to judgement. The frequency distribution of the opinion of the study group are shown in table 20.

Table 20. The Level of Gender Apartheid in Television Programs(N=563)

Judgement	Frequency (Frekans)	Percent (%)
Strongly agree	79	14.3
Agree	137	24.7
Undecided	134	24.2
Disagree	167	30.1
Strongly disagree	37	6.7
Total	554	100.0

556's of university students in research group stated view related to judgement. “*Television Programs have a content directing violence of society*” The frequency distribution of the opinion of the study group are shown in table 21.

Table 21. The Impacts Router of Violence Television Programs(N=563)

Judgement	Frequency (Frekans)	Percent (%)
Strongly agree	108	19.4
Agree	263	47.3
Undecided	101	18.2
Disagree	76	13.7
Strongly disagree	8	1.4
Total	554	100.0

556's of university students in research group stated view related to judgement “*Television Programs have a content cause of destroy the family structure*”. The frequency distribution of the opinion of the study group are shown in table 22.

Table 22. The Negative Effect to Family Structure of Television Programs (N=563)

Judgement	Frequency(Frekans)	Percent (%)
Strongly agree	138	24.9
Agree	232	41.9
Undecided	121	21.8
Disagree	61	11.0
Strongly disagree	2	0.4
Total	554	100.0

554's of university students in research group stated view related to judgement "Television programs have a negatively content affecting moral development of children". The frequency distribution of the opinion of the study group are shown in table 23.

Table 23. The Negative Effects on Moral Development Children of Television Programs

Judgement	Frequency (Frekans)	Percent (%)
Strongly agree	152	27.4
Agree	302	54.5
Undecided	58	10.5
Disagree	32	5.8
Strongly disagree	10	1.8
Total	554	100.0

554's of university students in research group stated view related to judgement "*I use social media to get rid of daily life from stress*". The frequency distribution of the opinion of the study group are shown in table 24.

Table 24. The Effect Repellant from Stress of Social Media (N=563)

Judgement	Frequency (Frekans)	Percent (%)
Strongly agree	61	11.0
Agree	300	54.2
Undecided	73	13.2
Disagree	87	15.6
Strongly disagree	33	6.0
Total	554	100.0

554's of university students in research group stated view related to judgement "*I think that wasted my time on social media*". The frequency distribution of the opinion of the study group are shown in table 25.

Table 25. The Effect Time Consuming of Social Media (N=563)

Judgement	Frequency (Frekans)	Percent (%)
Strongly agree	54	9.7
Agree	189	34.1
Undecided	151	27.3
Disagree	107	19.3
Strongly disagree	53	9.6
Total	554	100.0

548's of university students in research group stated view related to judgement "*I prefer that more access to television contents from social media*". The frequency distribution of the opinion of the study group are shown in table 26.

Table 26. The Access from Social Media to Television Media (N=563)

Judgement	Frequency (Frekans)	Percent (%)
Strongly agree	48	8.8
Agree	202	36.9
Undecided	132	24.1
Disagree	134	24.4
Strongly disagree	32	5.8
Total	548	100.0

552's of university students in research group stated view related to judgement "*I think that easier participant and comment of contents in social media*". The frequency distribution of the opinion of the study group are shown in table 27.

Table 27. The Interpretation and Participation from Social Media to Television Content (N=563)

Judgement	Frequency (Frekans)	Percent (%)
Strongly agree	93	16.8
Agree	308	55.8
Undecided	104	18.8
Disagree	33	6.1
Strongly disagree	14	2.5
Total	552	100.0

CONCLUSION

Although media has been considered one of individual's means of socialization almost throughout the whole twentieth century, in today's world new communication technologies have been read as parts of individualism and subjective psychology. This has been the first discussion point that shaped the concept of new audience: the audience, by getting free of objectivity in respect to socio-psychological aspect, has stepped in a process of becoming an actor which has been put into a specific position. In Morley's terms "the notion of mass culture in the shape of audience who passively consumes belongs to the past". In addition, audience ethnography-reception studies has come out as a stance against not only Durkheimian concept of system which is internally self-sufficient and the expression of collectivized individuals emerging from cultural values, but also the structuralist approach which assumes that the meanings of the texts are within those texts. Reception studies often emphasize that the issues such as semantic discussions and shifts have nothing to do with the absolute social groups, and that they occur according to different context and situations. Beyond all these, that which text or which part of the text the audience encounters on TV and chooses to be interested in, and they create their own meaning sets by this way have become prominent in the discussions of new audience. (Morley, 1986, 161-163)

Within the scope of this study, the university students who we define as the "new audience":

Change of point of view related to visual quality has made explicit the intervention and participation of the audience towards technological developments and cultural structures revealed by the change in technology. (Mullan, 1997, 34) The new audience has become an identity which sends limited messages to a homogenous audience in temporal terms, gives feedbacks to TV channels, beyond the individual displaying an active cognition towards the message; transforming his targets of previous periods due to numerous messages and resources into the power of interpretation, choosing his own messages, pointing out the subjectivities between the sender and the receiver by separating from the whole. The audience has melted the differences and individuality in the pot of technological developments and tries to perceive and interpret the content which coalesces with the flow. While technological developments reveal new relationalities in which the audience uses media as both channel and environment, this situation brings out new expansions in the mind of the audience. Individuals become active to the extent that the media allows for their opinions and refers to the truths of their own. The individual as an audience builds and reprocesses media messages not only by him but also "with the others".

Advertisers (and advertisement agencies with advertisement industry consisting advertisement designers) who make social relations directed and reproduced with visual-audial images in the formation of the new audience, media companies that provide the settlement and operability of broadcasting system, institutions like Radio and Television Supreme Council (RTSC) that make the system sustainable, and audience measurement institutions like AGB which has been defined as the supporter of validity and reliability in broadcasting have a dominant position. The relations between these corporate structures and the relation between each structure and the audience require the questioning of the assumption of audience preference subjectivity.

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Effect Of Education To Society Culture In The Digital Age

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ABSTRACT

Nowadays which learning one come forward more than teaching, we can define students as digital natives and teachers as digital immigrants. Therefore, reconsidering of educational administration have become an obligation with these student and teacher profile which have chaged in new age. As the major factor of education teachers have to be aware of the changing characteristics of students in the classroom, otherwise this will bring many conflicts. The purpose of this study is to explain the the effect of the education to community culture in the digital age, and the features and concepts of the digital natives and digital immigrants for an effective classroom management. . In addition, on the basis of these concepts is to determine how an effective classroom management should be. . this article is based on literature review. The domestic and foreign publications on the subject were reviewed and suggestions were made in accordance with available data.

Keywords: Community Culture, Social Change, The Digital Age, Digital Native, Digital Immigrants

Introduction

In today's world of rapidly change, the education system of society, faced with new educational paradigms developing and changing global and on a national basis. Actual unable to keep up with the changes and development of society and society's education systems remain in a difficult situation. Societies with adapting to the new paradigm of education must fulfill the age requirement. In parallel with the changes and developments in the culture of the society, according to the aims and objectives of education it is possible to have effective educational system.

As a requirement of the digital age, the subject and authority in the face of societies with other societies in the field of education systems are advantageous. In today's world of digital natives in the society needs analysis and relevant components of the education system is gaining importance in the change and development of society. The digital era education management is one of the features must be available in the education manager. The education manager the digital age, the era of the supposed topic of the changing and developing technology and knowledge of the field are aware of the advantages and disadvantages of following these developments and changes is a person who has a sense for the impact on the culture of society.

Humanity has encountered several massive transformations throughout the history. This massive transformation is the first of the soil and the transition to settled life, the second is the transition to an industrial society, and the third is the transition to the Information Society. There has been a change in society, developments in information and Communication Technology (Sütcü and Akyazı, 2005).

In parallel with the development of technology to conduct the education also experienced change has given effect to the idea of individual learning. Education and teaching rather than acting teacher-centered which has become independent of the physical environment can be executed (Tuncer, 2007).

Education is one of the basic needs of the individual and society. Societies need to have their qualifications aims to educate individuals, the individuals in society are trying to improve themselves in accordance with the norms of the new world order to meet this demand. This development is made possible by restructure the country of education and teaching programs. Communities are issues that led to these changes (Kaya, 2002:8 trans. Tuncer, 2007).

- The obligation to provide educational services to a large audience at the same time.
- Individual differences cannot be taken into account.
- Individuals can be determined from the amount of information they need.
- Failure to submit the appropriate methods and techniques of information.
- It requires a lot of time of the transfer of information.

In our age, we encounter with teaching and learning technologies at all levels of Education. Computer and information technology; education, economy, trade and health has set standards such as on many parts of our lives (Cepek and Hnojil, 2005).

Information is changing so fast, the skills of being dumped, but many teachers and even educational institutions are not possibly reach the rate. Education is one of people's most natural right. In our age, too much time is spent in education. Education encompasses a large part of life. However, the demand for education, so it is not possible to meet outside of educational institutions (Hernes, 2003). Today's employment conditions are regulated according to their individual skills and the current state of knowledge.

The technological development of technical skills as a result of the changed or former these skills in the direction of the inclusion of training demand cycle compartment as continuous learning continuous education defending possible approaches may be invalidated. Computer and want candidates to address these deficiencies identified by the use of online learning with the Internet emerges as a new education trend (Tuncer, 2007).

Technology is making great strides in advanced societies and the underdeveloped societies to increase the distance between the causes. Despite all this, the technology in the true sense of what that is yet save what is lost is not fully known (Tuncer, 2007).

Constantly changed under the influence of objective conditions of humanity, as a result, the transformation of perception and attitude has created generations of passing. Twenty and twenty-first century as a result of rapid social change, the differences between generations become more evident (Izmirlioglu, 2008, p.42).

Change is the truth of our age, despite the fact that individuals, organizations and Societies tend to the protection of the habits. The philosophy of each generation, culture and habits are different. Therefore, these conflicts are taking place and affects all systems of the generational conflicts. "Generation Z" as they are defined today's elementary and secondary students educated in a digital environment. Various aspects according to the characteristics of this generation are mentioned. In this process, the first two, the basic concept has emerged. The first concepts of "digital native" and the second "digital immigration" is called (Arabacı and Polat, 2013).

Digital Natives

According to Prensky (2001: 3) in short today's young generation, about children growing up in a network environment can be used to express a concept that asserts that there was a difficulty. But then, this in-depth, working as an expert, the most appropriate naming scheme for this generation of the digital language by main language (Native speaker) motion to be spoken of as a "digital native" (digital native) stated that he thought to be it was appropriate. Prensky, new technologies for the generation growing up with that uses the "digital native" for generation is a concept nowadays widely accepted to qualify this concept.

In general, the digital native concept of the new millennium, or the Millennium (year 2000 or later) is called learning and is used to describe the age of the students. So from a very young age, and was born into a world of technology-based technology that improves language learning in a technological and met with them to new-generation students are called digital natives. (Prensky, 2001a, 2001b; Oblinger and Oblinger, 2005; Pedro, 2006).

Digital natives were born and are in harmony with the virtual environment, and it is accepted that the ties. So the difference between digital natives and digital immigrants, Internet/digital world is based on the perception of using; however, when this distinction is made only in the definition of the digital native culture is not restricted to more powerful prospective study of the age structure (Fritsch, 2010 trans. Çetin and Özgiden, 2013:4). Born after 1980, digital tools and environments located at the center of life, technology is one of the necessities of everyday life think that a lot of unique languages and in this digital world, digital natives, came into the world with today's technology and the work environment that can be addressed through new technologies that can play all over the day for the twenty-first century of children can to be said (Karabulut, 2015).

Digital natives use technology, learning activities, and especially for social and communication purposes (Lei, 2009 to trans. Günüş, 2011: 2). Digital natives can easily adapt to new technologies, and who aren't afraid to make a mistakes when using it or disturbing of the tool and technology with the re-launch, knowing that he might return everything to its former state, the individuals that use technology in a more comfortable way (Richei, et al. 2009: trans. Günüş, 2011:2).

According to Prensky (2001) digital natives have also changed the patterns of thinking. Prensky (2001), "neuroplasticity," the brain is the ability to shape itself against various stimuli) by pointing to the findings of

their research “experiences different types of brain structures unleashed” and “the brain is changing and according to the entry that receives the self-organized in a different manner” suggests. Indeed, in an experimental study of 12 to 15-year-old girls who played Tetris for a period of three months taken in the aftermath of the game in brain imaging (MR), which is an indicator of the amount of grey matter in the brain, the thickness of the cerebral cortex (cortical thickness) changes have been observed (Prensky, 2001, trans. Haier et al. 2009: 6).

We examined digital natives of using technology, it is observed that for five different reasons. These (Walcott, 2010, trans. Bilgiç et al. 2011: 4):

- Personal interest or pleasure,
- Social communication,
- Daily use (Information storage or access to information),
- Professional work,
- College/study.

Research regarding digital natives as a result of the information they need, which is easily accessible for any subject is observed. Members of this group to come together with people they've never met before in an online environment see it as a natural situation, and through sharing information with each other about these environments are more likely than older generations show that. In this context, learning the properties of digital natives can be explained in the following manner (Bilgiç, et al. 2011:4):

- They want quick access to information,
- Prefer a graphic instead of text,
- Random read an article in capsules instead prefer to read in a linear fashion from start to finish,
- They prefer games instead of serious work,
- Cognitive structures are not parallel rows,
- They want to do many jobs at the same time,
- They want to learn by exploring,
- Quick access to information they want,
- Prefer a graphic instead of text,
- Instead of reading an article in a linear fashion from beginning to end, the capsule in case of random read prefer.

These factors for digital natives access to information at the point of over speed, it can be argued that it is important for visuals and entertainment. Information reaching the desired speed can reach during the phase, and visual elements, and hosts that wish to have entertainment in a way that it is observed. For a long time because deal with more than one topic on the network are not considered in the focus of a topic. This has created a generation that is changing the cultural and structural changes in addition to new social relations, identity and belonging the structure, creativity, security, artistic production, privacy, information quality, and toxicity differences are found to occur on some issues, such as with a team. (Parsa and Aytas, 2014: 91 - 93).

One of featured as a priority in research, 1999, "self-teaching" is a study performed in relation to. "In the hole in the wall named in this study, the researcher Sugata Mitra is named from Oxford, New Delhi in a neighborhood on the suburban of an ATM (automated money transfer machine) shaped assembly has carried out a small experimental study planted a computer into a wall. The children must go to school in the neighborhood of the neighborhood of this property, rarely and none of them doesn't know English. They were previously met, none of the kids on the Internet or with the computer also. Children at the first time in such a situation, quite weird, wall-mounted and two weeks later you start messing with the computer mounted on the wall in a state of most of the young kids on the computer you have installed can play many of the games on their own. At this point, the status of the computer language is English, which is amazing and none of the kids that doesn't know English. This result Mitra "Kids learn to figure a way to do it if they want to do something" is summarized in the form of (http://www.ted.com/talks/lang/en/sugatamitrathe_child_driven_education.html). So of the new millennium, students, children, learners, etc., regardless of any time or place, self-teaching and learning mechanisms can easily run the job. This property is in the classrooms of the students in the schools the basic question in how to change their participation in education and training (Arabacı and Polat, 2013).

Digital Migrations

Born to before millennium (internet and web age) technology and technology products for individuals who met after puberty with the term "digital migration" concept is used. In other words, digital migration, in twenty ages and beyond meet internet, web and technology, use technological tools and technology-based or technology that digital natives can experience various difficulties in learning literacy identifies individuals at

lower levels compared to compliance issues (Prensky, 2001: 5). Digital immigrants are confronted with various problems when used in the process of trying to get new technological. On the subject of Bilgiç et al. (2011) explains, "Digital immigrants trying to adapt to the environments where these technologies are used with the development of technology in and of itself consists in a new process that finds of a generation," (Bilgiç, et al. 2011: 2).

But recently, technology has become a necessity for information purposes, given that in addition to using technology for entertainment, chatting, and video game they use for reasons such as it is observed. Whatever the digital natives, according to the purpose of access to information at the point of utilization of this tool (Arabacı and Polat, 2013).

One of the most important characteristics of digital immigrant individuals they are able to use digital media tools effectively. Linear readings, graphics, and hypertext instead of reading the prefer. Digital immigrants are individuals that adapt better to the digital environment where they may be, but "accent" and reveal them. To obtain information primarily from printed materials you prefer. Tend to use any technological product or a program or a guide a guide to using (Prensky 2004 than trans. Tonta, 2009: 5).

One of the most important magazines in America, "Time" magazine in 2012 about digital natives and immigrants, research on different media use the results are outstanding. These results (Business Wire, 2012):

Digital natives, 27 times in 1 hour, television, magazines, tablet computer, smart phone, or they can switch between platforms in the other channels.

Emotional states bumpy living experience at lower levels in a very short time and this society is tired of the attention is directed to change their emotional state in other media.

Digital native's percent of 65, even when switching between rooms within the home life from their limbs as though they were smartphones side without separating uses.

More than half of digital natives (54%), while expressing a preference messaging instead of talking with people, ratio 28% is described as digital immigrants (Arabacı and Polat, 2013).

In parallel differences are reflected in the two age groups in this study. Depending on the age when this distinction is made on the basis of research, a distinction has been made shows that. Therefore, the interest in and intimacy in an age of technology it is hard to argue that arise from the relationship. Prensky (2009), in his study of immigrants that right now are in the age range 30-40 more use of the technological tools in order to facilitate their work and they benefit from technology in a useful way. In this context, Prensky (2009), the digital age of the twenty-first century the difference between digital natives and immigrants was gradually reduced and "digital wisdom" would reveal that the concept of the front sees. Prensky (2009), considers two aspects of the concept of digital wisdom.

Digital wisdom, our innate cognitive capacity that occurred as a result of the use of digital technology to access the power of wisdom, means wisdom in the intelligent use of technology to improve our skills at the same time.

The seekers of wisdom in the minds of the future both in terms of structure present in both our brains will be completely different. The wisdom of the future, seeking wisdom offered by today's increasingly complex digital technology without the need for us to strengthen the level of cognitive may have access to, but this is complicated and in terms of the quality of what wisdom is, nor the nature to find his way in a world more technologically advanced (navigate) will not be sufficient (Prensky, 2009 trans. Tonta 2009: 5).

Especially it should be noted that the one human in the process of education and teaching principal. Because stand-alone "Technology is neither good nor bad; what is neutral." (Kranzberg Technology Law).

Technology, the use of good-bad or biased way, technology loaded "value" is closely related to progress (Tonta, 2009). Bill Gates an extensive research in this direction, Education and Research Foundation (TED) researchers have conducted in the United States at the beginning of the 2000s until to 2011. The purpose of this research in the majority of districts in the suburbs of students living in the United States and considered the forgotten geography education that enable them to succeed in life or the effective application of the variable to determine what happened. Also American is located in the state and suburban, is considered to be underdeveloped and out of the areas where a nationwide exam (SAT, etc.) students able to get high scores in the American educational system by discovering the secret behind their success, it was thought that a tour could restructure. Bill Gates announced the results of this investigation, the TED in 2011, held periodically and is presented by selecting the best example in applications all over the world on behalf of education event. The

scope of the research firstly, where various underprivileged areas, these children are able to be successful the children and the families of the questionnaires, through interviews have been achieved. In the second stage where all the factors that can have a positive impact on the success variable is considered within a pool was created. These variables are generated from the experimental and control groups students tested. Finally, all the teachers in America have been successful in the fields working to identify the various tests to determine the effects of these teachers by student achievement has been studied. Ultimately, the most important factors in today's climate contrary to the idea of technology on student achievement, successful the biggest factor in the success of the students "Teacher" factor (http://www.ted.com/talks/lang/en/bill_gates_unplugged.html). The variable remained in second place with technology.

Change and Social Change

Özkalp (2009), social change is defined as new formations of material and spiritual elements in society. Social change is extremely difficult to separate from the social relations and cultural change. If so social change; social structure and social relations that compose it and the change of social institutions that determine these relationships. Social change; It is a socio-cultural change (Tezcan 1981: 163).

Social change, a group, organization, community or society is the process of switching from one format to another format. Some of the assumptions are available for social change. This change is a natural phenomenon of change is unstoppable, inevitable, change is constant, change is necessary, change shows similarities (uniform) (Özkalp, 2009: 299).

Education and Social Change

From a theoretical perspective for viewing social change thinkers have suggested that social change is at the forefront of the various factors. At this point, L. White technology, K. Marx economy, M. Weber ideology and belief system interpreted as the main factor for social change (Ergün, 1994).

The concept of social change can be treated in two ways. The concept of social change as you progress in the direction specifies the meaning of devolution. In both directions of social change (Kurtkan, 1976: 272).

In fact, there is a reciprocal relationship between education and social change. There is a unidirectional relationship between education, social change rather than a reciprocal relationship. So education on the subject of social change (impressive) both the object (affected) state. Here it is difficult to determine the degree of mutual been mentioned, although a cause-and-effect relationship (Şişman, 2006). Change in the desired direction and nature of change is already and by definition, education is one of the most basic functions. The function of Education, provide social continuity by transferring only the existing cultural values to new generations, even though in doing so, makes the child's behavior by changing a biological entity as a social being (Dincer, 2003).

The most basic purpose of Education, improve the level of individual welfare the welfare of the society, to gain the individual's personality. Then education, the country's political, social, economic, and scientific institutions can be seen as a process that increases production capacity.

The technology used to make right sense of the transformation taking place in the field of education with the impact of information and communication technologies, people/students are very important to the impact on the understand.

A major change in the student profile that emerged as a result of this change and the possibilities of the educational system-educators and student characteristics across decision makers face mismatch that is the question: How should be behaved the digital natives?

However, the information which needs to be known explicitly and primarily, the characteristics of the target audience. Because the characteristics of digital natives; cross-country, such as the demographic structure of the affected domestic and socio-economic levels. The conditions that affect the existence of the digital natives in the studies conducted in the European countries are stated quite heterogeneous distributed as a result of studies (Rasanen, 2006, s.1). Therefore, a country's education system or a school has not yet been proven that all of the arrangement according to the profile of a student will lead to incorrect results. However, although the characteristics of the digital natives is heterogeneous from country to country, and from region to region, socio-economic status differences between the shows even though the beginning of change was spreading all over the world and now it is noticed that along with the technology.

Because the world is changing very rapidly according to the conditions of students in yesterday's world, tomorrow's world, it is necessary to prepare to deal with the uncertainties of higher order thinking skills.

Technology in education as in all areas of life, and the most important dimensions of the teacher and the students on the qualities of his bottom which have inevitable effects, it is clear that. Today's students are digital natives; teachers are called digital immigrants. (Prensky, 2004; Yılmaz, 2007; Carr, 2010; Bilgiç, Duman ve Seferoğlu, 2011; Demir, Özmantar, Bingölbali and Bozkurt, 2011 Arabacı).

Cultural and sociological changes between individuals due to the rapid development of technology, it is possible to experience. Now individuals of various geographical and sociological conditions as well as their ability to access and use technology as related to age also varies (Karabulut, 2003).

Social education in the digital age and perhaps to be amended and transferred to future generations which preserved the elements of which will be forgotten where a significant social policy issue has become. Besides, politicians also determine short and long term goals the future of social communities, educational policies and school configurations should adjust accordingly. It makes the environment to the forefront of the globalization of society and values, education and school systems, re-directing, developing and developed much more than it was in the past in all societies have configured in a different way (Sağ, 2003).

The current digital age with individuals of students trained with the methods and techniques of old digital native can be said to be wrong. In this case, teachers and students to understand each other, can cause failure to happen in a more qualified education. The difference in this binding for the closure of some of the teachers with training, self-improvement, it can be argued that they should use technology in the classroom especially in integrated activities.

In societies where the technology reaches of society never met with current technology could be and should be noted in this context should be kept separate.

Future-oriented education in terms of the fiction of the new world order, functioning to educate individuals in the effective way information is becoming important.

As a result, education, real quality and value on the democratic life of the entire people and institutions that there is a purpose for the individual, the social, and therefore finding (Dinçer 2003).

Educational, social, political, economic, etc. there are many aspects and is responsible to perform the functions usually does not determine itself.

Education, one of if desired in the same twins someone "Hitler", the other one "Gandhi" effective or is a powerful tool and power to grow as well, mostly receives from the purpose and power determine the social level, socio-economic and socio-cultural policies.

Accepting the basic process and how it works; "Society is like two mirrors were placed and mutual education and cannot be said to affect the whole of one another" it should be noted (Dinçer, 2003).

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Effectiveness Of Behavioral Strategies Training (Bst) For Mothers In Reducing Anxiety And Conduct Problems Of Children With Attention Deficit Hyperactivity Disorder (Adhd)

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ABSTRACT

The Aim: present research has been conducted aiming at examining Behavioral Strategies Training(BST) to mothers in reducing anxiety and conduct problems of children with Attention deficit hyperactivity disorder (ADHD). **Method:** This research is a quasi-experimental study conducted on control group via pre-test and post-test. The statistical population consists of all the children with Attention deficit hyperactivity disorder(ADHD) referred to Imam Hossein Hospital, They were interviewed by psychiatrist and filled Conner's' Parent Rating scale by their mothers. Among the children with ADHD diagnosis 20 children were selected by random sampling . The instrument used in this research was Conner's Parent Rating Scales-Revised: Short Form (CPRS-R: S). The participants in experimental group were trained with mothers' behavioral strategies for 9 sessions and the control group received no intervention but they were for waiting list .The mothers filled pretest and post test questionnaire The data were analyzed via analysis of covariance (Anova). The results indicated that training behavioral strategies to parents can reduce anxiety and conduct problems. Findings indicate that behavioral strategies training (BST) to mothers reduces anxiety and conduct problems of the children with Attention deficit hyperactivity disorder.

Key words: Attention Deficit hyperactivity disorder (ADHD), behavioral strategies (BS), conduct problems, anxiety

INTRODUCTION

Attention deficit hyperactivity disorder has been regarded as the most common behavioral disorder which has been recognized during childhood. This disorder is too inclusive and sustainable, defined via the characteristics such as inattention, hyperactivity and impulsivity. Prevalence of this disorder has been estimated 3 to 6 percent among children that its prevalence is greater among boys 3 to 9 times than girls. Concerning the etiology of this disorder, there are scientific evidences which stress biological are very important (Saunders and Prinz, 2005). Range of causes includes genetic transmission, character and temperament, factors before and after birth, and the differences in brain structures and the differences in the brain's biochemical status interact with environmental factors (Amiri Nasab, 2009). However, Attention deficit hyperactivity disorder has biological and genetic causes which are controlled with pharmacological interventions, but the results of several studies indicate that symptoms of this disorder cannot be improved by such treatments. However treatment of this disorder is mainly fulfilled by pharmacological interventions, but to date results from a variety of studies have not indicated any long-term effect for pharmacological interventions that just their effects have been witnessed during drug consumption (Georgia, 2004); for this, it requires consuming the drugs constantly and serious resistance by parents and child due to side effects of these drugs such as loss of appetite, insomnia, headache and abdominal pain and in some cases loss of height and weight (Alizadeh , 2011). Results from studies indicated that the children with Attention deficit hyperactivity disorder (ADHD) do not still receive sufficient health services despite availability of suitable health services. On the other hand, studies indicate that if this disorder is not treated, the children in adolescence and adulthood will be exposed to the hazards such as academic failure, dropout, delinquency, drug and alcohol abuse, indicating rise of serious problems and high financial and human costs in this context (Pelham & Fabiano, 2008; Frouzan nia, 2011). Some of studies had shown that the pharmacological treatments for parents and ADHD children may raise problems for them for them. The variety of psychological interventions have been proposed for training parents of this children that Behavioral strategy training (BST) is one of them. In this type of therapy, behavior modification is made at home by parents. Further, this type of treatment causes an increase in different aspects of parental and family performance which can work out in treatment of the child in the light of new information that the parents find in

this treatment for child's problems (Chronis, Fabiano&Wymbs, 2012). Further, followed by the criticisms on drug consumption, during the recent decades, some studies have shown that behavioral interventions and parent training are suitable alternatives for pharmacological therapy of this disorder that can be compared with consumption of low to average doses of drugs in some cases (Chen, Seipp & Johnston, 2008). Studies indicate that some of children with Attention deficit hyperactivity disorder (ADHD) are high risk to conduct disorders in adulthood (Barkley & Grosswait, 2001). According to the student population statistics and increasing prevalence of Attention deficit hyperactivity disorder (ADHD) in school children, helping parents in recognizing and control of symptoms of this disorder is very importance. Children with this disorder oppose parents' requests and don't perform their assignments.

Parents spend substantial times to monitor their children's activities .It is common that mothers exposed to the disturbed behaviors develop depression. So children with this disorder incur difficult conditions to family.

Most of the parents acknowledge that their parenting style is not effective in correcting behavior of their children, seek to learn new skills (Zargari nejad & Yazdan doust, 2007). Therefore, it is prudent to give important information to parents on children's behaviors in order to educate them that most of children's problems are treatable (Alizadeh, 2004). Indeed, target of parents training is to learn them new skills; obviously, parents are the only adult peoples who have permanent presence in the child's life, by training to cope more effectively with the child's behaviors, they are able to provide continuity and maintenance of therapeutic progress in their child (Gorji, 2004). On the other hand, with reduction in level of parenting stress through education, they will have more control on their children's behaviors. Studies indicate that such program has been economically effective compared to rest of therapeutic methods. Therefore, with regard to what mentioned, use of this method in treating behavioral problems of children with Attention deficit hyperactivity disorder is of great importance, in the present research the efficacy of the method is to be examined . With regard to what mentioned above, the present research aims to test the hypotheses below:

-Training behavioral strategies to mothers makes reduction in conduct problems of children with Attention deficit hyperactivity disorder.

- Behavioral strategies training (BST) to mothers reduces anxiety of children with Attention deficit hyperactivity disorder.

RESEARCH METHOD

In the present research, quasi-experimental research method (pre-test & post-test) has been used. The statistical population consists of all the children with Attention deficit hyperactivity disorder(ADHD) referred to Imam Hossein Hospital. Attention deficit hyperactivity disorder (ADHD) were selected after psychiatric interview .Then their mothers filled Conner's Parent Rating Scales-Revised: Short Form (CPRS-R: S), and ultimately 40 children with Attention deficit hyperactivity disorder (ADHD) were selected randomly from this sample and then were divided randomly in 2 groups into experimental and control groups. In each groups were 20 sample.

RESEARCH INSTRUMENTS

In this research, Conner's Parent Rating Scales-Revised: Short Form (CPRS-R:S) has been used to examine effect of mothers' behavioral strategies on symptoms of Attention deficit hyperactivity disorder. This scale is beneficial for the age group 3-17 years old. This scale consists of 48 questions that the responses including never, seldom, relatively high and very high are considered to give response to each question, to which scores 0 to 3 are given. After filling form, scores are summed, deducing that if the score is high, the child will be found with Attention deficit hyperactivity disorder (ADHD).

Cronbach's alpha coefficient has equaled to 0.86 for total score and equaled to 0.88 and 0.80 for subscales of conduct problems and anxiety (Arabgol,ehyaiey&Vahid,2001).

BEHAVIORAL STRATEGY TRAINING PROGRAM PACKAGE

First session: education about Attention deficit hyperactivity disorder.

Second session: education about parent-child relationship and principles of behavior management.

Third session: a increase attention to child's positive behavior by parent.

Fourth session: ignoring improper behaviors.

Fifth session: formulating token economy program at home.

Sixth session: using behavior cost method and deprivation method.

Seventh session: using behavioral strategies for improper behaviors.

Eighth session: expanding management skill at other places.

Ninth session: management of future behaviors and relapse prevention.

RESULTS

The results in his study presents that behavioral strategies training (BST) to parents has affected reducing symptoms of conduct problems and anxiety in children with Attention deficit hyperactivity disorder(ADHD).

Table 1. Levene's test to examine equality of variance of research variables

Variable	F	Df ₁	Df ₂	sig
Conduct disorder	0.084	1	28	0.774
Anxiety	0.009	1	28	0.927

As the results in table above indicate, significance level of all the calculated f-values is greater than 0.05, thus difference of variances is not significant statistically and equality of variances is true.

Table 2. Mean and standard deviation in two control and experimental groups in pre-test and post-test

Variable	Group	Mean	Standard deviation
Conduct disorder	Experimental	14.87	3.399
	Control	14.80	2.366
Anxiety	Experimental	14.20	3.707
	Control	14.78	2.833

Source of variations	Sum of squares	Freedom degree	Mean of squares	F	Sig
Conduct disorder	387.391	1	387.391	82.548	0.001
	90.085	19	4.741		
	415.846	1	4.781	86.971	0.001
	90.848	19			

The results showed in table, behavioral strategies training (BST) to mothers has affected reducing symptoms of conduct problems and anxiety symptoms in children with Attention deficit hyperactivity disorder (ADHD). Therefore, The research hypothesis concerning efficacy behavioral strategies training (BST) to mothers in reduction of symptoms of conduct problems and anxiety in children with Attention deficit hyperactivity disorder (ADHD) was confirmed.

DISCUSSION AND CONCLUSION

Results from research indicated that training behavioral strategies to mothers reduced symptoms of conduct problems in children with Attention deficit hyperactivity disorder. This finding is consistent with the findings the other researches such as Carolin (2011), Zargari nejad & Yekeh Yazdan doust (2006), Housh var et al.(2009), Mohareri et al.(2009), Forouzan nia(2011). Those who filled the questionnaires have been mothers, their attitudes towards behavior, relationship and conduct problems of their children affect filling questionnaire. On the other hand, change of attitude is one of the most important benefits from holding group sessions to train parents. Therefore, during group training session's mothers learn that most of the children's behavioral problems are the same among families, so feeling of incompetence in their parental role reduced, this made mothers to undertake responsibilities of their parental roles with more self-confidence (Saunders and Prinz, 2005).

With regard to social learning theory, children learn violent behavior and conflict and repressive practices when their parents deal with their behavioral problems. Family issues compared to ADHD, play more important role in the etiology of aggression and conduct disorders. Indeed, with regard to the specific characteristic such as behavioral disorders of impulsivity in hyperactive children, observing aggressive behaviors used by parents in applying a dysfunctional system of punishment and reinforcement at home is the way for learning conduct problems in these children. With attending group programs for training parents besides other interventions, the parents acquire more precise strategies to encounter with the child's behavioral problems and make attempt to control sudden and arbitrary behaviors in anger and frustration through predetermined implication. In this way, they control transmitting negative emotions practically based on the social learning theory to their child and avoid increasing incidence of conduct problems (Zargari nejad & Yekeh Yazdan doust, 2007). It should be noted there is a vital link between poor parenting practices and children's anti-social behavior outcomes. In fact, with training of the effective parenting practices, signs of anti-social behavioral disorders and coping stubborn behaviors reduce in children significantly (Chronis et al., 2012). Further, since poor parenting practice has been assumed as one of the most important factors to reduce efficiency of behavioral therapy and occupational therapy in children with ADHD and on the other hand it can directly cause increase in negative and stubborn behaviors of children with ADHD, modification of parenting behaviors is of great importance (Peterson & Chamberlin, 1994). Further, obtained results indicated that training behavioral strategies to mothers affects reducing anxiety in children with ADHD. This finding is consistent with the research findings by Van den Hoofdakker et al (2012), Faber, Edwards & Wetchler (2003), Housh var et al.(2009), Zargari nejad & Yekeh Yazdan doust (2006), Amiri nasab(2009). Many behavioral problems in children with (ADHD) can be caused of their different sensory characteristics. Most of the mothers of these children have not a good understanding of their children sensory characteristics and needs. Behaviors of children including avoidant or sensory defenses are misunderstood as stubbornness and other communication problems such as aggression or shyness. Increase in understanding of mothers from their children's sensory needs can also be a factor in the improvement of their relationship with each other, increase of mutual acceptance and reduction of behavioral problems and anxiety in them (Saunders and Prinz, 2005). Dysfunction in parents' performance can affect family functions, family roles, dynamics of family interactions and the ability of parents to implement a comprehensive plan required for treatment. Further, family dysfunction of parents associates to dysfunction of children including severe anxiety disorders in children, anxiety symptoms and general function of the child (Pelham and Fabiano, 2008). Lack of

fathers' attended in this research has been regarded as one of the limitations of this research, which is due to their occupations problems, since fathers' contribution in meeting disciplinary principles cannot be neglected at home. Another limitation relates to number of participants and limitation in training sessions. It is suggested to study management training program besides different theocratic strategies in next research so as to examine extent of effectiveness of this program in different states. Apart from these factors, this training can be practiced in other behavioral and emotional disorders of children. Further, it is suggested to increase numbers of participants and correcting limitations of training sessions to generalize the results in future research. Since attention deficit hyperactivity disorder (ADHD) has been regarded as one of the most common behavioral disorders of children, it is suggested to any organization or entity which is the practitioner of education for children to hold training classes for parents so as to lower incidence of this disorder in children.

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Effects Of Dynamic Geometry Software Integrated Workshops On Mathematics Teachers' Beliefs

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ABSTRACT

The purpose of the current study was to examine the shifts in the middle school teachers' beliefs in relation to the use of computer technology in mathematics classroom through their involvement with eight weeks of workshops sessions based on utilizing GeoGebra tool. Six middle school mathematics teachers were volunteered to participate in these workshops sessions so as to gain practical knowledge and hands-on experience about the use of mathematical software in education. A multiple case study approach was employed in current study to investigate changes in beliefs. Semi-structured interviews, observation and field notes were used as a data collection instruments to gather required the data. Based on the initial findings, before the workshop sessions, the volunteer teachers had little aware of mathematical software use in mathematics teaching. The qualitative results provide evidence that following workshop sessions, teachers developed a new vision about the role of computer technology in education. It is not easy for teachers to infuse mathematical software in their future teaching of mathematics due to some impediments such as national exams, time issue and lack of infrastructure. This research provides some useful information about technology professional development for mathematics education and about the degree to which GeoGebra-integrated workshop sessions affected participants' beliefs.

INTRODUCTION

The past two decade has seen the rapid development and remarkable changes in technology and naturally it has an effect on different aspects of our work and personal life. Many reform initiatives have been in place aiming to integrate digital technological tools into their educational systems. Today's educational technologies have the potential to be effective tools for mathematics teaching and students' learning. Hoyles and Noss (2003) stated that technology could be employed to promote learning by motivating students to become more open to exploring and discovering. Countries should be able to enrich their teaching and learning environments by incorporating technology so as to accelerate their students' achievements in mathematics education (Lavicza, 2010). From this perspective, revisions of middle school mathematics curriculum, in accordance with the new developments, were made in Turkey. Turkish mathematics teachers have been stimulated to infuse information and communication technologies effectively in their teaching practices and students are expected to gain the ability to use these technologies in their learning of mathematics (MONE, 2013). Recently, Dynamic Geometry Systems (DGS) and Computer Algebra Systems (CAS), the Internet, smart board, interactive e-content, projector and calculator have been increasingly becoming prevalent in mathematics classroom to promote learning activities. In particular, well-known computer applications, DGS have given more attention to relationships between points, segments and line circles, pupils are able to build geometric figures and make connections between them. GeoGebra-based tasks are designed by teachers may provide pupils the opportunity to engage with and explore the mathematical ideas with their peers (Preiner, 2008). Therefore, it is expected that technology used in the learning context may stimulate teachers and learners to work on mathematical ideas together by interacting each other with discussions about discoveries (Nasari, 2008).

Despite giant steps in the development of innovative technological tools, the effective integration of technology into learning-teaching process demonstrated slow progress and has not reached expected level (Ruthven, 2008). In fact that the implementation is a challenging process; there are several significant factors that affecting successful integration process which are identified as follows: teachers' conceptions and interest about the embracing of this innovation, resources, professional development of teachers, and appropriate technological-centered educational content (Hennessy, Ruthven & Brindley, 2005). In fact, we cannot dismiss entirely the role of teacher in this integration process. Teachers' decisions about what and how to teach become an important part of effective teaching practice in classroom. Teachers appear to act as the primary mediator between technology and its integration in their teaching provide rich learning environment. To attain the technological aims implied by the policy makers, Thompson and Kersaint (2002) suggested that teachers are provided an opportunity to gain hands-on experience with computer-based activities to become familiar with their new roles in this environment. This study puts forward the argument that as with any other innovation presented to schools, professional development of teachers has been an important aspect in the process; it is suggested that teachers should be equipped with new innovative approaches, materials and tasks so as to plan and design their teaching activities. It is rational to anticipate that teachers come to see the potential of computer technology in learning and teaching of mathematics. It is a belief that technology serves as a teacher's presentation instrument to enrich better visual, interactive and dynamic representation of geometrical figures. This type of use in education could provide learner

to see mathematical ideas and enrich teachers' teaching practices. Given the recognition of the significance of the teachers' role in integrating of technology in education, the variables of the teachers' decisions about the use of computer technology in mathematical context has become a key element of literature.

When analysing studies related to the use of mathematical software in the field of mathematics education, many of them focus on the professional development of teachers through creating in-service or pre-service courses (Ozyıldırım et al., 2009; Mainali and Key, 2012; Tatar, 2013). Ozyıldırım et al., (2009) conducted a study with 75 Turkish student teachers so as to explore their perspectives about mathematical software (including GeoGebra, Geometry Sketchpad). They were participated in computer-based lesson in the course of their one –semester undergraduate education. According to findings of this study, the student teachers had become aware of the significance of utilising DGS in mathematics teaching as it provides an experiential learning environment and enjoyable activities for pupils. Mainali and Key (2012) created and implemented the four day a GeoGebra-based workshops sessions for fifteen secondary school mathematics teachers in Nepal in order to examine their conceptions, interest concerning the mathematical software and technological challenges faced. The authors determined that constraints and difficulties with regard to accessing technological materials may exist in current classrooms. They concluded that although the GeoGebra-integrated workshop developed positive attitudes and motivation towards the use of computer technology in education, teachers were not ready to integrate this in their teaching. According to the study of Tatar (2013), after participation in a GeoGebra course, teachers believe the necessity of integrating the technology into mathematics lesson but this education at the university is not enough to use technology effectively in their future classroom. This study aimed at exploring the degree to which teachers change their beliefs in relation to the use of computer technology in mathematics classroom through their joining with eight workshops sessions based on using GeoGebra tool.

RESEARCH DESIGN

This paper is based on research undertaken as part of my thesis. A multiple case study approach was designed in current study to investigate and explore changes in beliefs. Bogdan and Biklen (2007) stressed that in multiple case studies, “researchers study two or more subjects, settings or depositories of data” (p.69). As a multiple-case study, the present research explored technology related to beliefs of a group of teachers within the eight workshops sessions as they interacted with GeoGebra-based activities. Semi-structured interviews, observation and field notes were used as a data collection instruments to gather required the data. The study sample involved in six middle schools teachers, two of them are working in private school and rest of them are working in public school. Their teaching experience is ranging from six years to twelve years. The procedure of constant comparison (Glaser and Strauss, 1967) was employed in the cross-case analysis so as to elicit patterns across all teachers.

The workshop sessions included the researcher and the volunteer teachers in an investigation of mathematical ideas. They focused on open-ended GeoGebra-based activities (eight weeks, 26 hours). There are three main phrases on the workshop sessions; a) introductory, b) exploratory, and c) home-based exercises were seen in Table 1. The introductory phase aimed at providing teachers with technical knowledge to become acquainted with mathematical software. The exploratory phase of the workshop sessions was based on six pre-designed tasks. Teachers worked on these tasks with colleagues to find out the solutions through using computer technology. In the last phase, the teachers were requested to continue working on some events in their home so as to assess their practical knowledge about software.

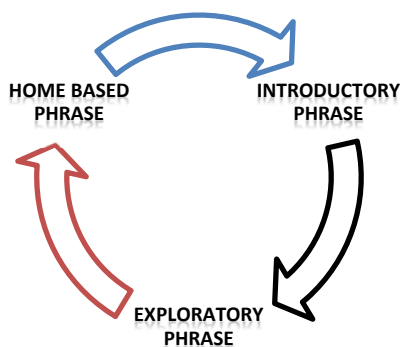


Figure 1: Stages of the workshop sessions

RESULTS

The results concerning to changes in teachers' beliefs in relation to the integration of computer technology in mathematics education were introduced in this current research. The participants' initial reflections about the mathematical software in mathematics classroom were revealed through the first interview. Although, most of the teachers had no experience of computers technology in teaching at the outset of the workshop, they were rather favorable about it. They were asked to respond the following question: if GeoGebra-based mathematical activities are used in mathematics lesson, their verbal commentaries were analyzed as follows:

Positive	Negative
It affects students' interest toward mathematics in a positive way.	It is not easy to obtain control over class during teaching with computer
It provides support students for the better comprehension of mathematical ideas with the help of visualization.	It does not improve students' arithmetic abilities.
It enables teachers to save the time which is wasted for drawing figures and note taking.	It takes more time to prepare computer-based mathematics activities.

Table 1: Teachers' initial beliefs about the use of computer technology in mathematics education

Before began the workshop, one of teacher mentioned that "I did not believe that the two (computer and mathematics) can come together before I saw the workshop you were talking about" [Interview]. He initially felt ambivalent about mathematical software use in mathematics. Other teacher commented that "When you are working with computer in class, you may face with some problems...while some students are studying; other may make noise at back... This problem leads to lose students' attention on lesson" [Interview]. This statement points to classroom management regarding learning while they are integrating computer technology into education. As a result, most of them initially held belief that using the mathematical software might assist to stimulate students' motivation and interests towards learning and provide the teacher with more time to conclude a lesson. It can be said that teacher' initially had a little notion of what certain role the mathematical software might play in mathematics.

It is rational to anticipate certain shifts in teachers' beliefs towards integrating mathematical software into education as a result of their participation. Teachers' beliefs in relation to integrating computer technology (GeoGebra) into mathematics were varied, and they would be categorized into three different perspectives:

Supplementary tool	Image-maker tool	Pedagogical tool
The computer could enrich teacher's conventional mathematical lesson	The computer provides provide visual activities and has the potential to transform how mathematics is introduced.	The computer could be used to explore and investigate aspects of mathematics and to allow learners to discover things.

Table 2: Teachers' beliefs in relation to using maths software

According to findings of the study, teachers have developed more concentrated ideas about the nature and characteristics of learning for the duration of workshop sessions. Following the workshop sessions, two of the teachers held the belief that the computer technology can be utilized in education as a pedagogical tool to survey and come to know some characteristics of mathematics and to facilitate students for understanding of mathematical ideas. For this perspective, using mathematical software can play a significant role in students' learning and students might have opportunities to review and understand its potential. Here is the example, "constructing an object in software, you have to use your imagination. When we are working on our tasks step by step; we are able to think in a mathematical way. Actually it requires deeper mathematical thinking so much in the process of construction" [Field notes]. Other participants who considered computer technology as an image maker tool to provide students with dynamic visual aspects of mathematics in order to improve the quality of their teaching. In this context, the visual aspects of GeoGebra may excite students' motivation towards learning of mathematics. One participant came to see the computer technology as an additional ingredient of education, like an extra educational tool for their teaching. From this perspective, the teacher should utilize several approaches in teaching mathematics and can be used mathematical software as a support for his existing teaching method. He appeared to not strongly appreciate about using it. On the other hand, collaborations with peers during the workshop sessions appeared to have facilitated some volunteer teachers to change their beliefs from regarding the computer as an extra educational tool for enriching lesson to seeing the computer technology as a pedagogical tool. Here is the example, "when you asked us to discuss software-based activities and problems with partner, I had never thought of mathematical ideas as discussible on the computer...Now, I believe that new conjectures can come up and new solutions can be invented through technology and discussion" [Interview].

CONCLUSIONS

The aim of this paper was to explore shifts in teachers' beliefs towards the use of computer technology in mathematics education following the eight workshop sessions. Based on the initial findings, before the workshop sessions, the volunteer teachers had an incomplete picture about the use of mathematical software in mathematics teaching. The qualitative results provide evidence that following workshop sessions, teachers developed a new vision about the importance of computer technology in education. In particular, this type of the workshop sessions appeared to have supported teachers to develop ability for using mathematical software and they therefore were willing to use it in their teaching of mathematics. In fact, some constraints such as exams, time and lack of infrastructure became the volunteer teachers' shared worries, which may have an effect on their pedagogical decision making about integrating mathematical software into education. To sum up, the teachers became aware of the potential for utilizing GeoGebra as a didactic tool for development of the quality of education. They should be delivered direct experience and this experience will give them a chance to realize their own beliefs.

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Efficiency Of Matrix Protocol (Mp) On Relapse Prevention And Improvement Of Quality Life In Methamphetamine Abusers(90 Days Follow Up)

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Introduction

“Amphetamine Type Stimulants” term is used for a group of synthetic substances that are similar to amphetamine (phenylisopropylamine) chemically including amphetamine, methcathinone, ecstasy (Keroic Shank, 2005). By increasing release of chemical mediators such as dopamine, serotonin, and noradrenalin, in synaptic space, they work as stimulating the central nervous system (Rothman et.al, 2003). A study by the National Center for Addiction Studies conducted on patients with opiate dependence, found that 35 percent of patients who were in the treatment plan of opioid dependence, were eligible for diagnosis of Amphetamine Type Stimulants abuse which had significantly negative effect on the outcome of their treatment. Also, It was found that there was a significant positive correlation between the consumption of amphetamine-like drugs and positive urine samples for opioids (Mokri, Chavarski, Taheri Nakhosht, Schottenfeld, 2006). These findings, along with multiple reports of specific treatments requests for stimulant use disorders, reveal the need to have plans for prevention and treatment of stimulants use disorders.

A sharp drop in the quality of life stands out in crystal meth addicts more than other substances , because after the early euphoria and hyperactivity, they push down their users in a downhill of irreversible inactivity and lack of energy and depression . Quality of life is known as a valid scale to assess the impact of treatment and services provided to those affected people (Wong , Cheung, Chan, Law, 2005). Quality of life includes physical health, psychological status, social relationships, spiritual beliefs and personal experiences based on the peoples mental assessments (Robinson, 2008). The researchers also concluded that three-quarters of those who have completed treatment within one year after completion of treatment, have recurrence (Dallay , Marlatt, 2005). Therefore, it is necessary to develop programs for the treatment and prevention of consumption. Now America Psychiatric Association considers psychosocial therapies a basic element in all treatment plans of stimulants. Cognitive-behavioral therapy targets at preventing recurrence, reducing the temptation, positive attitude change and strengthening sobriety in addicts, so it is considered an effective tool for treatment of addicted people, improving the quality of life of these people. The treatment is based on the ability to learn adaptive and maladaptive behavior and how to change the latter . These treatments are first-line addiction treatment based on strategies for preventing relapse, problem solving, and basic skills training which are essential in the cognitive - behavioral therapy (Malart, Gordon, 1985). One of the protocols of cognitive behavior therapy is a Matrix protocol. This protocol was created in 1980 by psychiatrists in America. This method is in the list of non-pharmacological treatments of National Institute of Drug Abuse (NIDA) in the USA .The National Center for Addiction Studies in recent years has considered these methods. This protocol has been prepared according to the treatment program in California Institute of matrix .Matrix protocol is a new approach and I has many social skills , life skills , behavioral and cognitive techniques . This protocol can help to prevent relapse and promotion of quality of life in addicted patients. Some studies showed the effectiveness of this protocole (Rawson, 2004). This protocole is used addict patients in Iran (Mokri, 2012).

Although this program is designed for amphetamine abuse, but it is usefull for another substance or drug addiction.

Matrix protocol for outpatient was compared with hospital treatment in a pilot study on Cocaine abusers The results showed that Matrix protocol effective approach (Rawson, 1986). Research has shown that this method is effective on reduction of psychiatric symptoms in substances and alcohol abusers (Rawson, 1995, Bishop Tau, 1994,and Cocaine abusers (Huber, 1997). Using the Matrix protocol can

improves the health and life quality in drug addict patients that they were treated with Naltrexone (Rawson and McCann, 1998). Marie-Nelly and Angelin et.al, (2004) used 16 weeks Matrix protocol in treatment 978 opiate addicted patients. This study showed that Matrix protocol is effective. In study Haber and Shoptaw (1997) 500 Opiate addicted and 224 Cocaine-addicted patients compared. There were not any significant difference in two group that participated to Matrix Protocol.

Release principles and guidance of Matrix protocol has been along with many efforts for making this treatment native and exclusive. Because drug users belong to different social and cultural groups, this is one of the things that in the addiction therapy should be fully considered by therapists (Rawson, 2005).

The individual differences should be considered (Rawson, 2005) for Native Americans (Matrix Institute, 2006) or for homosexual and heterosexual users of methamphetamine (Ribbeck and Shaptaow, 2005). In a comparative study (Review) (1995) by Richard and colleagues Matrix protocol was known as a powerful method in treatment for cocaine abusers. In this study, Matrix protocol was compared with a routine treatment model. This study provided initial support for clinical efficacy of Matrix protocol (Richard, A, 1995). A controlled study by Richard A. et al. showed positive correlation between the duration and amount of participation in Matrix protocol and positive results during a year. Patients treated by Matrix protocol showed significant improvement in cognitive, behavioural functions (Richard, A, 2003).

In this Study the goal was efficacy Matrix Protocol (24 sessions) on relapse prevention and improving quality of life of methamphetamine addicted patients. Research question was the efficacy Matrix protocol in relapse prevention in crystal addicted patients. Another question was does it protocol is effective on improvement of quality life in crystal meth addicted?

Methodology

Population, sample and sampling

Experimental method in this study (Homan, 2005). two groups control and experimental group with pre and post-test) and three months follow up. The population includes all Crystal abusers in summer, autumn and winter of 2013, in the Roodsar city in Iran. Inclusion and exclusion criteria for the study were taking crystal meth at least one year and avoiding the use of opiates at the same time (Interview with the help of substance therapists and diagnostic tests), age range between 20 and 40 years, male patient, Diploma as the minimum degree, lack of severe psychiatric disorders (diagnosed by clinical interview and MMPI-2), not participating any other psychotherapy and N.A associations

98 addicted patients included this study and 30 patients randomly were selected and randomly divided in two groups (15 persons in each group experimental and as control group). The samples assessed with Urine test and quality of life questionnaire patients in the beginning intervention and the end of treatment and 90 days follow up. Experimental group patients were participated in Matrix training sessions (24 sessions).

All participants in experimental group attended classes 3 times a week, every time for 2 hours for a period of 8 weeks. At the start of every session urine analysis results were registered. Questionnaire of quality of life was completed at the beginning of session 1, at the end of session 24 and 3 month later.

The content of sessions

Session 1. introduction of members with explanation of aims and group rules.

Sessions 2-5. behavioral techniques (identifying and controlling of external triggers such as avoidance of high risk persons and conditions or crave inducer things)

Sessions 6-10. behavioral techniques (identifying and controlling of internal triggers such as coping with negative emotions, coping with sensations for example pain...)

Sessions 11-15. cognitive beliefs (identifying and correcting negative beliefs toward person and positive beliefs toward substance)

Sessions 16-22.educating life skills (anger management, self-consciousness, assertiveness, communication, conflict resolution, negative emotional regulation)

Session 23-24. Reviewing of therapy sessions.

Measurements

Quality of life questionnaire SF-36: The questionnaire contains 36 questions evaluates eight different areas of health, including public health (10 items), physical function (4 items), role limitation due to physical reasons (4 items), role limitation due to emotional reasons (3 items), bodily pain (2 items), social functioning (2 items), vitality (4 items) and mental health (5 items). Montazeri et.al measured reliability and validity of this questionnaire. The internal consistency coefficient for its 8 subscales was 70% to 85%. Their retest coefficient with one-week intervals was reported between 43% to 79%. Also, this questionnaire separates healthy persons and patients in all scales.

Daily registration slide and avoid form: in this research through urine test at the beginning of each slip or avoid treatment session, the subjects were tested repeatedly

2- **Urin test:** Urine tests are done for each patient in a session in experimental group.

Results

Hypothesis 1) Matrix protocol is effective in the prevention of relapse in meth addictions.

Table 1) frequency of 3 months follow up in experimental and control group

Status after 3 months	(Relapse (slip)		(Healthy (clean		Total		Statistical estimation
	Number	percentage	Number	percentage	Number	percentage	
Matrix therapy	3	20	12	80	15	100	P=0/025
Routine treatment	10	66.7	5	33.3	15	100	
Total	13	43.3	17	56.7	30	100	

From 15 members in the experiment group, 12 patients (80%) were abstained (clean state) after 3 months and continued their abstinence. 3 patient (20%) failed to continue the abstinence. In control group only 5 people (33.33%) of 15 persons did not use substance . By using Fisher's Exact test and putting raw data there, it was concluded that with 95% of confidence and under less than 1% error, there was a significant decrease in recurrence rate 3 months after with matrix method compared to routine treatment.(P= 0.025). Based on these findings, we can conclude with confidence there is a real difference in preventing the recurrence of meth abuse between matrix and routine treatments.

Hypothesis 2): Treatment by Matrix method impacts positively on improving quality of life in patients with methamphetamine abuse. The mean score of the general population is 50 and the standard deviation for all 8 domains is 10. 8 divisions were merged to form two domains, the physical component score (PCS) and mental component score (MCS).

In PCS area, high scores are on PF, BP, RP, GH, and low scores for RE and MH. On the contrary, in MCS area, positive scores are for MH, RE, SF, VT, while negative scores belong to scores of PF and RP.

1-physical health (pcs) = physical functioning+ physical limitations + physical pain + public health

2. Mental health (mcs) = social performance+ emotional problems+ mental health+ happiness

Table 2) comparison between mean of pre-test and post-test scores of the 8 domains of quality of life questionnaire (SF-36) in the control group

Scope	Time	Number	Mean score	Standard deviation	t-value	Statistics assessment
Physical performance(PF)	Pre-test	15	57	16.88	1.41	P=0.18
	Post-test	15	48.73	16.55		
RF performance limitations due to physical problems	Pre-test	15	45	25.35	1.72	P=0.107
	Post-test	15	29.33	18.4		
Functional limitation due to emotional problems RE	Pre-test	15	31.08	26.6	0.29	P=0.744
	Post-test	15	33.3	21.81		
Feel the exhilaration VT	Pre-test	15	41.66	14.84	1.8	P=0.093
	Post-test	15	31.33	13.68		
MHI mental health	Pre-test	15	45.02	9.82	0.353	P=0.729
	Post-test	15	46.4	12.35		
Social function SF	Pre-test	15	40.13	21.57	0.592	P=0.564
	Post-test	15	44.3	19.8		
PP physical pain	Pre-test	15	53.4	20.58	2.64	P=0.019
	Post-test	15	38.66	14.87		
Public health GH	Pre-test	15	37	16.45	0.765	P=0.457
	Post-test	15	33.33	15.54		

Using Paired T-test comparing pre- and post-test scores achieved in each of the areas of quality of life questionnaire (SF-36) in patients treated with the routine procedure were analyzed. The only significant difference is in the area of physical pain in the pre-test and post-test scores can be seen in the group treated in the routine way ($P= 0.019$). There is no significant difference between pre-test and post-test scores of routine treatment group ($P> 0.05$). Using ANCOVA variance analysis compares the average grades obtained in each of the areas of quality of life questionnaire (SF-36) with regard to the pre-test scores in both groups, patients in two groups were analyzed. Only in two areas of physical functioning and mental health there was no significant difference between two groups. ($P=0.141$, $P=0.051$). In other areas, there was significant differences between two groups ($P\leq 0.05$). In all these cases, the average scores obtained in the Matrix treatment was significantly higher than the scores by routine treatment

Table 3) comparison between mean of pre-test and post-test scores of the 8 domains of quality of life questionnaire (SF-36) in the experimental group

Scope	Time	Number	Mean score	Standard deviation	t-value	Statistics assessment
Physical performance(PF)	Pre-test	15	52.66	24.11	.719	P=0.484
	Post-test	15	58.33	17.18		
RF performance limitations due to physical problems	Pre-test	15	36.66	29.68	1.09	P=0.294
	Post-test	15	47.22	26.1		
Functional limitation due to emotional problems RE	Pre-test	15	26.69	22.53	3.61	P=0.003
	Post-test	15	59.96	33.8		
Feel the exhilaration VT	Pre-test	15	31.66	17.89	3.26	P=0.006
	Post-test	15	52.66	15.68		
MHI mental health	Pre-test	15	39.2	16.8	2.76	P=0.015
	Post-test	15	60	19		
Social function SF	Pre-test	15	34.33	22.99	2.73	P=0.016
	Post-test	15	62.83	19.38		
PP physical pain	Pre-test	15	49.83	27.58	1.1	P=0.287
	Post-test	15	59	12.59		
Public health GH	Pre-test	15	29.66	23.25	2.84	P=0.013
	Post-test	15	51	17.64		

Using Paired T-test comparing pre- and post-test scores achieved in each of the areas of quality of life questionnaire (SF-36) in patients treated with the matrix treatment method were analyzed. Only difference in the area of physical pain and performance limitations due to physical problems and physical performance in the pre-test and post-test scores isn't significant in the experimental group ($p=0/484$ $p=0/294$ $p=0/287$). There is significant difference between pre-test and post-test scores of matrix treatment group in the rest of areas ($P < 0.05$).

Table4) comparison between mean of scores of the 8 domains of quality of life questionnaire (SF-36) according to pre-test scores in the experimental and control group

Scope	group	Number	Mean score	Standard deviation	F-value	Statistics assessment
Physical performance(PF)	Routine	15	48.73	16.55	2.3	P=0.141
	Post-test	15	58.33	17.18		
RF performance limitations due to physical problems	Pre-test	15	29.33	18.4	4.3	P=0.048
	Post-test	15	47.22	26.1		
Functional limitation due to emotional problems RE	Pre-test	15	33.3	21.81	7.3	P=0.011
	Post-test	15	59.96	33.8		
Feel the exhilaration VT	Pre-test	15	31.33	13.68	12.43	P=0.002
	Post-test	15	52.66	15.68		
MHI mental health	Pre-test	15	46.4	12.35	4.16	P=0.051
	Post-test	15	60	19		
Social function SF	Pre-test	15	44.3	19.8	5.94	P=0.022
	Post-test	15	62.83	19.38		
PP physical pain	Pre-test	15	38.66	14.87	15.84	P=0.0001
	Post-test	15	59	12.59		
Public health GH	Pre-test	15	33.33	15.54	8.75	P=0.006
	Post-test	15	51	17.64		

Using ANCOVA variance analysis compares the average grades obtained in each of the areas of quality of life questionnaire (SF-36) with regard to the pre-test scores in both groups were analyzed. Only in two areas of physical functioning and mental health there was no significant difference between post-scores of patients of two groups. (P=0.141, P=0.051). In other areas, there was significant differences in post-test scores of treatment groups patients (P<=0.05). In all these cases, the average scores obtained in the Matrix treatment was significantly higher than control group.

Table 5) comparison between pre-test and post-test scores for physical health and mental health domains of quality of life questionnaire (SF-36) in the control group

Scope	Time	Number	Mean	SD	t-value	Statistics estimation
Physical health	Pre-test	15	48.1	13.61	2.21	P=0.044
	Post-test	15	37.51	13.08		
Mental health	Pre-test	15	39.52	14.04	0.151	P=0.882
	Post-test	15	38.83	12.8		
Life quality	Pre-test	15	43.81	12.23	1.31	P=0.21
	Post-test	15	38.17	12.59		

Using Paired T-test showed that the mean of pre-test and post-test scores in the health scale in control group was significant (P=0.044). But there was no significant difference between mental health and life quality (P=0.882, P=0.21).

Table 6) comparison between pre-test and post-test scores for physical health and mental health domains of quality of life questionnaire (SF-36) in the experimental group

Scope	Time	Number	Mean	SD	t-value	Statistics estimation
Physical health	Pre-test	15	42.2	23.68	1.59	P=0.134
	Post-test	15	53.88	15.76		
Mental health	Pre-test	15	32.97	13.6	3.76	P=0.002
	Post-test	15	58.86	19.82		
Life quality	Pre-test	15	37.59	18.32	2.75	P=0.015
	Post-test	15	56.37	17.14		

Using Paired T-test showed that the mean of pre-test and post-test scores in the field of mental health and also quality of life questionnaire (SF-36) in patients treated with the matrix treatment method there was significant different within pre-test and post-test (P=0.015, P=0.002), but there was no significant difference between physical health in pre-test and post-test scores of patients treated by matrix treatment method (P=0.134).

Table 7) comparison between mean of post-test scores for physical health and mental health domains of quality of life questionnaire (SF-36) according to pre-test scores in the control and experimental group

Scope	Time	Number	Mean	SD	t-value	Statistics estimation
Physical health	Pre-test	15	37.51	13.08	9.08	P=0.006
	Post-test	15	53.88	15.76		
Mental health	Pre-test	15	38.83	12.8	9.24	P=0.005
	Post-test	15	58.86	19.82		
Life quality	Pre-test	15	38.17	12.59	9.92	P=0.004
	Post-test	15	56.37	17.14		

Using ANCOVA covariance analysis comparison between mean of post-test scores for physical health and mental health domains of quality of life questionnaire (SF-36) according to pre-test scores of patients who were treated by routine or matrix treatment method were analyzed. There was a significant difference between post-tests of all patients in two groups in the all areas ($p \leq 0.01$). In all cases, mean score of patients in matrix method was significantly more than mean score of control group.

Discussion and conclusion

ANCOVA test was used to analyze hypothesis two. There was a significant difference between post-tests of all patients in two therapy groups ($p \leq 0.01$). In all of these cases, mean score of Matrix protocol was more effective than routine therapies. There is significant consistency between results of this research and results of Sugarman (2010), Ocella (2009), Deris and Holoon (2011), Mack Hock et.al in the efficacy of cognitive behavioral therapy method on life quality improvement of opiate addicts.

According to many studies, there is significant reduction in Matrix protocol in addicted patients. There is significant difference between control and experimental group in many researches. There is significant consistency between results of this investigation and results of Rawson and colleagues (2004), rails (2006), Shepta (2005), Copeland and Sorenson (2001).

In explaining the above findings, it can be stated that the quality of life is a complex and multifaceted general concept. In addition to person's perception, it depends on his / her physical and social conditions. Therefore, long-term and holistic intervention is necessary to improve it. It is obvious that the Matrix protocol is effective on physical health and mental health in experimental groups. Physical health of quality of life includes an individual assessment of his physical pain, physical function and physical limitations as well as public health. Person's knowledge, beliefs and thoughts has significant roles in the individual assessment of his physical condition. The results of the post-test of quality of life questionnaire showed that psychotherapy by Matrix protocol leading him / her to continue the plan and doing exercise program and orders of agenda, was able to improve the physical condition better than the control group. On the mental aspect of quality of life, the results showed the effectiveness of treatment. There is significant consistency between results of this research and results of about effectiveness of the Matrix protocol on the mental aspect of quality of life, the results show the effectiveness of treatment and Hayes (1993), Hulen (1993), Chris and Christophe (1996), Marllat et.al (2004), Saunders and Feny (2006). Mental health aspect of quality of life includes social functioning, emotional problems, mental health and vitality.

. The goal of this therapy was keeping the patient clean, using a multi-faceted learning coping skills and training in various fields. According to this findings and consistent with the other studies can be concluded that Matrix protocol has efficacy on preventing the recurrence in meth addicted patients, and improved quality of life so the Matrix protocol would be regarded a useful therapeutic approach in addiction treatment.

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Enhancing Students' Vocabulary Knowledge In Thai Studies Through Lexicographical Process

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ABSTRACT

This research aimed to 1) compile words in Thai Studies field into conceptual categories in order to provide convenient sources of data and 2) enhance students' vocabulary knowledge in Thai Studies through lexicographical process. Lexical data was collected from primary sources related to Thai Studies. In addition, different types of dictionaries and encyclopedias were used as secondary sources. Lexical data were categorized by semantic field theory. The headwords and their lexical entries were grouped together and related in an associative networks. The arrangement of vocabulary items facilitated communication in Thai Studies and helped students develop self-regulated approach to vocabulary enhancement.

INTRODUCTION

ASEAN's regional integration not only marked an important milestone at the end of 2015, but also increased people-to-people connectivity, public awareness, mutual understanding, as well as active participation among the people of ASEAN through economic, cultural and educational exchanges. Being one of the most diversified regions with many ethnicities, languages, heritages and socio-cultural dimensions, ASEAN will have to overcome many challenges. In Thailand, Thai citizens are encouraged to learn and speak English to prepare themselves for the possible influx of foreign workers and tourists. However, their English proficiency remains questionable. When compared to people in the countries where English is not the official language, Thais, with an average score of 45.35, were labeled "very low English proficiency" and Thailand was ranked 62 out of 70 countries according to the most recent Education First Proficiency Index (EF EPI, 2015). Obviously, this seems to be a considerable concern if English is the major hindrance to make foreigners understand and gain a deeper insight into Thai culture.

Many empirical studies suggested that vocabulary knowledge was a major prerequisite and causal factor in English proficiency. Staehr (2008) showed that vocabulary size and knowledge influenced the skills of listening, reading and writing. Decarrico (2001) suggested that if learners lacked vocabulary knowledge, they would soon discover that their ability to comprehend or express themselves clearly was limited. Meanwhile, Elder (2008) agreed that vocabulary acquisition played an important role in mastering a language. For this reason, a learner with insufficient vocabulary size will not perform well in every aspect of language.

Having many years of experience in teaching Thai Studies at Phranakorn Rajabhat university, the researcher has discovered that lots of his students still encountered many difficulties in explaining Thailand's cultural idiosyncrasies, mentality, arts, traditions, ways of life, etc. as well as in promoting knowledge, insight and appreciation of Thainess to foreign visitors into understandable English. The main reason is apparently their limited vocabulary size in Thai Studies field. Moreover, Thai students, confronting with a linguistic difficulty in reception or production, may not be able to find a solution to lexical problems in Thai Studies field in general dictionaries which list words in alphabetical order and are mainly designed for users from all possible cultural and linguistic backgrounds. Garcia (2005) noted that a great abundance of dictionary production has not matched by an adequate research into the type of users and language skills needed for the exploitation of dictionary. Based on this, the researcher planned to compile words by applying lexicographical process in order to enhance students' vocabulary knowledge in Thai Studies, so that they would be able to communicate and transmit information of Thailand with more efficiency and confidence.

METHODOLOGY

A dictionary is considered as an essential source or a vital reference tool for language learning. It is used to grasp the meaning of words and helps EFL learners to master a language both productive and receptive skills. Good dictionary should be designed according to users' needs and requirements. The lexicographical process of Thai Studies involved five phases.

Phase One: Defining target users

During pre-lexicographical stage, a clear idea of who the users are and what they want from their dictionary is the most influential factor in order to make the dictionary tremendously useful (Atkins and

Rundell, 2008). In this study, the target users were Thai students majoring in English who took Thai Studies subject at Phranakhon Rajabhat university. In addition, teachers, researchers, translators and personnel in tourism industry were also included.

Phase Two: Designing properties of the dictionary

As part of the dictionary specific lexicographical process, the dictionary conceptualization plan has the most direct influence on the compilation process (Gouws and Prinsloo, 2005). In designing properties of the dictionary to ensure the target user's linguistic empowerment, the dictionary's language is bilingual and unidirectional so that the intended target user group could decode the source language (Thai) to understand, translate into or express him/herself in the target language (English). The information in the source language was provided through translational equivalents (L1 → L2 dictionary).

For the dictionary's medium, the researcher selected printed version due to some drawbacks of web-based and mobile Thai-English dictionaries where a search term is entered in a search box. For example, when the user wants to look up the English equivalent of the word “อุปสมบท” (to be ordained as a Buddhist monk) in <http://dic.longdo.com>, which is a widely used and reliable online bilingual dictionary for Thai users (Vitayapirak, 2013), there are not so many associated words found, to be used, and studied as shown in figure 1.

■ Thai-English: NECTEC's Lexitron-2 Dictionary [with local updates]	
อุปสมบท	[V] go into priesthood, See also: to be ordained, Syn. บวช, บรรพชา, Example: ท่านเกิดความเมตตาในจังหวัดพระนครศรีอยุธยาจึงตัดสินใจอุปสมบทสู่เพศบรรพชิตอีกครั้ง, Thai definition: บวชเป็นภิกษุ
■ ไทย-ไทย: พจนานุกรมฉบับราชบัณฑิตยสถาน พ.ศ. ๒๕๕๒ [เชื่อมโยงจาก royin.go.th แบบอัตโนมัติและผ่านการปรับแก้]	
อุปสมบท	[อุปสมบต, อุปะสมบต] ก. บวชเป็นภิกษุ. (ป. อุปสมปทา).
อุปสมบทกรรม	[บดทะกะ] น. การบวชเป็นภิกษุ.
■ English-Thai: NECTEC's Lexitron-2 Dictionary [with local updates]	
Buddhist ordination	[N] อุปสมบท, See also: บรรพชา, การบวช
■ English-Thai: Nontri Dictionary	
initiation	(ก) การเริ่มต้น, การอุปสมบท, การนำมาให้อุปสมบท, การทำพิธีรับเข้า
ordain	(ข) บวช, บรรพชา, อุปสมบท, คลบ้นดาล, ลีขีต
ordination	(ก) การบวช, การบรรพชา, การอุปสมบท, การคลบ้นดาล, การแต่งตั้ง

Figure 1: A search for an English equivalent of a Thai word in an online dictionary

Nesi (2000) clearly mentions the disadvantages of electronic dictionaries which limit the learning process since the users can learn just one or two equivalents or definition given for the entry. On the contrary, the dictionary of Thai Studies (Thai-English) provides a richer information of the words from the same concept domain as well as idioms and collocations related to the similar entry. Hence, the users can use it as a well-supported resource of knowledge in Thai Studies field.

Phase Three: Collecting data

After the target users, purposes and properties of the dictionary had been identified, the researcher, together with 43 students majoring in English who took Thai Studies subject at Phranakhon Rajabhat University in the second semester of the academic year 2014, collected lexical data from primary and secondary sources.

3.1. Primary sources

3.1.1. Introspection

The primary source of data was gained through introspection, the direct gathering of data based on lexicographer's own linguistic competence, or the indirect result from the collection of informant data (Svensén, 2009).

In the first class meeting of Thai Studies course at Phranakhon Rajabhat university in the second semester of the academic year 2014, the project of lexicography of Thai Studies (Thai-English) and its purposes were introduced to the students. Instead of providing students the course description directly, the conceptualization of Thai Studies was meaningfully made by brainstorming in order to generate their basic knowledge of Thai Studies content. The students' ideas were noted and listed as follows: temple, festival, Thai dancing, literature, folklore, culture, history, musical instrument, food, art, value, tradition, belief, politics, royal family, ritual, silk, norms etc.

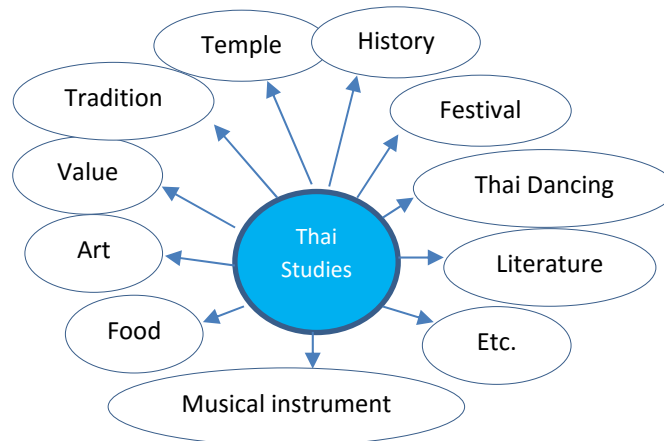


Figure 2: Conceptualization of Thai Studies

To avoid a problematic factor of incomplete data and unreliable method of data collection, other sources of information such as books, textbooks, articles, newspaper, internet resources and other authentic document related to Thai Studies were checked and consulted too.

3.1.2. Language corpus

Language corpus supports data collection and it has been used in a range of dictionary projects (Kilgarrif, 2013). The term ‘corpus’ can be defined as ‘a collection of language material selected according to certain criteria and used as a basis for linguistic investigation’ (Svensén, 2009). The corpus contains both spoken and written linguistic data and it makes lexicographical process more efficient and complete. For this lexicography of Thai Studies, the researcher collected raw data from the Thai National Corpus (TNC), which is believed to be sufficiently large and representative of the standard Thai language (Aroonmanakun, 2007). The Thai National Corpus itself is constantly available through the internet (<http://www.arts.chula.ac.th/~ling/TNCII/>).

Figure 3: Thai National Corpus

A web-based corpus can be searched accurately, rapidly and efficiently. The researcher used the Thai National Corpus to find collocation information about the lexical entries. The first step is to click at “collocate (please click for enable)”. Then, type the targeted word in Thai in the textbok appeared on your left hand side and click the ‘search’ button. For example, when you type the word “ละคร” [*lá-kon*] (stage performance or drama) which is the subordinate word of ‘Thai performing art’, the numeral data shows 5,077 examples found in fiction, newspaper, non-academic, academic, law and miscellany along with the word frequency in percentage so that the lexicographer can decide which collocations should be significantly provided in the dictionary.

No.	Collocation/ Related word	TOT	Fiction	Newspaper	Non-academic	Academic	Law	Misc	All	%
1.	พื้นทาง (Thai folk drama)	24	1		8	15			48	50.00
2.	ดึกดำบรรพ์ (Opera oriented dance)	141			18	123			345	40.87
3.	ชาตรี (A dance drama popular in the South and often seen at popular shrines in Bangkok as thanksgiving to a deity)	28	1	1	9	17			136	20.59
4.	เสภา (Thai folk drama with verse recital)	8	1			7			111	7.21
5.	สังคีต (A drama evolved from dialogue play with dance in which the actors perform in dialogue and in dance equivalently)	47			39	8			677	6.94
6.	รำ (Dance drama)	97	6	6	36	48		1	1400	6.93
7.	เวที (Stage play)	186	20	73	15	28		50	2861	6.50
8.	หนังใหญ่ (Shadow plays)	6			1	5			102	5.88
9.	โขน (Mime show)	8	3	4		1			301	2.66
10.	ตลก (Comedy)	15	5	4	2	1		3	1656	0.91

Table 1: The selected collocations of the word “ละคร” (stage performance or drama) from the Thai National Corpus

3.2. Secondary sources

The lexicography of Thai Studies (Thai-English) relied heavily on secondary sources such as primarily monolingual (Royal Institute dictionary) and bilingual dictionaries suitable for general use, and specialized dictionaries, for instance, dictionary of literary terms, dictionary of linguistics, dictionary of geography, dictionary of Buddhism, etc. In addition, lexical data were also collected from Thai Junior encyclopedias, initiative project by His Majesty King Bhumibol Adulyadej.

To gather lexical data from pre-existing encyclopedias and dictionaries in which the words are listed in alphabetical order, the headwords, normally broad terms whose meaning covered the meaning of the entry in the lemma list, should be set beforehand in order to facilitate the categorization of words according to their concept domain. For this lexicographical project, the researcher divided the content into 13 groups covering Thai Studies field including 1) topography 2) climate and natural disaster 3) appearance and human characteristics 4) society and governance in Thailand 5) economy, occupations and employment, 6) Thai culture and tradition 7) Buddhist concept 8) Thai architecture 9) visual art and handicraft 10) Thai performing art and music 11) Thai language and literature 12) Thai cuisine and 13) miscellany. So, it is an onomasiological dictionary that goes from concepts to words rather than from words to concepts (Sterkenburg, 2003).

Phase Four: Analyzing data and building subsidiary lemma lists

Lexical data were analyzed and categorized by semantic field theory. According to this theoretical framework, the headwords have a more general meaning than the subordinate words (Jackson, 2002). The headwords and their lexical networks were related by both hyponymic (showing the relationship between the more general terms and the more specific instances) and part-whole relations. The following table shows how words were conceptually structured:

Headword	Thai traditions					
1 st subordinate word	Customs associated with birth and adolescence		Customs associated with adulthood		Death and funeral customs	
2 nd subordinate word	Baby blessing ceremony	Topknot- cutting ceremony	Thai wedding ceremony	Monk ordination	Funeral	Beliefs concerning death
3 rd subordinate word	-baby cushion -childbirth, delivery - etc.	- sacred thread - spirit in the head - etc.	- bride-price - conch shell - engagement - nuptial - etc.	- alms-bowl - enlightenment - precepts - etc.	- ashes - coffin - crematorium - wreath -etc.	- barn owl - hades - next life - etc.

Table 2: Words related in an associative network

From the table, , the set of words in the 3rd subordinate group, for instance, “baby cushion”, “childbirth”, “delivery” belongs to a larger group “baby blessing ceremony”, which is included in a larger concept “customs associated with birth and adolescence”, and the latter is included in an even larger group devoted to Thai traditions. Semantic field, involved generally with brainstorming an associative network, categorizing lexical items and building subordinate words, can increase cognitive processing and develop students’ vocabulary knowledge (Ward and Annita, 1988). During this process, students were encouraged to think of and gather words that are related to the selected key topic from various sources.

Phase Five: Finding equivalents

As the purpose of the bilingual dictionary is to give target-language equivalents of words and expressions in the source language (Svensén, 2009), lexicographers may confront certain restrictions due to the differences in socio-cultural matter, grammar, concept formation and semantic ranges between two linguistic systems, for example, there are lots of Thai words which do not exist in English. The word “กราบ” [grāap], which means to prostrate oneself to worship, is not found in English-speaking cultures. In bilingual lexicography, lexical items in source-language and target-language are related with regard to meaning and usage. Therefore, some culturally-bound words or expressions have no one-to-one equivalent between the source language and the target language. When zero equivalence was found, the researcher used two methods: transliteration and explanatory or descriptive equivalence.

5.1. Transliteration

Supplying term equivalents from one language into another is not as easy as it may seem. When the target language has no equivalent for source language units, the character of the source language is assigned to a different character of the target language. According to Mabasa (2005), transliteration is normally said to be direct loan by where a particular term is created from one language and the user adjusts its pronunciation, spelling and morphological characteristics to suit the target language. The transliteration technique was adopted mostly with the proper nouns.

Proper nouns in Thai	Transliterated words in English
เทศกาลลอยกระทง	Loy Krathong festival
นางนพมาศ	Nang Nopphamas
ประเพณียี่เป็ง	Yee Peng festival
วันวิสาขบูชา	Visakha Puja day
ศิลปะทวารวดี	Dvaravati art

Table 3: Transliterated proper nouns from Thai into English

The system for rendering Thai language words in the Latin alphabet appeared in the dictionary of Thai Studies (Thai-English) was strictly based on the Royal Thai General System of Transcription, published by the Royal Institute of Thailand. However, transliteration, according to Mabasa (2005), should not be excessively implemented as it can lead to language death or mere duplication of the source text (Ngobeni, 2013) which will not help the users of dictionary to achieve their communicative goal if the speakers of the target language do not understand the source language term. In this case, the researcher applied explanatory or descriptive equivalence.

5.2. Explanatory or descriptive equivalence

Comprehensive explanation or description was often employed when dealing with culturally-bound words. This strategy is a target language paraphrase of the source language item, situated somewhere between a target language equivalent and a target language definition (Adamska-Safaciak, 2011). The following examples illustrate this point:

Culturally-bound words in Thai	Explanatory equivalents in English
กระบุง, กะต๊อบ	bamboo container for holding cooked glutinous rice, sticky rice box
กระบวย	big spoon with long handle, deep spoon made of coconut shell
เฒ่าแก่	well respected person who plays the role of a go-between in asking the hand of someone's daughter to be married to someone's son
บายศรี	offering of cooked rice under a conical arrangement of folded banana leaves and flowers topped with the boiled egg
พระอุปัชฌาย์	monk who officiates at an ordination ceremony, preceptor

Table 4: Explanatory equivalents of culturally-bound words from Thai into English

RESULTS AND DISCUSSION

Since there is still no bilingual dictionary of Thai Studies in which the lexical items are arranged into conceptual association, this project is believed to provide a user-friendly resource which would enhance students' vocabulary knowledge in Thai Studies. The lexicography of Thai Studies (Thai-English) was presented in 3 constituent parts including megastructure, macrostructure and microstructure (Svensén, 2009).

1. Megastructure

The dictionary megastructure consists of preface, user's guide, list of abbreviations used in the dictionary, index, appendixes and lemma list which is the main component of a dictionary. All lexical entries, divided into two columns with a vertical line in the middle, are listed in Thai alphabetical order. Each entry is represented with a headword. Words in the source language are listed on the left while their English equivalents are found on the right.

นาฏศิลป์ และ ดนตรีไทย (Thai Dancing Art and Music)

I. นาฏศิลป์ไทย (Thai Dancing Art)

การฟ้อนรำ	dancing
การแสดงประกอบดนตรี	musicality
การออกแบบท่ารำ/ ท่าเต้น	choreography
เข้าพระเข้านาง	to flirt, to be romantic, to court
โขน	Thai classic masked play enacting scenes from the Ramayana
การแสดงที่ต้องใช้พลัง มาก	strenuous performance
บทเจรจาโขน	dialogues

ก้มลงจรดพื้น	to bend down to touch the ground
ก้มตัวลงข้างหน้า	to bend the body forward
กระโดดตบเท้า	to jump and clap feet together
กระโดดสองเท้าประชิด	jump with feet close
ก้นในอากาศ	together in the air
กระเียบเท้าทีละน้อย	to slightly move the body
ตามจังหวะของดนตรี	according to the beats of the song
การก้มศีรษะลงเล็กน้อย	slight bow of the head
การกระโดด	bound, jump
จีบ	to touch the inside of forefinger with thumb

Figure 4: Presentation of the lemma list

2. Macrostructure

Macrostructure is an organizational structure which applies to the dictionary in its entity. The lexical entries appeared in bilingual dictionary of Thai Studies (Thai-English) are arranged according to systematic or thematic macrostructure (Svensén, 2009) while the arrangement of lemma list found in most general-purpose dictionaries is in alphabetical macrostructure. Categorized into 13 semantic fields, the headwords and their subordinate words are related by semantic affinity and within each category and sub-category, the lexical items are alphabetized according to Thai alphabetical system, apparently more intricate than English. To determine Thai dictionary order, word items can be found its place according to the ordering of the 44 consonants. The inherent vowels are considered at a lower level of precedence than consonants and finally, if required, tone marks are considered with the final precedence. However, non-strict-alphabetical macrostructure is found on some occasions, particularly within the sub-lemma grouping while the overall lemma remains a strict-alphabetical one. The following table shows non-strict-alphabetical macrostructure within sub-lemma list.

อริยสัจ 4	the four noble truths
ทุกข์	suffering, misery, pain, sorrow, trouble
สมุทัย	the cause/ origin of suffering
นิโรธ	the cessation of suffering
มรรค	the path leading to the cessation of suffering

Table 5: Non-strict-alphabetical macrostructure within sub-lemma list

“อริยสัจ 4 (The four noble truths)” is the lexical entry under the headword “Buddhist concept”. Its sub-lemma list contains four words which are non-strict-alphabetically arranged according to Thai alphabetical system. The words can be strictly arranged as ทุกข์, นิโรธ, มรรค and สมุทัย according to Thai alphabetical order, but it will not reflect the idea of cause and effect which is considered as the heart of the Buddha’s teachings. In this case, strict-alphabetical macrostructure is not a good idea to be applied in this sub-lemma grouping.

3. Microstructure

Microstructure is, according to Louw (1999), “the structure of individual dictionary entries: their various parts and the mutual relationship of these including the typographical conventions used”. The microstructural functions aim to provide the accessibility of information and the user-friendliness, ensure ease of comprehension and create a homogenous style throughout the dictionary. The following table presents the information categories that constitute the microstructure of the bilingual dictionary of Thai Studies (Thai-English) as well as the conventions used to present them.

Information categories	Presentation and convention(s) used
Spelling	Headwords in bold font
Symbols	1. [/] used to indicate a choice

	<p>กระแสน้ำเชี่ยวกราก fast-flowing/ powerful/ strong/ swift/ treacherous current</p> <p>2. [,] used to separate two or more synonyms</p> <p>ฉันทาคติ bias, prejudice caused by loved, partiality</p> <p>3. [()] used to</p> <p>3.1. give more information about the word</p> <p>ยิ้มสยาม Siamese smile (which is found on the face of a typical Thai)</p> <p>3.2. explain the cause</p> <p>ท้องคึดท้องแข็ง strained belly (due to uncontrollable laughter)</p> <p>3.3. give grammatical information</p> <p>เท้า, ตีน foot, feet (pl.)</p> <p>4. [-] used to indicate the subordinate words which are related to the larger word</p> <p>เทศกาลลอยกระทง Loy Krathong festival</p> <p>กระทง lotus-shaped vessel</p> <p>- กะลามะพร้าว coconut shells</p> <p>- เงินเหรียญ coins</p> <p>- ชิ้นส่วนของลำต้นของต้นกล้วย a slice of the trunk of a banana tree</p> <p>- ทำให้แม่น้ำเน่าเสีย to pollute the river</p> <p>- เทียน candle</p> <p>- รูปสามดอก three incense-sticks</p> <p>- ใบตอง banana leaves</p> <p>- โฟม styrofoam</p> <p>- เน่าเปื่อย, ย่อยสลาย to decompose</p> <p>- ย่อยสลายได้ตามธรรมชาติ biodegradable</p>
Equivalents	English equivalents occur immediately after the lemma.
Collocations	<p>Collocative partners are spaced distinctively from their base word.</p> <p>น้ำท่วม, อุทกภัย flood</p> <p>กำแพงป้องกันน้ำท่วม flood wall</p> <p>ทางระบายน้ำท่วม flood way</p> <p>น้ำท่วมฉับพลัน flash flood</p> <p>น้ำท่วมรุนแรง catastrophic/ devastating/ great/ severe</p> <p>flood</p> <p>ปริมาณน้ำท่วม flood runoff</p> <p>พื้นที่น้ำท่วม flooded area</p>

Table 6: The microstructure of the bilingual dictionary of Thai Studies

CONCLUSIONS

With the advances in transportation and technology, the world has become increasingly interconnected. Communication among people from diverse linguistic and cultural backgrounds has also become a concern since it will lead to mutual understanding. The aim of this lexicographical project was the production of bilingual dictionary to facilitate communication in Thai Studies. In accordance with the purpose and intended use of the dictionary, the lexical entries, obviously the main component of a dictionary, were arranged according to conceptual categories. The lexicographical process of the dictionary of Thai Studies (Thai-English) started with defining target users, followed by designing properties, data collection, data analysis and finding equivalents respectively. During the phase of data collection, students were involved in gathering words which were semantically associated to the selected headwords from various sources. They were guided by the teacher to list the words by categories and to find the target-language equivalents. The anticipated benefits were to enhance their vocabulary knowledge in Thai Studies, provide user-friendly and convenient sources of data as well as break down their language barriers so that they could effectively promote knowledge and insight as well as appreciation of Thai Studies to foreign visitors.

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Environmental Attitudes And Awareness of Turkish, Libyan And Northern Cyprus University Students On Water

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Abstract

This study aims at investigating environmental attitudes and awareness of turkish, libyan and northern cyprus university students on water The environment and water issues for the university students in North Cyprus, Libya and Turkey. In order to determine attitudes and behavior of the university students in environmental education and water usage, questionnaires were applied to emphasize the importance of education in the formation of environmental awareness. The purpose of the study is to determine with the help of surveys the attitudes and awareness about water and investigate whether university students in North Cyprus, Libya and Turkey have enough consciousness on the subject. The research involves 300 university students in Northern Cyprus, Libya and Turkey. This study applied the relational model with quantitative research methods; it was carried out by giving students enough time to answer the questionnaire used as a data collection tool . The data obtained from the survey results were analyzed by SPSS 20 program. The Participants who were unrelated to the case determined that varies according to gender t – test, in determining whether parents' education level varies ANOVA, Cronbach's Alpha, Split-Half, Post Hoc test has been applied. Frequency and percentage were utilized to examine the behavior of the students regarding the adequacy of the environmental education. The findings obtained in this study show that students lack of environmental education concerning water and their general knowledge is not adequate.

Keywords: Environmental education, environmental awareness, environmental information, water.

1.Introduction

Environment is a set of living and inanimate interaction. The world also increased environmental pollution, especially starting from the kindergarten school and the necessity of the environmental education at university. The environment has largely replaced the environmental education on the new generations to grow up in terms of environmental issues and the importance of the quest for greater than (Sungurtekin, 2001).

All people in the audience and environmental education are also sensitive to the environment, the development of positive attitudes and behaviors regarding environmental protection. If included in school curricula, environmental education can be provided to achieve the objectives of environmental issues. Environmental education is fundamental for the protection of nature and natural resources. But air, water, soil, plants and biosphere in order to understand how to protect the fauna and to be able to get into biomes and ecosystems must be well known all around. For this, the pre-school education should provide materials to make a variety of activities and environments where children use their senses and are required to demonstrate feedback. Children realize their theoretical knowledge of the environment and they forms environmental protective habits. Life-long habits and values that we obtain by environmental education should start from early childhood that develops in the first years of our lives (Şimşekli,2001).

Water, the main source of life, is the most essential need for all living beings. At first glance the earth of sufficient amount of water for all living beings. Although the total amount of water in the world is 1.4 billion km³, 97.5% of the water is the oceans and seas as salty water,

2.5% as fresh water in rivers and lakes. Less than 90% of fresh water resources are polarity and therefore men is trapped underground easily due to very limited amount of fresh water suitable to benefit from. On the other hand, the rapid growth of the population and as a result of industrialization global water resources are also consumed and the situation is tainted and pressure on these resources is increasing with each day.

Especially in recent years, lack of rain, and inefficient use of water resources in the world raised the need to top level. Today water scarcity in many regions of the world has become one of the most important issues of this century and global water crisis has begun to be pronounced. In 2000, the Stockholm Water Symposium, about 350 million people in 26 countries drawn by thirst, and do not have sufficient water resources number of people were reported to be 1.2 billion people. These figures are taken into account as much as one third of the world population means when faced with water problem (Atabey, 2005).

Today, water has ceased to be the subject of only engineering work; economy has become the subject of ecology and social sciences. “Sustainable water management”, “integrated water resources management”, “water management” put forward a number of new concepts and began to discuss the implementation of these concepts. These discussions are particularly developed and developing countries continues, to face water pollution on, deficiencies in water supply, natural disasters such as droughts and floods. Since the 1990s, the World Water Council has ensured global cooperation and solidarity by setting up new international institutions such as the Global Water Partnership (Bilen, 2008).

Under these conditions, effective management of water resources has begun to hold one of the priority issues of the country. At the same time, sustainable use of limited freshwater resources, for the countries where it is crucial necessity of saving water saving is of vital importance for world order and prosperity.

2. Methodology

2.1. Research Model

In the research called “Comparision of Environmental Attitude and Awareness Levels of the students from TRNC, Libya and Turkey about Water”, “relational screening model” was used. In the relational screening model, it is aimed at determining the existence or degree of covariance between two or more parameters (Karasar, 2009). This kind of researches could present an opinion about a cause-effect relationship to the researchers; yet, they can never been interpreted as a cause-effect relationship. Correlation researches are important research types which are effective on disclosing the relations between the parameters and determining the levels of these relations, and which provide essential clues to conduct high level researches related to these relations (Büyükoztürk and others, 2008).

2.2. Study Group

The population of this research consists of 300 university students from TRNC, Libya and Turkey; taking education in 2014-2015 academic year in TRNC, Libya and Turkey.

2.3.Data CollectionTool

In this research, the “Survey Purpose Form” and the “Environmental Attitude Scale” was used as the data collection tool.

2.4. Scoring Scale Classification Of The Substance

The levels of knowledge of the university students participating in this research about the environmental education were revealed and interpreted in regards to the survey questions.

2.5.Data Analysis

The data obtained from the surveys were analyzed in silico by using the computer program SPSS 20.0.While detecting if there was any difference in the environmental education and water usage awareness of the university students participating in the research from TRNC, Libya and Turkey in regards to their sexes, unrelated samples t-test was practised; and while

detecting analysing the difference in their environmental education and water usage awareness in regards to their educational backgrounds, ANOVA, Cronbach's Alpha, Split-Half, Post Hoc test was practised.

3. Findings

This chapter is divided into three sections. The first characteristics of the respondents demographic section is examined. The second section provides a report on the characteristics of the measurement scales (Cronbrachs Alpha Test) used in the study. The final section then, discusses the analysis of the research hypotheses.

3.1. Respondents' Characteristics

The profile of the respondents with respect to their gender, nationality, Population of the area where they live, education status of there mother, education status of there father and family is shown in Tables1.

Table 1 : Frequency And Percentage For Gender.

Gender	Frequency	Percentage
Male	134	44.7
Female	166	55.3
Total	300	100.0

Table 1 show that most of the respondents in the gender group are (44.7%) percent male and (55.3%) are female respondents (figure 1 shows that).

3.2. The Result Of Study Depend On It's Questions.

Research Question 1: The difference between university students from Libya, Cyprus and Turkey in awareness raising of the environment around the water? The answer to this question is shows in mean.sta.deviation descriptive statistics (Table 11).

Table 11(a) :Mean And Standard Deviation For Items

No.	Items	Mean	S.d
1	How concerned are you about the quality of your local water environment?	3.63	0.80
2	How concerned are you about water pollution?	3.64	0.68
3	The Water Framework Directive aims to improve the “ecological condition” of water bodies across this area. This is a measure of both water quality and how good the rivers and canals are for wildlife. How would you assess the ecological condition?	2.95	1.08
4	Should the regulations to control water pollution be more strict, less strict, or about as strict as they are now?	3.73	0.89
5	Is the Environment Agency spending too much money trying to improve the water environment, too little money or about the right amount of money?	2.74	1.34
6	Is improving the local water environment more important than improving the local economy, less important than improving the local economy, or about as important as improving the local economy?	2.82	1.38
7	Should the government spend more money to improve the water environment, less money to improve the water environment, or about the same amount of money to improve the water environment?	3.89	1.05
8	How willing are you to change your lifestyle to reduce the damage you cause to water environment?	3.44	1.08
9	Is The business community interested in protecting water?	3.50	0.91
10	To conserve water, elected officials should pass ordinances that limit the number of single family homes that can be built each year	3.42	0.97
11	Elected officials should establish a public information office to disseminate information and educate citizens about water conservation	3.03	1.13
12	How do you feel about the formation of a local agency to control and manage water assets?	3.65	1.01
Total		3.37	0.42

Table (11) shows that mean range between (2.74-3.89), is the highest mean for “Should the government spend more money to improve water environment, less money to improve water environment, or about the same amount of money to improve the water environment?”, and the lowest mean is for “Is the Environment Agency spending too much money trying to improve water environment, too little money, or about the right amount of money” (3.06). The overall mean for environment around water Reached (3.37), This shows the average level of awareness of the environment. The government should support the people to increase the level of awareness towards the environment of water. This means the government play a critical role in improving water environment through establishing the projects that concern the improvement of water environment.

Table 11 (b): Mean Score.

Mean Score	Interpretation
1.00 -1.80	Strongly disagree
1.81 – 2.60	Disagree
2.61 – 3.40	Moderate agree
3.41 – 4.20	Agree
4.21 – 5.00	Strongly agree

Most of the means seem between 3.40 to 4.20 which means that most of the answers agree on the issue. There is only moderate agreement?

Research question2: The difference between male and female in raising awareness of environment of the water ?

The answer to this question is shown in Mann-Whitney Test table (12a-12b)

Table 12(a): Result of Mann-Whitney Test To Awareness of Environment Due to Gender (n=300).

	Gender	N	Mean Rank	Sum of Rank
Raising awareness of environment of the water	Male	134	148.41	19886.50
	Female	166	152.19	25263.50
Total			300	

Table 12 (b): Test Statistics.

	Gender	N	Mean Rank	Sum of Rank
Raising awareness of environment of the water	Male	134	148.41	19886.50
	Female	166	152.19	25263.50
Total			300	

Table 12 shows that, value of awareness of the environment due to gender reached to (-0.376), by Sig. (0.707). This indicates that there are no significant differences due to gender in raising awareness of environment of water. The analysis indicated that there is no high difference between the awareness by males and females towards water issues. The Ranks table is the first table that provides information regarding the output of the actual Mann-Whitney U test. It shows the mean rank and the sum of ranks for the two groups tested (i.e., the exercise and diet groups)

Mean rank represents the highest and lowest. In the table above the highest percentage is 152, 19 for the females, and lowest is for the males (148.41). That means the females are more aware of the environment of water. Table 12(b) the Sig is 0.707 so there is no significant difference concerning gender in raising awareness of environment of the water.

Research question3: What is the impact of the family's monthly income on students in the culture to do with the environment of the water? To answer this question Kruskal-Wallis Test was applied.

Table 13(a): Result Of (Kruskal-Wallis Test) to Awareness of Environment Due to Monthly Income (n=300).

	What is your income?	N	Mean Rank
Raising awareness of environment of water	Less than 1000 TL	4	160.50
	Between 1000-2000 TL	60	140.29
	Between 2000-3000 TL	107	143.31
	Between 3000-4000 TL	43	198.07
	More than 4000 TL	88	142.32
Total			300

Table 13 (b): Test Statistics

Raising Awareness of Environment on Water.	
Chi-Square	15.386
df	4
Asymp.Sig.	0.004

Table 13 shows that value for awareness of environment with monthly income reached (15.386), by Sig. (0.04). This indicates that there are significant differences due monthly income, in order to differences favor of category monthly income (Between 3000 - 4000 TL). There is a positive relationship between monthly income and the level of awareness towards the environment. When monthly income provides a high quality life the awareness towards the element high. The mean rank in table 13 shows the income between 3000-4000 and it is the highest mean rank. Table b shows is significant differences due to monthly income with 0.04.

Research question 4 (1): What is the impact of the educational level of the mother and father on the student and does it affect the culture and environmental awareness of water? To answer this question (Kruskal-Wallis Test) was applied. Table14.

Table 14: Test Statistics

Raising Awareness of Water on Environment.	
Chi-Square	10.312
df	5
Asymp.Sig.	0.067

The level of education in the family by father and mother helped in increasing the level of awareness towards the environment. Table 14(a) shows that the highest mean rank is elementary (182.34). Table b shows no significant differences due to educational level of the mother (0.06).

Question 4 (2): What is the impact of the educational level of the mother and father on the student and does it effect the culture and environmental awareness of water? To answer this question (Kruskal-Wallis Test) was applied Table15.

Table15 (a): Result Of (Kruskal-Wallis Test) To Awareness of Environment Due To Educational Level of The Fathers (n=300).

		Education Status	N	Mean Rank
Raising awareness of environment of the water		Elementary	41	166.85
		Primary School	26	194.69
		Secondary School	41	149.71
		High School	73	149.97
		University	96	135.51
		Master-Doctorate	23	137.04
Total				300

Table 15 shows that, Chi-Square.value for the awareness of environment with educational level of the father reached (11.685), by Sig. (0.05). This indicates that there is no significant differences due to educational level of the father.

Question5:What is the difference between recruits students in associations or institutions to cultural environment? To answer this question (Mann-Whitney) Testwas applied. Table16 (a ,b).

Table 16: Result Of (Mann-Whitney) Test Of Awareness Of The Environment By Recruits Students (n=300).

	Have you received?	N	Mean Rank	Sum of Rank
Raising awareness of environment of the water	Yes	125	145.58	18195.00
	No	175	154.03	26955.00
Total		300		

Table 16 (b): Test Statistics

Raising Awareness of The Environment on Water	
Mann-Whitney U	10320.000
Wilcoxon W	18195.000
Z	-836
Asymp.Sig.(2-tailed)	0.403

Table (16) shows that, value of awareness of environment by recruits students is (-0.836), by Sig. (0.403). This indicates that is no significant differences among recruits students in raising awareness of the environment of water. There is a high awareness by the students to protect the environment. The environmental crisis improved the level of the weaknesses towards the environment. In the table 16 we can see that mean rank is the highest with the answer (No) (%154.03). Table (b) shows no significant differences among recruits students in raising awareness of the environment of water (Sig.%0.403).

4. Result

4.1. The results of the research

In this research, “Survey Purpose Form” was practised in order to have an idea about the students’ awareness of the environment. Students’ answers were analyzed by using SPSS 20.0. The findings show the awareness levels of university students’ related to the environmental education.

This research supports the development of directed awareness information focused on improving the current level of understanding of sustainable shower, clothes washing, irrigation and tap use behaviors. Such targeted programs will result in significant reductions in water consumption within residential households. In my conclusion I braced on a search for master Millock, K. and Nauges, C. (2010), it was about environmental attitudes and policy Environmental and Resource Economics. Awareness of water consumption was found to be limited, with just over half of participants identifying as being conscious of the amount of water they consume. Many were found to have favorable attitudes to household water conservation, yet this attitudinal enthusiasm was translated only to a modest reduction in water consumption. Many also declared to using water saving practices. However, participants were more likely to engage in simple actions such as stopping dripping taps than for example, reusing bathwater. Furthermore, the favorable attitude and water saving intentions did not reflect the adoption of water efficient appliances. Less than half of all participants started that they do not own any such appliance.

In table 11 in the overall meaning of environment around the water is (3.37). This shows the average level of awareness of environment. The government should support people to increase the level of awareness towards the environment of water, by taking a crucial role in improving water environment through establishing the projects that concern improving the water environment. In my conclusion I also braced myself to a search for master by Bilir (2012), about environmental awareness and education of water, where the results were comparable to my own conclusions. While a favorable attitude to water conservation does not always translate to water saving behaviors, the fact that so many are in favor of water conservation provides much

opportunity for future household water management strategies. In addition to the installation of water meters and increased water prices, participants highlight that increasing user knowledge of water issues (e.g. the consequences of wasting water, water consumption figures) as well as social marketing campaigns (e.g. providing information on how water can be saved in the house, communicating information about the quality and performance of water efficient appliances) would help encourage water saving behavioral change.

In table 12 Mean rank represents the highest and the lowest percentages. In the highest percentage is (152), for females, and the lowest for the males is (148). That means the girls are more aware of the environment of water.

Table 13, indicates that there are significant differences due to monthly income, (between 3000-4000 TL). There is a positive relationship between the monthly income and the level of awareness towards the environment. When monthly income provides a high quality life the awareness towards the element is higher.

The level of education represented by the family there parents helped in increasing the level of awareness towards the environment is in table 14 and 15.

In table 16, there is high awareness by the students to protect the environment. The environmental crisis improved the level of the weaknesses towards the environment. We can see that mean rank is the highest with the answer of (No) (%154.03). There is no significant differences among recruits students in raising awareness of environment of water (Sig% 0.403).

4.2. Recommendations

- It should be provided that the environmental and water-related education should be given not only in universities but also in each school starting with the kindergartens; the public should be educated about water usage through the media; the social water awareness should be created. Even, the education models should be taken as examples from the developed countries studying on this point; and the knowledge should be shared by establishing common councils if necessary.
- The practical projects prepared by the students during university should be focused on. For instance; projects could be prepared in order to search the amount of water used in houses in a day; to encourage the students to make water budget in their homes by brainstorming; to search the water pollution issue; to show scarcity of water resources and how important water is.
- Education campaign programs should be developed to spread the environmental education which is the biggest agent on bringing environmental awareness to all parts of the society. Particularly, spreading the environmental education through mass media should be given importance. B2B collaboration should be performed in order to give the environmental education through TV, radio programs and the press. Within this scope, a center should be created by associating with the universities in order to prepare educational films, documentaries and materials to be used both in schools and in the press.
- Because of the fact that the subject “environment” is an interdisciplinary field, it could play the role of catalyst in realizing the general objectives of the education. In other words, increasing the awareness of the environmental education and water shouldn't be the subject of just one lesson.
- Because universities are the foundations giving education in modern level, and because a modern education can help the individuals gain awareness of loving and protecting the environment, elective environmental courses should be given to the people who take university education in majors different from the environmental science and the environmental engineering in order to inform them about environment of subjects.
- The term, “Recycling” means making the recyclable waste products, which cannot be used anymore, raw materials again by using various recycling methods. When the consumed product is recycled, the necessity of raw materials decreases. Thus, the increasing degeneration and damage to nature parallel with the population growth are prevented.
- Water treatment plants should be constructed for treating the waste water.
- Although it is confirmed that the students' knowledge levels on the environment and water usage are not that low, it is clearly seen that there is not essential care on it. In order to turn the knowledge into practice, it is important that all the state institutions and organizations, business

world and non-governmental organizations -particularly, the National Education Ministry should develop responsibility projects and all people should participate in these projects.

- To support official efforts in the field of protection of water resources, everyone can participate in water conservation as a campaign "water saving tools" adopted by the Environment Agency to support both parents, mosques, schools and commercial and government buildings, where the technicians are accredited to visit every home and place of work for the installation of water-saving tools campaigns the taps. Organize these small items that have to be installed for free flow of water, and reduce water consumption.

- Rationalization is intended to optimize the use of water that leads to benefit from the least amount and the cheapest possible financial costs in all areas of activity. When you talk about the rationalization of water consumption the main goal is to educate the citizens of the importance of water as the basis of life and the basic element in all industrial, agricultural and tourism fields. And the call for rationalization not intended deprivation of the use of water as much as intended to work on changing patterns and consumer habits so that a daily consumption behavior of the citizen or the family to show restraint and balance and not wasteful .

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Eurimages Membership And Turkish Cinema

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ABSTRACT

Cinema-State relationship in Turkey until 1990s developed mostly around the issues of censorship and taxes. Neo-liberal economic and cultural politics after 1990s caused crucial breakups for the future of Turkish cinema. Turkey, on the one hand, organized a series of regulations in order for the free circulation of international capital and enabled Off-Shore Media Project in cinema through those regulations. On the other hand, the country became a member of international programs and institutions such as Eureka, MEDEA, See Cinema Network which were organized within the scope of European Union cinema politics, and carried forward its relationship with Eurimages. Eurimages membership caused a transformative effect in Turkish cinema in terms of economy, culture and art. Eurimages membership can be described as a new era of Turkish cinema or a moment when the country had an opportunity to rediscover itself. In this study, economic, cultural and artistic gains that Turkish cinema acquired thanks to Eurimages will be discussed. Besides, suggestions on how those gains can be carried forward in the future will be given.

EU CINEMA POLITICS

Today, cinema is in the position of a globally-running industry. It can be seen that, especially Hollywood cinema dominates the world movie market and tries to disseminate the American lifestyle. Representations of a culture are taken over from the culture you are in and internalized. From this aspect, representations are politically crucial. Today, cinema products presented by a global marketing are important in terms of carrying out the political struggle. Ryan and Kellner (1997: 38) explains this struggle as: “Political interests in cinema are extremely powerful, because movies become a part of a wider cultural representations keeping alive the social institutions by manipulating the common thought of what the world is and what it should be, and the psychological stands that form a basis for building social reality one way or the other.”

Many countries have a common dilemma in cinema politics: the relationship between culture and trade. Here there is always a struggle between the desires for forming a powerful economic sector that provides employment areas and the desires for a representative and local cinema that can help serious thinking upon the society through drama (Miller, 2000: 44). Ben Gibson states from the example of England that (1992: 30-31) the best way to understand the place of the governments while creating a movie industry is the necessity to arrange the related arguments between economic realities and a set of cultural priorities. Cultural priorities require the explanation of these issues: In which market the business should be carried out or which market is the one to provide service? Does it matter who shoots the movies of a country? What are our arguments for making a movie? Who is busy with trade and who produces culture or is culture a business of trade? Gibson expresses that (32) English producers could not attempt such a work because they did not believe there would be a market for a ‘European’ movie or the lack of their market-related experiences and information. The writer associates the problem related to film production which has various cultural characteristics in cinema with the distribution and marketing process of the movie. It seems that those problems related to the relationship between culture and trade can increase and occupy the agenda in the future. Miller (2000: 44) suggests avoiding economic and cultural minimalist (reductionist) approaches towards the solution of the problem.

With the development of globalization concept, some sort of changes can be seen in film industries and national and international policies that organize the relations in those industries. While the term ‘national cinema’ has been used for long years in the history of cinema, the terms ‘multiculturalism’ in 1990s and ‘transnational’ by and after 2000 have been used. Cinema has an international characteristic from the beginning due to the movie dealing between countries or co-productions. With the economic, cultural and political outcomes of the globalization process, national limits have been exceeded, and cinema has gained a transnational quality. “Neoliberalism”, which is based on the circulation of capital exceeding national limits, and internationalization of labour are the prominent reasons of the appearance of globalization process. It can be stated that globalization process caused hopes and concerns about many issues as well as its positive and negative aspects. Considering the fact that 22 companies out of top 50 that run cinema, television, entertainment and music industries are USA-based, it can be seen Hollywood’s dominant and hegemonic position in the concept of globalization can be seen (Ulusay, 2008: 23-24).

Globalization process further stratified the relations of film industries and cinema of the countries with economy and politics. Concepts such as international circulation of the capital and labour, the structure of

ownership which changes due to the vertical and horizontal coalescences, convergence of mass media and the related sectors create different perspectives on the analysis of cinema through political economy.

Starting from the Hollywood example, Wasko (1999: 226-227) states that the purpose of political economy approach is to realize the distribution of power in film industry and criticize it. Labour problems should be pointed out and efforts for producing alternatives for commercial movies should be made. Instead of adopting the status quo, people should stand up to that. Film industry as a whole should be considered a part of the society as a huge part of the communication and media industry. How one can become dominant in international movie markets and by which mechanisms is the dominance of the market sustainable should be pointed out. How the film export is associated with the market of the other media products, domestic film industry of the countries and political and cultural outlooks because of that situation should be focused on.

“European, Europeanness, belonging to Europe” and similar definitions have been discussed in and outside of Europe in terms of culture, society, politics, economy and philosophy, in addition, it can be stated that “European thinking” has become a current issue through movies. The idea of “European Cinema” has the similar discussions as well. Besides those discussions, transnational interactions and intercultural reception topics can be mentioned. According to Tim Bergfelder, who claims that European Cinema studies mostly equal to the national cinema studies, this situation reflects the main problem of European project existent from the very beginning; how can the desire of protecting national identity and cultural differences be associated with a society ideal? (2005: 191). When considered from the perspective of cinema history, it might not be necessary to use the definition of European cinema years ago. Instead of that definition, terms such as “French movie” or “Italian movie” were much more commonly used. “European Cinema” has become a category mentioned during the years when the limitations of European Union, Europeanness and Europe have been discussed in different platforms (Sevgen, 2005: 7).

Since the first years of cinema, Europe which has been considered a huge and profitable market by USA brought up art house films against Hollywood movie industry. “In addition to its indication of a production and narration style which exists in almost every country’s cinema no matter how different cultural characteristics it has or its place in the world geography is, art house film has been generally associated with European cinema” (Ulusay, 2003: 63). In relation to Hollywood film industry’s policies of gaining predominance as a market in Europe, it can be stated that Europe tended towards more protective politics, cultural diversity and art house films in the cultural field.

The formation of a holistic policy related to cinema and the other mass media in European community started in 1980s. As it will be mentioned later, a set of programs have been formed. About the process regarding Europe’s coalescence in 1992, Bergfelder (2005: 192) talks about two important conferences that caused European cinema regain significance by academic environment in 1989. Both conferences brought into question three important issues: “Problematizing Europe; the problem of national and cultural identity and differentiation and hierarchy between advanced culture and popular culture.” When viewed from a general perspective, these issues are still at the centre of debates.

European art house cinema is the prominent concept reconsidered in Europe in 1990s. European art house cinema, which places importance on the history of masterpieces, different cinema schools, the director himself/herself and brings forward auteur methods, has constituted a significant reference point in the determination of European culture politics. This idea, in a sense, has formed the basis of GATT negotiations during mid-1990s.

Bergfelder (2005: 191) points out that in order to provide persistence and protection for the art house cinema, the applications and institutions seen in European countries have been organized in a similar way for the last 40 years. A production based on state support as it is seen especially in France and Germany is the leading element in these mechanisms. Furthermore, dissemination of intra European distribution network and art house-based projection style, which are based on the marketization of the movies via film festivals such as Berlin, Venice and Cannes, finally, formation of magazine and newspaper network that believes in the spirit of art house cinema and its industrial structure are among these mechanisms. In addition, criticisms on European art house cinema have appeared. The major topics criticized are that European art house cinema created a cultural homogenization, it takes side with high culture and it is a reproachable elitist cinema with that aspect. Its exclusion of popular culture and the audience has taken the criticisms/discussions to extreme points. It has been stated that European art house cinema has been supporting a cultural and an ethnic ‘European stronghold’ (Bergfelder, 2005: 192).

The basic concept that is questioned within these developments is where the place of the European cinema in the expanding picture of the world cinema would be. State-funded cinema perception, which provides an individual expression through “Auterist” point of view, has made itself evident in the 1993 GATT negotiations, and a defensive discourse against Hollywood hegemony has become prominent. In this respect,

initiatives supporting co-operation in Europe have been supported. Besides, national tendencies of European art house cinema –as it has been mentioned above- have been debated by the academe, intra-national formations and inter-cultural reception topics in film production have been pointed out (Göktürk, 2005: 57). Within these changes, it is seen that Europe has been discussed around the identity concept since 1980s. The geographical and cultural borders of continental Europe have been discussed. European geography has reshaped within the scope of cultural-local connection in terms of economy, culture, and politics. Europe, which has been shaped in such a position, faces, in Ulusoy's (2008: 45-47) words, two different concepts of 'other'. On the one hand, the *other* is Hollywood which is the biggest rival against the European cinema. On the other hand, it is possible for Europe to encounter the *other* in itself which arises from its colonial history.

Within those discussions and improvements, the studies which have been carried out with the purpose of gaining Europe a holistic politics started in 1980s. Europe has founded funds and prepared programs for supporting the development of visual-audial culture and production-distribution opportunities. Units such as European Script Fund (SCRIPT) and Europe Distribution Office (EFDO) have been founded within MEDIA (Mesurés Pour Encourager le Développement de l'Industrie de Production Audio-Visuelle), and it has been aimed to support European cinema industry (Ulusay, 2003: 65).

On the one hand, a cultural space with a European scale has been formed through those programs; on the other hand supporting the industry (culturally and economically) in the competition with the USA has been targeted. The main supports given with that purpose are; Advocating co-productions, distribution networks and cinema halls, paving the way for futuristic and innovative projects, giving a demonstration of the movies through festivals and presenting them to the market.

TURKEY'S EURIMAGES MEMBERSHIP

One of the prominent characteristics seen in the politics of European cinema, as it is in Eurimages example, is advocating the projects open for cultural diversity and innovation. In addition, Herold states (2005: 291-292) that there is a tension in Europe between liberal commerce principles and cultural protective attitudes. The conflict between market concerns and cultural concerns is the idiosyncratic and dual –cultural and economic- characteristic of the movie. In effect, the problem centres around the discussions on how coherence can be achieved between those two characteristics as well as sacrificing the cultural one. It can be said that Europe seems closer to the cultural concerns within this dilemma. European attitude was clear-cut in the 1987-1994 GATT negotiations. According to that attitude, cinema is more of a cultural concept rather than a commercial one like vegetable or computer (Ulusay, 2003: 63).

Supporting co-productions is one of the most important developments in the European cinema politics. It can be stated that co-production practice brings a lot of advantages in production-distribution-projection areas. Cinema has an international quality from the beginning until today. This is seen not only in movie dealing, but also in the co-productions whose number has been increasing gradually. Cinema in many countries shows a tendency towards co-productions to be able to compete with the Hollywood industry. Although co-production, roughly defined as a work that is produced thanks to the integration of two or more countries' economic and technical utilities of their cinema, is a concept which has been supported in Europe since 1920s against the competition with the Hollywood movies, it experienced its major development in 1990s. European Council's co-production support fund Eurimages has been put into practice in 1989, however some members of the European Council did not participate in this program.

The number of the Eurimages members was 27 in 2000, but in 2005 it was 30 (Göktürk, 2005) and became 32 in 2008. Eurimages, which was founded in order to support co-production and distribution, has revived movie production in Europe. Having categories during the evaluation process of the projects such as artistic value, cinematic diversity, innovative movies, Eurimages has major goals such as supporting the productions with cultural diversity and investing in the cinema industry as an art (Ulusay, 2003: 67-68). On one hand productions that reflect many aspects of the European society have been supported, on the other hand investments have been made into "an industry which takes into consideration the commercial success as well as accepting cinema as an art like the other branches of art by acting according to these issues" (Ulusay, 2005: 347).

Turkey became a member of international programs and institutions in 1990s which were established within the scope of European Union cinema politics such as Eureka, MEDEA, See Cinema Network, and continued its relationships with Eurimages. Turkey became a member of Cinematographic and Visual-Audial Co-Production and Distribution European Support Fund (Eurimages) in 1990, and undertook Eureka Audiovisuel's National Coordinatorship which is an important foundation of the Ministry of Culture visual-audial field. Visual-audial Eureka was closed in 2003 with the decision of Eureka Coordinators Committee with the thought that the foundation has successfully accomplished its mission. Ministry of Culture keeps its relationship going with See Cinema Network (South-eastern European Countries Cinema Network) which was established in 2000 and of which Turkey has been a founder member. The purpose of the foundation is to

encourage South-eastern European Countries about cinema and carry out co-productions through co-operation between each other. As a result of the evaluations, points such as preparation of new regulations on taxation and sponsorship, application of copy rights, effective campaigns against knockoff products, securing the rights of cinema employees with legal regulations and supervision of their use of existent rights have been emphasized, and foundation of Cinema Institution regarding reconfiguration of the cinema field has been offered.

Co-production has been an experience which Turkey was not that interested in until 1990s. Turkish cinema participated in co-production of only 40 movies between 1931 and 1990 (Ulusay, 2005: 339). With Eurimages membership, it is seen that the same number has been reached in a short period of time; i.e. 9 years. Eurimages supported 40 movies between 1990 and 1998 among which 4 of them were documentaries and 36 of them were full-length movies. This is a considerable number for a country where co-production works are considered new. International co-productions not only revived Turkish cinema in and after 1990s, but also gave hope for the future. In this new era, where new generations have participated in Turkish cinema and co-production experience has developed, Turkish cinema has started to be mentioned in international environments.

Thanks to Eurimages membership, the problems of cinema related to freedom and production have been more or less overcome. Besides, it brought economic contributions. Europe's protection of itself from the effect of the American cinema or for the sake of forming a cinema image, European culture image, European countries have preferred the settlement whose centre was located in Strasbourg. Eurimages which can be considered a 'union of cinema' in European Union brought not only chances on the basis of freedom and expansions, but also provided economic contribution for Turkish cinema.

Eurimages was one of the two important developments that helped Turkish cinema get out of the financial bottleneck in 1990s. Before 1990 and in 1995, cinema experienced two predicaments that it was almost impossible to shoot films. During the first predicament, Ministry of Culture helped to overcome the situation, and during the second predicament between 1996 and 1997 Eurimages stepped in; 80% of the movies shot during those years were supported by Eurimages (Yurdatap, 1997: 4). Eurimages not only provides an important resource for the production network of the cinema sector, but also paves the way for meeting other countries' cinema practices and making use of their technical utilities. Except the above-mentioned issues, the most important contribution of Eurimages to Turkish cinema has appeared within the concept of "art house cinema". "Art house cinema", which is a differentiating concept for the determination of European cinema identity against Hollywood, has been legitimized in Turkey thanks to Eurimages-supported productions (Ulusay, 2002: 237). It is not correct to associate this change with only Eurimages. "Socialist-realist" movements at the beginning of 1960 and in 1970s and the movies of directors such as Refiğ, Erksan and Güney can be considered within the context of "art house cinema". "Women films" shot after 1980 and the movies dealing with before and after 12th of September have a role in emergence of this tendency. Knockoff video and cassette market presented many alternatives for the consumer and this helped them make a connection with the art house movies. Also, the channel TRT2's display of classical cinema examples and the festivals became a kind of a guide in this issue (235-239). However, the concept of "art house cinema" has gained a new momentum in Turkey thanks to Eurimages. Experience and talent exchange in movie production techniques were shared thanks to co-productions, and some scripts which would not find any producer in Turkey were taken into consideration through this way.

1990	1.000.000 FF	4.800.000 FF
1991	3.000.000 FF	6.250.000 FF
1992	4.500.000 FF	1.750.000 FF
1993	4.500.000 FF	5.400.000 FF
1994	4.500.000 FF	6.800.000 FF
1995	4.500.000 FF	10.600.000 FF
1996	4.500.000 FF	8.000.000 FF
1997	4.500.000 FF	9.550.000 FF
1998	4.500.000 FF	9.300.000 FF
1999	6.000.000 FF	5.800.000 FF
2000	6.000.000 FF	6.650.000 FF
2001	6.000.000 FF (914.964 Euro)	1.019.000 Euro
2002	914.694 Euro	1.838.000 Euro
2003	914.000 Euro	1.690.970 Euro
2004	1.000.000 Euro	1.477.400 Euro
2005	966.511 Euro	1.300.145 Euro
2006	767.173 Euro	1.071.350 Euro
2007	822.088,09 Euro	1.021.250 Euro

Table 1: Table of subscription fees and subventions

When looking at the table of subscription fees and subventions (Table 1), it is seen that Turkey has benefited from Eurimages membership. Except a few years, both subscriptions fees and subventions increased. In 18 years, Turkey paid 47.500.000 FF and 62.994.30 Euro subscription fee between 1990 and 2007, and had 74.900.000 FF and 94.181.15 Euro subvention in return. These subventions were disbursed for full-length movies and documentaries, distribution support for European movies, Turkish movies which took distribution support in Europe and cinema halls in Turkey.

5 documentaries and in total 84 full-length movies have been supported financially within 18 years. Until 1994 Eurimages did not fund the cinema halls in Turkey. It has started with funding 4 cinema halls in 1994, and it has been seen that until 2002 5 to 8 cinema halls in average each year were funded. After 2003, funding rates of the cinema halls increased: 11 halls in 2003, 15 halls in 2004, 21 halls in 2005, 23 halls in 2006, and 23 halls in 2007 have been financially supported. The audience had an opportunity to watch many European movies in Turkey thanks to the financial support of European movies distribution. 277 European movies in total within 18 years have been funded by Eurimages to be projected in Turkey.

Eurimages membership provided many new gains for Turkish cinema in terms of economy, culture and art. Eurimages membership, which has a transformative impact with these new gains upon Turkish cinema, can be called in a sense a new era for Turkish cinema. Within this context, Turkish cinema having an opportunity to rediscover itself with Eurimages membership should be supported more after 2000 when the relations with EU intensified, unlike previous periods, and should participate in other programs within the body of EU thanks to the regulations compatible with European cinema politics.

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Evaluating Competitiveness Using Fuzzy Analytic Hierarchy Process: A Case Study Of Port Enterprises in Turkey

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ABSTRACT

The issue competitive position of ports has been an important part of logistics industry. Most countries are making great effort to advance port competitiveness and to reduce logistic cost by investing enormous funds on port performance. The study aims a) to select the most competitive ports in Turkey under different sub-criteria; b) to offer fuzzy analytic hierarchy process (FAHP) as an effective and useful solution for resolving the uncertainty in the evaluation of port enterprises competitiveness. Fuzzy AHP method provides a structured framework for evaluating the alternatives on each level of the hierarchy using pair-wise comparisons. To achieve the objectives of the study, we use the FAHP, port competitiveness was evaluated and ports ranked according to the total weights obtained based on the expert judgments of logisticians.

Keywords: Competitiveness of Port, Strategic Cost Management, Fuzzy Analytic Hierarchy Process.

PREFACE

Ports which are the basic components of sea transportation have great effects on countries' economic structure. Handling of loads in a time as short as possible and in a way as effective as possible increases expected benefits and provides competitive advantage in international trade. Operations that are held at the ports have high shares on expenditures. Therefore, competitive power of ports gains importance in reducing transportation expenditures.

Concept of competition has become an important subject also for ports. Competition factors include reducing waiting time of ships at the ports and reducing costs of loading/unloading/transferring. In this context evaluation of competitiveness within the frame of expenditure management at the ports provide benefits.

Fuzzy AHP is used widely in academic studies. FAHP is a useful method to determine advantages of related criteria to make a choice for a specific decision among the alternatives. In this study, a literature review is done to determine factors affecting port competitiveness and FAHP is used to determine degree of importance of these factors.

1. Competitiveness and Strategic Management Concept

Connected to increasing trade volume in the world competition gains importance among enterprises and puts low costs and high quality under the spotlight so that strategic management concept is needed. Competition strategy focuses on making factors that are off effect range work in enterprise's favor. Strategic cost management (SCM), an important tool for providing strategic competitive advantage, is compilation of operations and decisions for reducing expenditures of enterprises and developing their strategic positions (Cooper and Slagmulder, 2003, 23). Strategic cost management considers not only improving expenditures but also factors like increasing sales income, external environment and market conditions, prioritizing requirements and determining competitive goals etc.

Logistics is another subject that is important for determining strategies for enterprises. Companies consider paper work, speed and security while conducting logistics operations in addition to expenditures. Competition gains importance in port industry as well due to developing maritime. Apart from sectorial structure, technical and economical features of ports affect profits and costs. Serving up port services fast, coordinately and efficiently makes it possible to reduce logistics costs.

Strategic decisions related to future have uncertainties. In order to overcome unexpected situations, planning costs and reaching correct decisions and effective solutions for complicated problems provides advantages with companies. From this aspect, companies and directors try to improve competitiveness by using decision methods against decision problems.

2. Fuzzy Analytic Hierarchy Process

Analytic Hierarchy Process is one of the multi-criteria decision methods developed by Thomas L. Saaty (1977). With this approach, criteria and sub-criteria superiorities are determined by the help of paired comparison. Paired comparison is done through subjective and experimental evaluations of decision makers. FAHP is obtained by adjusting Fuzzy rationality to AHP. In Fuzzy Rationality, evaluations that are done for the criteria and alternatives are expressed orally. Decision maker's ambiguous decisions are expressed more rational with the help of fuzzy paired comparison. Fuzzy AHP is used widely and developed by Chang (1996).

In Chang's method a set of objects $X = (x_1, x_2, \dots, x_n)$ and a set of goals $U = (u_1, u_2, \dots, u_n)$ are defined. When expanded analysis is applied for each goal, m piece analysis values are obtained and each of them is triangular:

$$M_{gt}^1, M_{gt}^2, \dots, M_{gt}^m \text{ } i = \{1, 2, \dots, n\}$$

M_{gt}^1 Defined here show triangular fuzzy numbers with parameters of 1, m and u . Steps of Chang's expanded analysis method defined as:

1. Step: Fuzzy synthetic dimension values are defined according to "i" criterion

$$S_i = \sum_{j=1}^m M_{gt}^j \otimes \left[\sum_{t=1}^n \sum_{j=1}^m M_{gt}^j \right]^{-1}$$

$$\sum_{j=1}^m M_{gt}^j$$

To obtain this value fuzzy operation below is conducted:

$$\sum_{j=1}^m M_{gt}^j = \left(\sum_{j=1}^m l_j, \sum_{j=1}^m m_j, \sum_{j=1}^m u_j \right)$$

$$\sum_{t=1}^n \sum_{j=1}^m M_{gt}^j = \left(\sum_{t=1}^n l_t, \sum_{t=1}^n m_t, \sum_{t=1}^n u_t \right)$$

$$\left[\sum_{t=1}^n \sum_{j=1}^m M_{gt}^j \right]^{-1} = \left(\frac{1}{\sum_{t=1}^n u_t}, \frac{1}{\sum_{t=1}^n m_t}, \frac{1}{\sum_{t=1}^n l_t} \right)$$

2. Step: $M_2 = (l_2, m_2, u_2)$ and $M_1 = (l_1, m_1, u_1)$ are fuzzy numbers, probability degree of $M_2 = (l_2, m_2, u_2) \geq M_1 = (l_1, m_1, u_1)$ is calculated in this way:

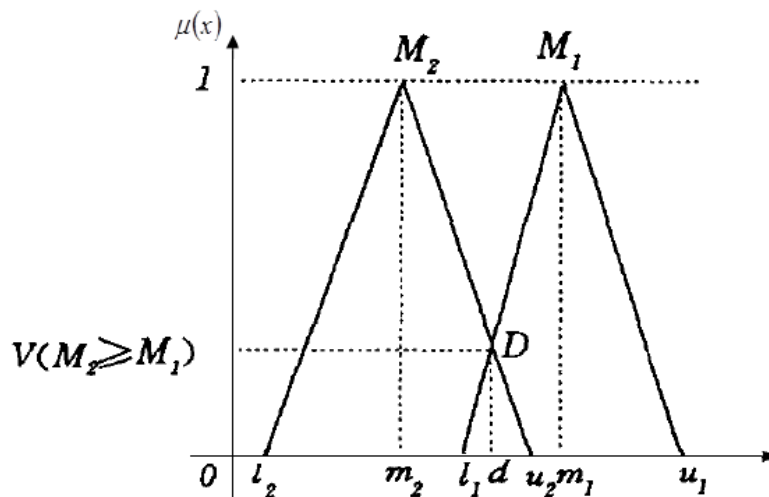
$$V(M_2 \geq M_1) = \sup_{y \in X} [\min(\mu_{M_1}(x), \mu_{M_2}(y))]$$

$$= \text{hgt}(M_1 \cap M_2) = \mu_{M_1}(d)$$

$$\begin{cases} 1, & \text{if } m_2 \geq m_1 \\ 0, & \text{if } l_1 \geq u_2 \\ \frac{l_1 - u_2}{(m_2 - u_2) - (m_1 - l_1)}, & \text{in other cases} \end{cases}$$

This statement is obtained. Here ordinate D is the highest point among d , μ_{M_1} and μ_{M_2} .

Chart 1: Triangle Fuzzy Number Intersection of M_1 and M_2



3. Step: Probability degree of bigger fuzzy convex number than “k” piece convex fuzzy number.

$$V(M \geq M_1, M_2, \dots, M_k) = V[(M \geq M_1) \text{ and } (M \geq M_2) \text{ and } \dots \text{ and } (M \geq M_k)]$$

$$= \min V(M \geq M_i), i = 1, 2, 3, \dots, k \text{ as defined.}$$

For $d^i(A_i) = \min V(S_i \geq S_k)$ and $k = 1, 2, \dots, n$; if $k \neq i$ weight vector is obtained as in below:

$$W^i = (d^i(A_1), d^i(A_2), \dots, d^i(A_n))^T$$

4. Step: Weight vector is normalized.

$$W = (d(A_1), d(A_2), \dots, d(A_n))^T$$

W weight vector is not a fuzzy number.

3. Application

3.1. Material

Variables used in similar studies were taken into consideration while determining criteria that are used in FAHP structure. However, variable selection was affected greatly by the limited number of data declared in Turkey. Table 1 shows 14 selected ports and data related to them.

Table-1: Criterion Values of Selected Ports, 2014

Ports	Market Share (TEU)	Terminal Field (m ²)	Pier Length (m)	Number of Cranes	Water Depth (m)
Marport	1.705.929	310.000	1.950	17	16
MIP	1.366.823	438.350	2.425	10	14
İzmir	697.026	500.000	1.050	7	11
Kumport	1.295.569	400.000	1.930	10	15,5
Mardaş	376.916	189.308	910	10	15,5
Gemport	331.430	255.000	839	7	36
Haydarpaşa	142.744	219.360	650	5	12
Evyap	457.537	150.000	500	4	19
Nemport	258.275	100.000	820	3	22
Yılport	305.135	202.000	325	6	16
Borusan	218.401	110.000	450	5	14,5
TCEEGE	219.469	120.000	750	3	20
Port Akdeniz	217.384	100.000	320	3	9,2
Rodaport	123.713	170.000	1.257	3	15

Source: TURKLİM, extracted by Akgül vd., 2015.

In depth interviews were done with the subject-matter experts for paired comparisons of criteria. Alternatives were put into orders after determining comparative importance of criteria. Matrix multiplication is performed with Quantitative values of 14 ports and weights determined via FAHP.

$$\text{Competitiveness Index of Ports} = \text{Criteria Weights} \times \text{Criteria Values} \quad (1)$$

In this study, scale in Table 2 is used to form paired comparison matrices in Fuzzy AHP.

Table 2: Degree of Importance

Verbal Importance	Importance Degree	Correlation of Importance Degree
Equally Important	(1, 1, 1)	(1, 1, 1)
Intermediate Value	(1, 2, 3)	(1/3, 1/2, 1)
Slightly Important	(2, 3, 4)	(1/4, 1/3, 1/2)
Intermediate Value	(3, 4, 5)	(1/5, 1/4, 1/3)
Strongly Important	(4, 5, 6)	(1/6, 1/5, 1/4)
Intermediate Value	(5, 6, 7)	(1/7, 1/6, 1/5)
Extremely Important	(6, 7, 8)	(1/8, 1/7, 1/6)
Intermediate Value	(7, 8, 9)	(1/9, 1/8, 1/7)
Completely Important	(8, 9, 9)	(1/9, 1/9, 1/8)

In this study, hierarchical structure is formed with the help of experiences and views of a group of experts from port industry. Stages, expressed in Fuzzy AHP (FAHP) method, were applied in an order and by using MS Excel it is solved and for fuzzy correlations, triangle membership functions were used.

Generally, performance at the ports are evaluated by the amount of load handling. So that, reaching optimum level of load traffic and handling of load are basic goals for port operations. In addition to load traffic, factors like terminal field size, pier length, current number of cranes and water depth are also important in facilitating competition power of ports. These factors have importance in terms of different dimensions. For example; terminal field size is related to loading/unloading/transferring/storage capacity while water depth is related to enabling heavy ships to approach and pier length is related to number of ships being processed. Table 3 shows paired comparisons of related criteria.

Table 3: Paired Comparison of Evaluated Criteria for Port Competitiveness

Criteria	Market Share	Terminal Field	Pier Length	Number of Cranes	Water Depth
Market Share	1,1,1	1,2,3	2,3,4	2,3,4	3,4,5
Terminal Field	1/3,1/2,1	1,1,1	1,1,1	1,2,3	2,3,4
Pier Length	1/4,1/3,1/2	1,1,1	1,1,1	1,1,1	1,2,3
Number of Cranes	1/4,1/3,1/2	1/3,1/2,1	1,1,1	1,1,1	1,2,3
Water Depth	1/5,1/4,1/3	1/4,1/3,1/2	1/3,1/2,1	1/3,1/2,1	1,1,1

Synthetic values that are obtained from values in Table 3 :

$$\sum_{j=1}^5 M_{g1}^j = (1,1,1) \oplus (1,2,3) \oplus (2,3,4) \oplus (2,3,4) \oplus (3,4,5) = (9,13,17)$$

$$\sum_{j=1}^5 M_{g2}^j = (1/3,1/2,1) \oplus (1,1,1) \oplus (1,1,1) \oplus (1,2,3) \oplus (2,3,4) = (5,333,7,5,10)$$

$$\sum_{j=1}^5 M_{g3}^j = (1/4,1/3,1/2) \oplus (1,1,1) \oplus (1,1,1) \oplus (1,1,1) \oplus (1,2,3) = (4,2,5,333,6,5)$$

$$\sum_{j=1}^5 M_{g4}^j = (1/4,1/3,1/2) \oplus (1/3,1/2,1) \oplus (1,1,1) \oplus (1,1,1) \oplus (1,2,3) = (3,583,4,833,6,5)$$

$$\sum_{j=1}^5 M_{g5}^j = (1/5,1/4,1/3) \oplus (1/4,1/3,1/2) \oplus (1/3,1/2,1) \oplus (1/3,1/2,1) \oplus (1,1,1) \\ = (2,116,2,583,3,833)$$

$$\sum_{i=1}^5 \sum_{j=1}^5 M_{g1}^j = (24,232,33,246,43,833)$$

$$\left[\sum_{i=1}^5 \sum_{j=1}^5 M_{g1}^j \right]^{-1} = \left(\frac{1}{43.833}, \frac{1}{33.246}, \frac{1}{24.232} \right) = (0.041268, 0.030079, 0.022814)$$

$$S_{Market\ Share} = (9,13,17) \otimes (0.041, 0.030, 0.022) = (0.205, 0.391, 0.701)$$

$$S_{Terminal\ Field} = (5,333,7,5,10) \otimes (0.041, 0.030, 0.022) = (0.121, 0.225, 0.412)$$

$$S_{Pier\ Length} = (4,2,5,333,6,5) \otimes (0.041, 0.030, 0.022) = (0.095, 0.160, 0.268)$$

$$S_{Number\ of\ Cranes} = (3,583,4,833,6,5) \otimes (0.041, 0.030, 0.022) = (0.081, 0.145, 0.268)$$

$$S_{Water\ Depth} = (2,116,2,583,3,833) \otimes (0.041, 0.030, 0.022) = (0.048, 0.077, 0.158)$$

If we compare these values with fuzzy numbers:

Market Share

$$V(S_{\text{Market Share}} \geq S_{\text{Terminal Field}}) = 1; \quad V(S_{\text{Market Share}} \geq S_{\text{Pier Length}}) = 1;$$

$$V(S_{\text{Market Share}} \geq S_{\text{Number of Cranes}}) = 1; \quad V(S_{\text{Market Share}} \geq S_{\text{Water Depth}}) = 1;$$

Terminal Field

$$V(S_{\text{Terminal Field}} \geq S_{\text{Market Share}}) = 0.555; \quad V(S_{\text{Terminal Field}} \geq S_{\text{Pier Length}}) = 1;$$

$$V(S_{\text{Terminal Field}} \geq S_{\text{Number of Cranes}}) = 1; \quad V(S_{\text{Terminal Field}} \geq S_{\text{Water Depth}}) = 1;$$

Pier Length

$$V(S_{\text{Pier Length}} \geq S_{\text{Market Share}}) = 0.214; \quad V(S_{\text{Pier Length}} \geq S_{\text{Terminal Field}}) = 0.693;$$

$$V(S_{\text{Pier Length}} \geq S_{\text{Number of Cranes}}) = 1; \quad V(S_{\text{Pier Length}} \geq S_{\text{Water Depth}}) = 1;$$

Number of Cranes

$$V(S_{\text{Number of Cranes}} \geq S_{\text{Market Share}}) = 0.204; \quad V(S_{\text{Number of Cranes}} \geq S_{\text{Terminal Field}}) = 0.647;$$

$$V(S_{\text{Number of Cranes}} \geq S_{\text{Pier Length}}) = 0.92; \quad V(S_{\text{Number of Cranes}} \geq S_{\text{Water Depth}}) = 1;$$

Water Depth

$$V(S_{\text{Water Depth}} \geq S_{\text{Market Share}}) = 0; \quad V(S_{\text{Water Depth}} \geq S_{\text{Terminal Field}}) = 0.2;$$

$$V(S_{\text{Water Depth}} \geq S_{\text{Pier Length}}) = 0.431; \quad V(S_{\text{Water Depth}} \geq S_{\text{Number of Cranes}}) = 0.531;$$

$$V(S_{\text{Market Share}} \geq S_{\text{Terminal Field}}, S_{\text{Pier Length}}, S_{\text{Number of Cranes}}, S_{\text{Water Depth}}) = \min(1, 1, 1, 1) = 1$$

$$V(S_{\text{Terminal Field}} \geq S_{\text{Cost}}, S_{\text{Pier Length}}, S_{\text{Number of Cranes}}, S_{\text{Water Depth}}) = \min(0.555, 1, 1, 1) = 0.555$$

$$V(S_{\text{Pier Length}} \geq S_{\text{Cost}}, S_{\text{Speed}}, S_{\text{Number of Cranes}}, S_{\text{Water Depth}}) = \min(0.214, 0.693, 1, 1) = 0.214$$

$$V(S_{\text{Number of Cranes}} \geq S_{\text{Cost}}, S_{\text{Speed}}, S_{\text{Pier Length}}, S_{\text{Water Depth}}) = \min(0.204, 0.647, 0.92, 1) = 0.204$$

$$V(S_{\text{Water Depth}} \geq S_{\text{Cost}}, S_{\text{Speed}}, S_{\text{Pier Length}}, S_{\text{Number of Cranes}}) = \min(0, 0.2, 0.431, 0.531) = 0$$

Weight vector is defined as:

Normalized weight vector:

$$W' = (1, 0.555, 0.214, 0.204, 0)^T$$

$$W = (0.506, 0.281, 0.108, 0.103, 0)$$

Table 3 shows criteria weights that are calculated with FAHP method. According to this market share is the most important criterion and terminal field, dock length, number of cranes follow it up respectively.

Table 4. Criteria Related Weights

Criteria	Market Share	Terminal Field	Dock Length	Number of Cranes	Water Depth
Weights (W)	0.506	0.281	0.108	0.103	0

In accordance with (15) equation if port competitiveness index is calculated according to matrix multiplication, index value is obtained for each port.

Table 5: Competition Power Ranking of Ports

Ports	Index	Ranking
Marport	1.163	1
MIP	1.078	2
İzmir	607	4
Kumport	977	3
Mardaş	343	5
Gemport	330	6
Haydarpaşa	205	12
Evyap	328	7
Nemport	248	8
Yılport	247	9
Borusan	190	13
TCEEGE	226	11
Port Akdeniz	173	14
Rodaport	247	10

When an evaluation is done by looking at the relative priority values of criteria, there occurs a ranking among ports. Accordingly, port with a highest competition power is Marport while Port Akdeniz is the one with a lowest competition power.

RESULTS

Different types of operations are conducted at the ports where is an intersection of land and sea transport. Competition power increases in international trade when port has efficient and active handling system. In this study, competitiveness of ports is modelled by one of the multi-criteria tools which is AHP. In recommended model, through decision making process criteria are weighted by using fuzzy numbers and in this way the goal was enabling decision-makers to evaluate ambiguities more easily.

In FAHP method order of criteria that is effective in port competitiveness is market share (0,506), terminal field size (0,281), dock length (0,108) and number of cranes on the dock (0,103). According to analysis results Marport is the one with the highest competition power, Port Akdeniz is the one with the lowest competition power.

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Evaluation Of Language And Speech Materials For Language And Speech Disorders: A Study Of Meta-Synthesis

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ABSTRACT

Speech is a concept that describes feelings and thoughts through verbal symbols of the organs of speech are produced. Language has a much more complex structure of the individual's thoughts and feelings in written, verbal, gesture, or behavior with similar behavior, the symbol of creation and to comprehend. Individuals may have speech or language disorders due to physiological or psychological factors. The present study focuses on speech and language therapy and evaluation of speech therapy materials. Although the number of studies focusing on the issue is significantly higher, the studies that analyse material designs are scarce. The present study aims to accumulate the results of the studies that have evaluated materials for language and speech disorders. Related studies have been analysed and the results are reported via content analysis.

Keywords: Language and speech materials, language and speech disorders, special education, speech therapy.

INTRODUCTION

Immediately after the birth first cry is the first voice behaviour and continue to develop if that's not a problem in development. One of the most important ways to communicate is speech, as a word carries more meaning than people would use in our everyday lives. When people get down to the details "speech" and "language" these two concepts are intertwined with the concepts of entering, although people can see that are quite different from each other.

Speech in any language that describes feelings and thoughts through verbal symbols of the organs of speech are produced. Language has a much more complex structure of the individual's thoughts and feelings in written, verbal, gesture, or behaviour with similar behaviour, the symbol of creation and to comprehend. During the course of human life will continue to evolve. Language is a concept which is a much broader concept than the concept of speech. Language does not depend on verbal communication alone. At the same time are affected by all kinds of symbolic stimuli, and enables the use of these stimuli for communication. Nevertheless in the development of verbal language, symbols are transferring or understanding much more complex thoughts and feelings is which are much more important. Therefore, especially when using the goal of communication with various symbols, these must be stressed the importance of verbal symbols. The verbal expression of symbols is made by the organs of speech. A good central organization and neural structure of the peripheral organs have to work in sync and accurate. A disorder that may occur in the central or peripheral neural structures affected by any cause these structures.

Language and speech has a very complex structure. Our senses are in a very close relationship with this structure, they are; hearing, sight and touch. This affects all the senses very closely with language and speech development. Hearing that carry the verbal warning, it is much more effective than others. The aural warnings during fetal life are known to produce effects after six months. This effect suggests that the development of language begins much earlier. Therefore hearing for language and speech development is of paramount importance. In particular, speech development is directly related to the hearing. Lack of hearing directly affects the development of speech and speech could not develop.

Language and speech disorders as a proportion of all cultures and countries as a group are the most common obstacles researchers seen. Statistical study which is done in Turkey is very limited, with failing to indicate very easy when researchers rate developing countries. UNICEF (speech disorder all over the world; 3.5%) stated that in Turkey speech disorder over two million. This percentage arises when researchers add hearing impairment much more dramatic statement. There are also other obstacles, as well as the number of which is not less than speech disorder.

Language and speech disorders, while keeping rates as the biggest place in disability groups in our country and are very limited studies done in this area. Despite standing at the centre of speech therapy individual and speech-

language pathology (SLP), therapy material of speech therapy is the main factor for success (Pappas, McLeod, McAllister & McKinnon, 2008; Toğram & Mavis, 2009). In recent literature the choice of speech material is important when assessing the benefit of speech therapy. The materials which are used in speech and language therapy printed materials (Cagatay, Ege, Tokdemir, & Çağıltay, 2012).

There are many ways to enrich individuals' speech and language skills, including games, books, and oral motor activities. Online speech therapy resources offer a way to refine and practice their speech skills at home and /or therapy centre (Courtenay, 2016). Sometimes individual needs more speech therapy, whether it is to refine certain skills they are learning and reinforce what they are working on with their SLP. SLPs use a kind of methods and materials to achieve objectives in service delivery (John, 2004). Scientific method drives decision making involving assessment and intervention techniques. Many researchers declare feeling "lost in the knowledge explosion", especially where "high technology" is related. More experienced researchers may have started professional training at a time when "low technology" was standard practice, in spite of that any researchers even had professors who insisted that one needed as tools only one's mind, a pencil and a pad of paper to achieve any therapy goal. How difficult it was to do many therapy tasks armed with only these instruments (John, 2004).

Today, computers and technology are used creating speech therapy material for each speech and language impairment. Materials and technologies from the point of view computer-aided design give benefit for speech and language therapy. The most important points is updating could do easily and users of these materials are highly motivated. As the body of knowledge from science grows, and as technological options for diagnosis and treatment expand at an alarming rate, "keeping up" with innovations seems almost a full time job in itself.

According to John (2004), while the old "medical model" is slowly being replaced with more educational and habilitative models of practice, researcher has also recognized that "symptom management" must be replaced by treatment of underlying causes. When working with children who have developmental dyspraxia, articulation problems, fluency disorders, researchers often get the notion that there is something which researchers are missing. When working with adults who have apraxia, autistic spectrum disorders, researcher may get inkling that there is something below the level of the cerebral cortex that researcher should be addressing. That something often involves looking at the neurobiological substrates of the behaviours researchers are attempting to modify or improve. The therapists need to be able successfully evaluate and treat the substrates of some of the "higher order" communicative behaviours they are working with. There are cases in which those substrates involve the planning, sequencing and execution of motor activity. The timing, rhythmicity and motor skills that are underlying processes vital to cognitive, communicative and learning skills have often seemed "elusive" to precisely evaluate and treat.

The objective of this study was to determine interactive speech therapy materials which are used in international literature. In border of this general purpose browsing international literature in order to answer the following research questions:

- Which materials are used for speech and language therapy?
- In what way(s) materials used in therapy for speech and language disorders can be evaluated?
- What are the trends and tendencies in studies about therapy for speech and language disorders?

METHOD

This study has been designed with meta-synthesis approach of content analysis. Content analysis can be divided into three categories: meta-analysis, meta-synthesis, and descriptive survey (Çalık & Sözbilir, 2014). Quantitative content analysis findings of a meta-analysis of studies included, whereas a meta-synthesis of qualitative analyses of the findings. The descriptive research includes the evaluation of trends in the size identifier of studies on a particular subject.

Meta-synthesis, the synthesis of the research on the same subject by creating the theme and contains the interpretation (Çalık & Sözbilir, 2014). The method related to the literature in order to answer to research questions determined following this method, related studies in literature have been searched on January 5th, 2015 in Google Scholar with keywords such as "*speech materials*", "*language disorders*", "*speech disorders*", "*language therapy*", "*speech therapy*" and only the contents of studies that have been cited more than ten times have been coded. Results obtained from this coding operation are summarized below:

RESULTS

Speech and Language Therapy Materials

The studies about speech and language disorders and related disorders were analyzed (Acero-villa & Gomis-Canete, 2005; Hariharan, Chee, Ai, & Yaacob, 2012). Of the materials used on the speech therapy are often written materials, where the form of word or phrases. In addition, some studies (Acarlar & Johnston, 2006; Çağatay, 2012; Fook, Hariharan, Yaacob, & Adom, 2012; Murray & Parker, 2004; Öster, House, Protopapas, & Hatzis, 2002; Rodriguez, Vaquero, Saz, & Lleida, 2008; Saz, et al., 2009; Schipor, Pentiuc, & Schipor, 2012; Umanski, Kosters, Verbeek, & Schiller, 2008; Vicsi et al., 1999; Zin, Banihashem, Daud, Abdullah, & Lida, 2015) used computer-aided/based materials and in some studies (Hatzis, 1999), the logo and so on.

Saz et al., (2009) stated that Computer-aided speech and language therapy that began in the 1990s and one of the study is Pratt, Heintzelman, and Deming (1993)'s study which is done by IBM SpeechViewer and the first in this area. However, Rowe (2010) stated that the history of such studies began 1928 with the use of Bell Telephone Laboratories. Both researchers revealed that studies which are based under certain theories used IBM's synthesized speech materials. Researchers enhanced children's speech skills via visual materials with the help of computers.

In recent literature it had been obtained that speech therapy supported by computerized therapy materials (Coorman, Fackrell, Rutten, Van Coile, 2000; Duchateau, Cleuren, Van Hamme, & Ghesquiere, 2007; Gerosa & Narayanan, 2008; Hawley et al., 2003; Henton, 2002; Lleida & Rose, 2000; Menendez-Pidal, Polikoff, Peters, Lorenzo, & Bunnell, 1996; Robles-Bykbaev, López-Nores, Pazos-Arias & Arévalo-Lucero, 2015; Rodriguez et al., 2008; Sanders, Ruiter, Beijer, & Strik, 2002; Vaquero, Saz, Lleida, & Rodriguez, 2008). In particular It had been used the above-mentioned speech therapy materials are designed like a spelling a word, or reading a text etc. Computer-aided speech and language therapy materials were noted that the implementation of advanced variations of these methods. For example, the text reading speed can be replaced with computer assistance and/or can be given with the help of therapy games. It has been determined that such activities are conducted with more parental assistance. In addition to these techniques was to allow them to listen to their own voices of individuals achieved in the literature.

Evaluation of Materials Used in Speech and Language Disorders Therapy

One of the most common scales is The Therapy Outcome Measure scale which is related to speech therapy was developed by Enderby & John (1997). The researchers began to develop the scale in 1994 and published a book about the development process (Enderby, John & Petheram, 2006). Once this scale was focusing more speech therapy issues and obtained no evidence of the speech therapy material evaluation.

Pratt et al.(1993) was used as a speech therapy material IBM's SpeechViewer that aims to develop children's ability to speak. However, the measuring tool in this study reached a subjective nature in conclusion. Other studies (Acarlar & Johnston, 2006; Bornstein & Haynes, 1998; Condouris, Meyer, & Tager-Flusberg, 2003; Pratt et al., 1993; Ukrainetz & Blomquist, 2002) used also measuring instruments, but generally the task of measuring instruments cannot reached clear evidence that the validity of these assessment tools are examined.

Results in screening tool for speech and language disorder indicated that related literature and access to some studies are in designing phase. Nevertheless, the materials used in speech therapy were not achieved quantitative evaluations.

Studies on Trends of the Speech and Language Disorders Therapy

As a result of the speech therapy materials used in the speech therapy was obtained that focusing on the design. Generally in speech therapy studies it has been determined that teachers and/ or parents focused on the approach not to the speech material. Evaluation of these approaches found that the dimension of the task was attitudes, opinions and completion.

DISCUSSION

Each individual is born with equal rights on an equal basis. For individuals with disabilities are subject to a specific duty of the relevant experts and managers to ensure these rights. Individuals who have a speech or language disorder are one of these obstacles. Individual, family, SLPs, teachers stakeholders with well-organized with a therapy and improve the quality of life of the material included in this group may be more easily compared to the other group members. This study focuses on the effects of these stakeholders and speech therapy materials.

Based on the above findings there is a lot of speech therapy materials that are used in speech and language disorders, did not focus on the exact meaning of speech therapy materials. It was inferred that only about materials, studies examine the design of the speech therapy material. The first of these materials are paper etc. then materials are presented with an increasingly number computer-aided materials. Printed materials transferred in to the digital environment, even when computer-aided materials are examined.

Measuring is an important step in scientific activities. The only studies to measure subjective results according to individual progress are reviewed. Koul, Petroi and Schlosser (2010) stated that there are problems in measurement of the meta-analysis because of many studies calculate the effect size of the study. These results seem to support this interpretation. The evaluation of the obtained results is not fully examined the material that used in speech therapy. This study examined the reasons for the failure of the studies associated with research teams and research area. Today studies on a specific subject have to conduct instructional designers, assessors, etc. the necessity for stakeholders to work together as well as the nature of the area researchers. This comment is supported by Saz et al. (2009) study and must be increased by specifying by interdisciplinary studies.

Studies that examined the trends of studies on speech and language therapy, researchers focused on the success of the therapy, attitude, etc. and were inferred in the direction of the examination of variables that tend to research. The main purpose of these studies was the success of the therapy, but the measurement of the above-mentioned limitations in terms of measuring the shape of is thought to be the success of these studies. In addition, the success of a speech therapy has not only connected to the type of researchers, but also to the wrong approach. The need to evaluate the overall success of a study depends on the type of speech therapy and as well as speech therapy materials should be examined in detail. Researchers need to focus on the material before this assessment can be made. Finally, it was inferred with similar and repeated studies. The reason for this repetition in the research area is associated with lack of meta-analysis and meta-synthesis of the study. Saz, Lleida, Rodríguez, Rodríguez, and Vaquero (2010) strengthen this association's similar emphasis in their study.

CONCLUSIONS

It is very clear the importance of studies on speech and language therapy. But efforts need to focus on are updating of studies. Speech therapy material development and in particular to focus on evaluation of speech therapy materials is important.

Advices that will give direction to future studies showing clear results of this study are presented as below:

- Researchers and as well as material developers for speech therapies proposed to be added to the interdisciplinary working group.
- An emphasis on materials which is used in speech therapy proposed to examine the different types of digital media.
- Establishing specific standards for evaluating disorders of speech therapy materials to be used in therapy, more objective assessment of the materials which is developed and used for speech therapy is recommended.
- Increasing of variables, especially the variables in speech therapy are recommended to update their studies examining the relationship between trends.
- Periodically speech and language disorder treatments meta-analysis and meta-synthesis of related topics in the field work done and the determination of trends is recommended.

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Evidence-Based Mental-Health Promotion For University Students – A Way Of Preventing Drop-Out

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ABSTRACT

Our paper reports on the results and consequences of an empirical mental health research fulfilled among 1618 university students at the University of Szeged, Hungary. Results indicated that 46,8% of students could be considered as mentally healthy, 42,1% of them were vulnerable and 11,1% were endangered. Among their general resistance resources (GRR) for coping in mentally demanding situations financial status was a definite negative factor, while mildly positive resources included friends, family, living environment, health status, learning and work. The lack of GRRs leads to becoming mentally endangered, which in turn inhibits the mobilisation of existing resources. There is a strong need for student-targeted mental health promotion actions, programmes, projects and education initiated in higher education.

INTRODUCTION

The Physical and mental health status of the Hungarian population is rather unfavourable. Promotion of health culture and creation of a lifestyle that strengthens physical and mental health as well are of high priority in terms of improving the situation. The basic prerequisite of community level intervention is to characterise the actual mental health status of the target population. Empirical data provide a good starting point for the creation of community programmes and setting out the priorities.

The promotion and improvement of mental health and subjective well-being is a very important part of European Union Health Policy (European Pact for Mental Health and Well-being, 2008). This is based on the recognition of mental health being not only an individual value, but an individual and community resource as well that is very important in terms of EU's social and economic success. In accordance with this, the low level of mental health raises not only individual problems but human rights, social, economic and public health issues as well we have to address on Union and member state level also (European Pact for Mental Health and Well-being, 2008).

To define the concept of mental health we started from the WHO approach. According to the World Health Organisation mental health is not only the lack of mental and psychological disorders but it can be considered the state of subjective well-being in which every individual can recognise the inherent possibilities and cope with the natural stress situations of life, can work in a productive and fruitful way and play an active part in his/her own community's life (WHO, 2010).

As an antecedent of the above definition, the Hungarian Ferenc Szakács uses important key words in terms of our thinking. He states, that „...healthy (normal) is the person, who is capable of *independent life*, who *accepts the roles* arising from his/her life situation, *performs a work* sufficient for his/her capabilities, and in the meantime (therefore not at last) is *capable to please* and *lives his/her life* together with other people *in accordance with community and social purposes*.” (Szakács, 1994, pp. 29.).

Mental health is the most sensitive indicator of psychological normality, the capacity for life pleasures, meaning the individual feels safe and well in the world and in his/her “own skin”, is at peace with his/her environment (objective and subjective environment) and with him/herself, and has a feeling of comfort. He/she is able to utilize the sources of pleasure offered by life and is capable to fight for reaching these. This pervades his/her life skills, the organising of his/her lifestyle and the planning of his/her future.

On the basis of its experiences in mental health promotion and psychotherapy, our research group attempted to empirically define and validate three categories of psychological status (Lippai and Erdei, 2014). The starting point of our research was the fact that the psychological status of an individual is largely characterised by the experience of different scale difficulties, complaints during the adaptation to everyday challenges (cf. Generalised Adaptation Syndrome - Selye, 1965; transactionalist approach to stress - Lazarus, 1991).

We have created a short Mental Health Status Questionnaire and validated it on a representative sample of 1839 people from a middle-size Hungarian town called Hódmezővásárhely (Lippai and Erdei, 2014., Benkő et. al. 2013). Validation included comparing our data to national psychological life quality measurements worked out by Hungarostudy research (Kopp and Kovács, 2006). These measurements included elements like a) self-evaluation of subjective psychological well-being, positive life quality and mental health; b) low-spirit, depression, negative emotional states; c) hopelessness; d) lack of life goal and positive emotions; e) vital exhaustion accompanying stress; f) feeling of subjective competence in solving difficult tasks and g) sense of coherence helping to cope with everyday stress situations.

By comparing our data to data obtained along all the above dimensions of psychological life quality we found, that results of *mentally healthy* people were significantly more favourable than that of the *vulnerable* and the *endangered* group (Lippai and Erdei, 2014). Let us now see how can these three categories be characterised.

Mentally healthy people were characterised as those possessing appropriate self-power, self-evaluation. When they get to strongly stressful – loaded by emotional trauma and relationship conflicts – life situations, they are able to react in a structured way and actively cope with challenges. Their own resources are enough to fulfil everyday activities, they are also capable of controlling negative feelings and tensions resulting from stress situations. Adaptation problems can occur in this group also, but relatively rarely and on a temporary basis.

In case of people in the *vulnerable* group we can assume considerably different reactions in stress situations. The individual's response to actual stress situations is less active and can be characterised with parrying the problems and difficulties. In the background there is mostly the devaluation of oneself or his/her environment (self-evaluation problems). In case of the vulnerable person there are explicit adaptation disorders, typically in the form of some pronounced complaints or many smaller – but by and large with a significant effect – difficulties. That is why to be able to face problems and to handle everyday stress situations more effectively he/she has to *change*, in a way like acquiring a novel application of his/her existing resources.

The person characterised as *endangered* can not effectively handle everyday stress situations, emotional traumas, social conflicts and relationship difficulties, he/she is paralysed when confronted with a problem (serious decision dilemma). His/her existing external and internal resources are not enough for coping with the challenges of everyday life. The severe adaptation disorders appear in the form of serious complaints. That is why an external help is needed in learning new ways of coping, conflict management techniques and get support in their adaptation.

In case of all three groups for the sake of effective intervention there is a need to set different mental health promotion targets and apply different methods. That is why the recognition of these three groups and their empirical characterisation is an important step in the preparation of community level health promotion intervention (Benkő, 2009).

THE STUDY

Research aim

We aimed at researching mental health among university students in Szeged. Information referring to mental health is especially important in case of the university student population as this is the area where student related health promotion needs the most improvement.

Research tool

The research tool was an assisted structured questionnaire interview administered by well-prepared interviewers. The research was carried out within the framework of grant *TÁMOP-6.1.5-14-2015-0004 – One step towards our health – The complex health promotion programme of County Csongrád*. Our questionnaire contained 10 socio-demographic questions and 8 topic-related questions in the following composition:

1. *socio-demographic questions*: gender, age, place of living, university faculty, major, term, education level of father and mother, financial status and academic performance.
2. *Indicators of mental health status*.
3. *Resources playing a role in the development of mental health*: social integration, social support, culture in the wider sense among others.

Data were processed by SPSS20 statistical programme.

Research Sample

The sample consisted of the students studying at the University of Szeged. The University of Szeged is the biggest service-provider in the Southern-Great Plains Region of Hungary. It has 12 faculties and more than 20 000 students study here at the moment. 1618 students were asked during the research, among which 1565 students provided suitable answers for setting up the three categories of mental health. 464 students came from County Csongrád, where the university is located (29,1%) and 1129 students (70,9%) came from all over the country. Students of 10 faculties could have been reached. The profile of four faculties include teacher training also (see in italic). Evaluable amount of responses came from the Faculty of Medicine (FM - 37%), Faculty of Health Sciences and Social Care (FHSSC - 25,9%), *Juhász Gyula Faculty of Education* (JGYFE - 20,6%), the *Faculty of Natural Sciences and Informatics* (FNSI - 13,4%) and the Faculty of Dentistry (FD - 1,9%). The rest of the students came from the *Faculty of Arts* (FA - 0,3), Faculty of Economics (FE - 0,2%), Faculty of Pharmacology (FP - 0,2%), Faculty of Law (FL - 0,2%), and the *Faculty of Music* (FM - 0,1%).

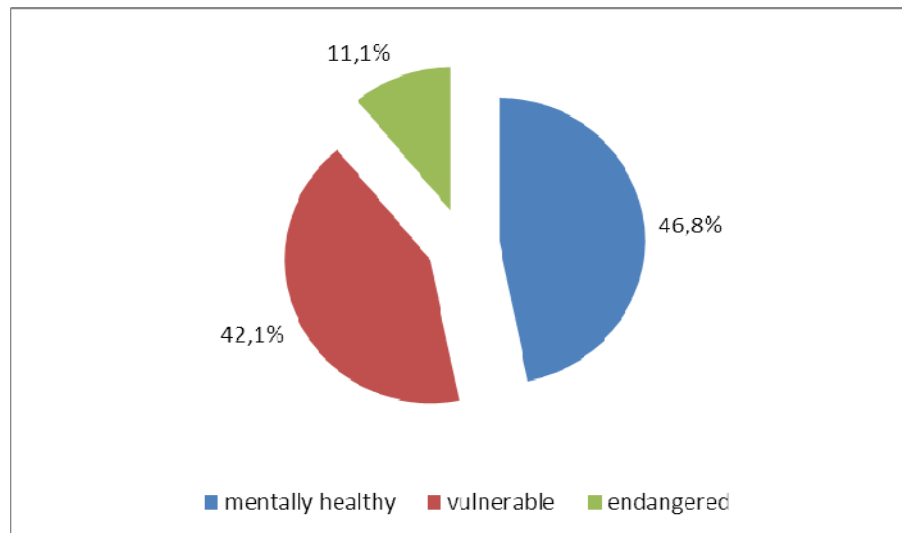
25,5% of respondents were male and 74,5% were female. We have created age-groups according to psychological categories. 94,3% were between 18 and 25 (adolescence), 5,5% were between 26 and 45 (young adult), 2,0% were between 46 and 65 years (age of upkeep). None of the respondents were above 66 years, which is the age of decline.

FINDINGS

Mental health status indicators of students at the University of Szeged

When analysing our data, the following student distribution among the developed three categories of mental health was found (Figure 1.)

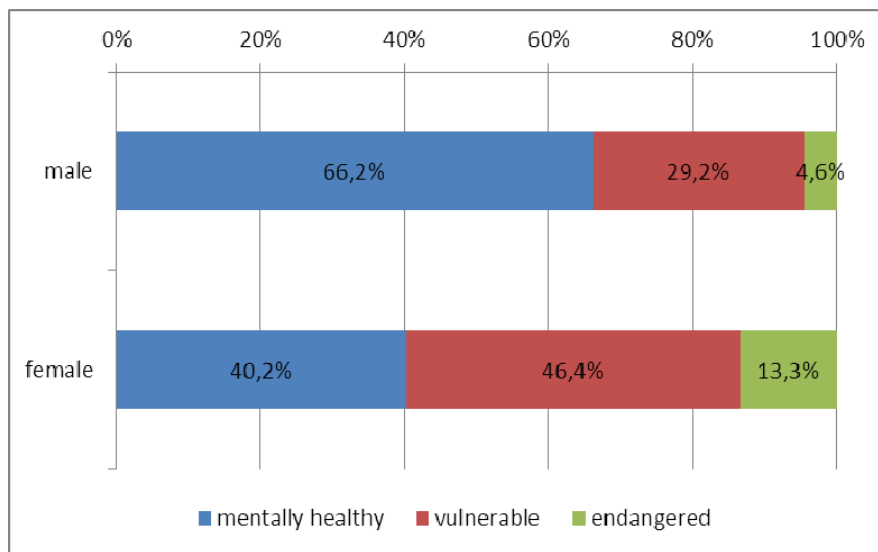
Figure 1. – Mental health status of the student sample at the University of Szeged (N=1565)



Our results show, that 46,8% of students could be considered as mentally healthy, 42,1% of them were vulnerable and 11,1% were endangered.

We have studied the observed categories along socio-demographic variables. Figure 2. shows the differences by gender.

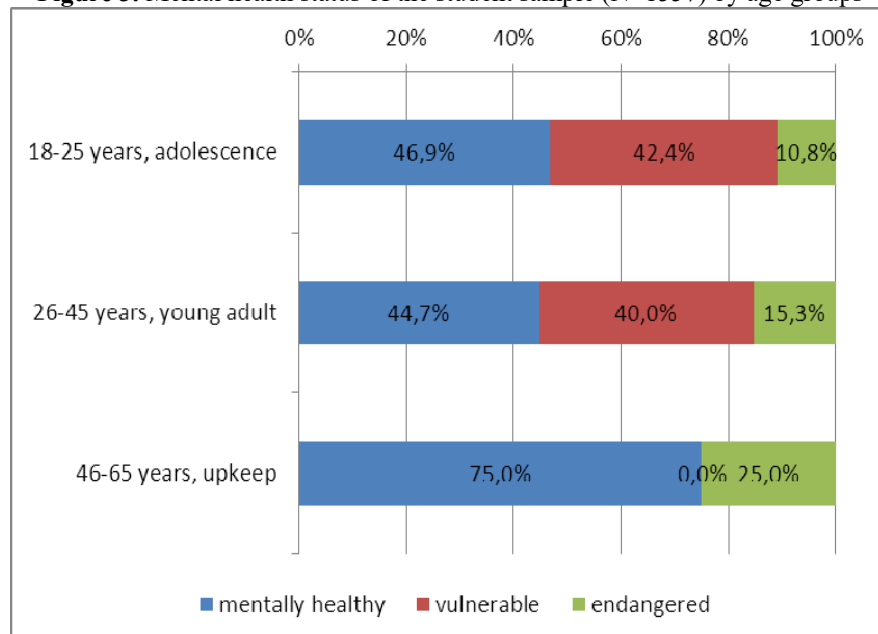
Figure 2. Mental health status of the student sample (N=1553) by genders



We can see, that 66,20% of male respondents could be considered mentally healthy, while only 40,20% of female respondents belonged to the same category. 29,20% of male respondents were in the vulnerable and 4,60% of them were in the endangered group, compared to the corresponding 46,40% and 13,30% of female respondents. It can be stated, that data referring to female respondents were considerably unfavourable than those referring to male respondents.

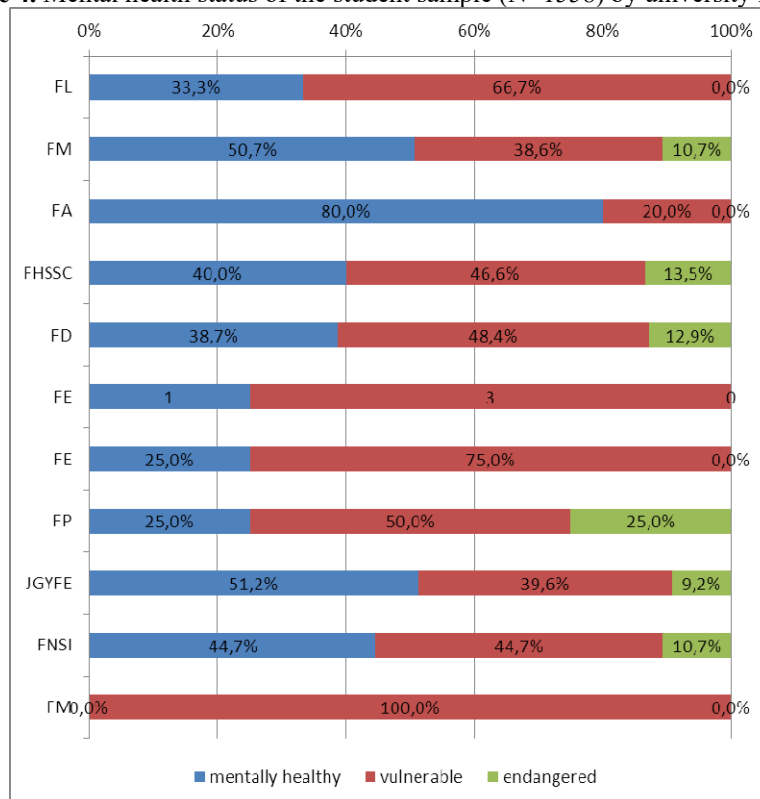
Age-group differences are shown on Figure 3. When creating the age-group categories, we have used the classification of the Hungarostudy researches (Kopp and Kovács, 2006).

Figure 3. Mental health status of the student sample (N=1557) by age groups



It is clearly visible, that almost half of the adolescent (18-25 years) and the young adult (26-45 years) group (46,90% and 44,70%) belonged to the mentally healthy category. Their respective ranking in terms of vulnerability was 42,40% and 40,00%, for endangerment it was 10,8% and 15,30%. There were only 4 respondents above the age of 46 years that is why a statistical statement can not be provided. To some up, by age the proportion of the mentally healthy was decreasing, while the proportion of those becoming vulnerable and endangered was increasing. Data was also processed according to the university faculty students belong to. As it was already indicated, only 5 faculties provided statistically enough number of students to our research, so results should be treated with this restriction in mind (Figure 4.).

Figure 4. Mental health status of the student sample (N=1558) by university faculties



Compared to the complete sample results of the subsamples of the Juhász Gyula Faculty of Education and the Faculty of Medicine show slightly more favourable tendencies. At the Faculty of Education 51,2% of the subsample were mentally healthy, 39,6% were vulnerable and 9,2% were endangered. In case of the Medical Faculty the proportion of those mentally healthy were 50,70%, 38,6% were vulnerable and 10,7% were endangered.

The distribution of students in the 3 mental health categories at the Faculty of Natural Sciences and Informatics were as follows: 44,7% mentally healthy, 44,7% vulnerable and 10,7% endangered.

Less favourable results were obtained in case of the Faculty of Health Sciences and Social Care and for the Faculty of Dentistry. For both faculties the ratio of the mentally healthy were lower (FHSSC – 40,00%, FD – 38,70%), and the proportion of the vulnerable (FHSSC – 46,60%, FD – 48,4%), as well as of the endangered group (FHSSC – 13,50%, FD – 12,90%) was higher.

Resources of students at the University of Szeged

It is widely accepted in health promotion, mental health promotion literature, that the strength and number of General Resistance Resources (GRR) and their subjective Sense of Coherence define the success of coping with stressors. General resistance Resources are those biological, material and psychosocial factors which make it easier for individuals, groups and sub-societies to observe their life as consistent, structured and comprehensible (Antonovsky, 1987). Typical examples of GRRs are money, knowledge, experience, self-esteem, health-conscious behaviour, devotion, social support, cultural capital, intelligence, traditions, life-philosophy etc. The higher a person is on the continuum of resources, the more probable it is to obtain life experience that supports a strong sense of coherence. The lower is one positioned on such a continuum, the more likely it is to obtain experiences that support a weak sense of coherence.

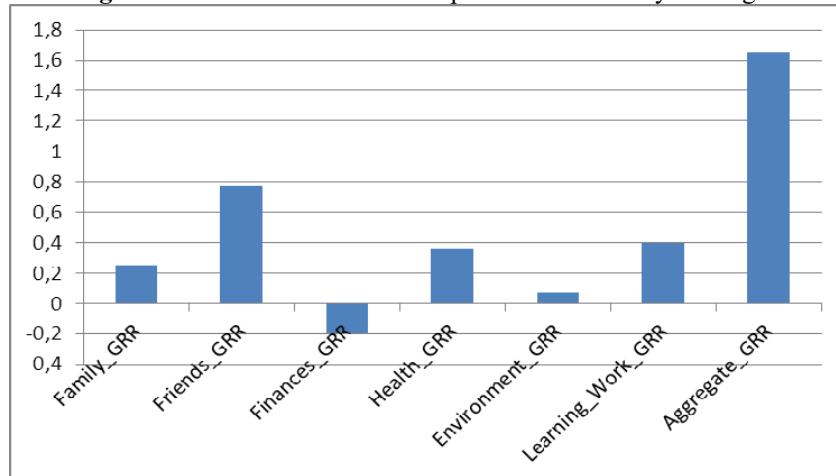
On the basis of subjective sensing, the following GRRs were studied among the students of the University of Szeged:

1. *Social relationships - Family.*
2. *Social relationships – Friends*
3. *Financial status*
4. *Health status*
5. *Learning and work*

6. Environment

We have generated a GRR index for all domains with the minimum value of -2 and the maximum value of +1. Figure 5. shows the distribution of GRRs in the whole sample.

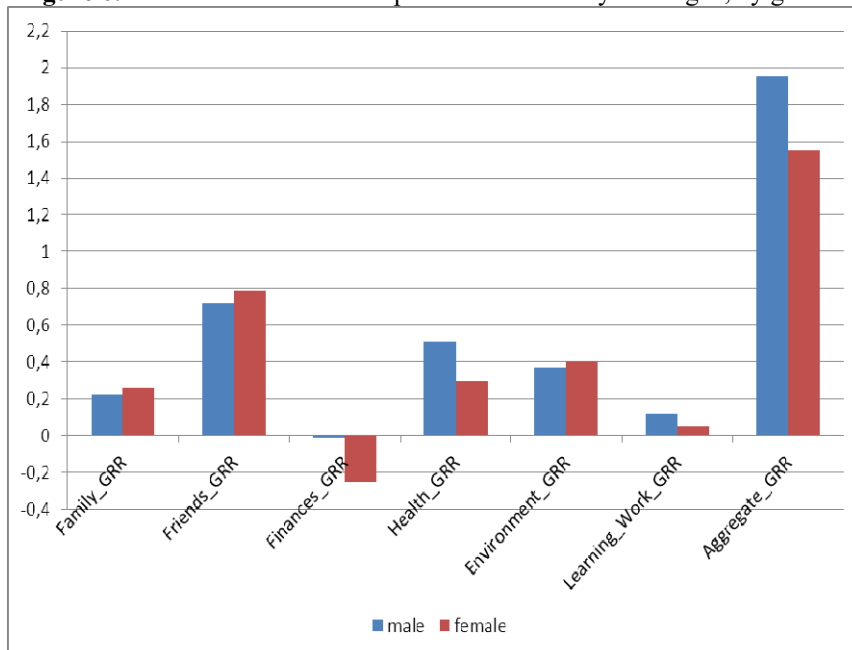
Figure 5. GRRs of the student sample at the University of Szeged



It is visible, that financial needs were evidently not satisfied. Mildly positive resources included friends, family, living environment, health status, learning and work. An aggregate GRR index was also generated out of the six separate domains (Aggregate_GRR), the minimum value of which was -12, the maximum value was +6. This aggregate value was in the positive range, though not very strong.

Let us observe the gender differences in the development of GRRs (Figure 6.).

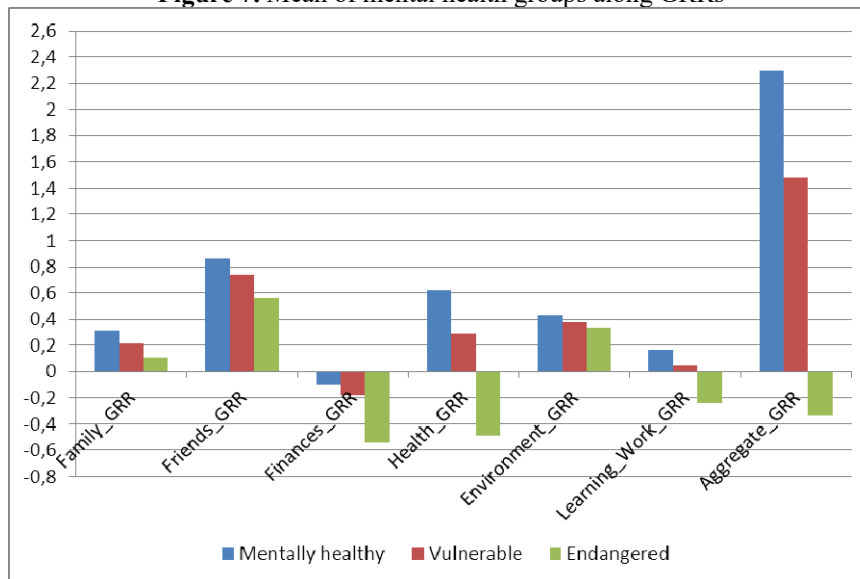
Figure 6. GRRs of the student sample at the University of Szeged, by genders



Female students were in a visibly worse position concerning the aggregate GRR value (1,55). Compared to the male respondents, they had a slight advantage only in case of family, friends and the environment. When analysed by age, young adults, that is those between the age of 26 and 45 years had the least aggregate GRR value (1,40).

Let us compare the GRRs along the 3 groups of mental health (Figure 7.).

Figure 7. Mean of mental health groups along GRRs



There seems to be a clear relationship between GRRs and mental health status. In case of each GRR domains, the mentally healthy group possessed the highest set of resources, followed by the vulnerable ones, and the least resource belonged to the endangered group.

Student expectations

It was an important question whether students would like to receive support in a hard life situation or in case of a crucial decision. 96,7% of all respondents indicated they would. So students needed and were willing to receive expert help. The expressed need was greater in case of female respondents (97,8%), while male respondents indicated 'yes' in 93,3%. Analysed by age groups, adolescents, that is those between the age of 18 and 25 years needed help the most (96,8%).

CONCLUSIONS

On the basis of our research it can be stated, that the observed university students possessed low level or resources and the ratio of those in the vulnerable and in the endangered groups were high. That is why there is a need within the higher education system for processes, programmes and projects aiding social integration and social relationships, as well as focusing on establishing the relevant prerequisites. The lack of resources leads to becoming mentally endangered, being mentally endangered would in turn prevent the individual from mobilizing existing resources.

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Examination Of Perception Of Communication Skills Of The Secondary School Teachers In Terms Of Various Variables

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Abstract

The objective of this study is to examine whether communication skills of the secondary school teachers significantly changed or not according to the gender, age, professional seniority and branch. The target population of the research is the district of Gazimagusa of Turkish Republic of Northern Cyprus. For the sample of the research, three secondary schools have been selected in line with the objective of the research in the 2015-2016 academic year and the study have been conducted with 108 voluntary teachers working in these schools. As a result of the research, it has been observed that the communication skills of the teachers have significantly differentiated in the empathy sub dimension and have not differentiated in the sub dimensions such as transparency, equality, effectiveness and competence according to their genders. It has been observed that such skills have not significantly differentiated in the sub dimensions such as empathy and equality and have significantly differentiated in the sub dimensions such as effectiveness, transparency and competence according to age. It has been analyzed that such skills have not significantly differentiated in the sub dimensions such as empathy, transparency, equality and competence and have significantly differentiated in the sub dimensions such as effectiveness according to the professional seniority. It has been observed that average of the scores of the teachers have not significantly differentiated in statistical manner in the sub dimensions such as empathy, transparency, equality, effectiveness and competence according to the marital status. It has been analyzed that such skills have not significantly differentiated in the sub dimensions such as transparency and significantly differentiated in the sub dimensions such as empathy, equality, effectiveness and competence according to their branches.

Keywords: Communication skills, Secondary school teacher

Introduction

Communication, information generation, transfer and interpretation process (Dönmez,2008), two people in a relationship that you put into the psycho-social process (Cüceloğlu, 2000); Communication between individuals that occur in feelings, information sharing and thoughts that includes a multi-channel process (Cüceloğlu, 2005; 28). The general sense of the usual sense, “developed between two or more people, take its source from different needs of “Develops between two or more people, takes its source from the different needs of different densities experienced as intimacy from the acquaintance, they are the mutual interaction and emotional of behavior” (İmamoğlu, 2008). The need to communicate with people, whether that is due to the desire to influence the environment to spread knowledge, wants to educate, entertain or want to tell you the only one in the main purpose is to influence and to provide information against (Tutar, Yılmaz and Erdönmez, 2003). Communication, environment and predominantly reflect effective determinant of human effort may be on his own life (Levent, 2011). Communication with people as a social being in perform himself, in other words, not only as a biological organism, going to be member of the community (Kavak and Vatansever, 2007). Effective communicators; comfortable socially, sensitive to the body language, critical thinking skills and effective listening skills are those that you use (Şeker, 2000: 18). The most important skills necessary for effective listening and effective response (Korkut, 1996). In the lives of individuals, to educate itself to work on communication and to communicate effectively, there are considerable (Çetinkanat, 1996). Effective teachers; professional knowledge, professional skills, and they're reputable and reliable in the eyes of students. In class builds confidence providing dignity and talented teachers understand their students' needs and produce solutions faster (Kılbaş, 2000). Effective teachers must be basically a good expert as well as an excellent Communicator. Teachers play a role in regard to communication, empathy, decision-making and social activities should be an integral part of the creative and critical thinking class control (Güçlü, 2003). Student success in the classroom environment created by the interaction of the teacher is very important. Teachers in the near and long-term interaction with students, learning in addition to the main function of facilitating learning are being installed to guide the functions such as model (Açıkgöz, 1998).

Behavior change in individuals through education is provided in the desired direction. Communication training communication education to develop behavior patterns through education starting to work with the concept of community was born (Şimşek, 2000).

Communication in education education is the most important element. Communication, academic skills, and in teaching and classroom management is highly effective in targeted information. In order to do a good job a teacher must be knowledgeable about communication theory and the Science of the soul (Yavuzer, 2003). In class, students and teachers to reach educational goals, and their information and experiences through various means of communication that provide an appropriate modify they share with the environment. Students readiness levels, interests and requirements, adequacy of facilities by their teachers; the educational purpose of the vehicles will be determined together with the guidance arrangement of the teacher communication (Çetinkanat (1998; Güçlü, 2012 and Başar, 2003).

For a teacher, communication skills, or technical information that supports educational is more important. Against such a question most people usually gives the answer communication skills. Healthy teachers cannot communicate, instructional in the sense that no matter how good will not benefit; in this case, on the contrary it may harm children (Nacar, 2010). A very knowledgeable teacher of children rather than teachers who communicate well, can love more was observed. Based on this description, first of all prospective teachers or teachers, advised to improve their communication skills (Nacar, 2010, Selçuk, 2000, 94).

Communication, well-managed classroom is the focal point of. In modern school teacher told the student he listened, lost its significance one-way communication. It is together the listening and speaking; students feeling, versatile communication skills they clearly reveal the thoughts and ideas is a must to learn all the teachers (Altıntaş, 2000, 129).

An analysis of research carried out with skill; It is seen that the descriptive and experimental studies. In the studies examined communication skills; teachers and administrators perception, social communication skills with the relationship level between the motivation level of the subject teachers, social communication skills with the relationship level between the motivation level of the subject teachers, administrators communication skills with the level of relationships between organizational values, deter behavior relationship, the relationship between school culture, the relationship between school success, manager of supportive leadership roles, the relationship between leadership styles It is disclosed (Kurt, 2015; Koçak, (2014); Fidan, 2013; Sabancı and Şekerci (2014); Dogan, Uğurlu, Yıldırım, and Karabulut, (2014); Lal (2012; Çetinkaya (2012); Çankaya and Aküzüm (2010); Bektaş (2010). Northern Cyprus Ministry of National Education in secondary schools depends on the skills of the teacher's tasks not seen a study discussed. In this sense, it is thought will bring contribute to the field. In this context, in this study, perceptions of communication skills of secondary school teachers by gender, age, industry, seniority and examines whether marital status has changed according to a professional.

In this context, the general objective is to answer the following questions:

1. Middle Schools school teachers, the ability to communicate the scale of sub-dimensions, "empathy", "transparency", "equality", "effectiveness" and "adequacy" Is there a significant difference between the points?

Material And Method

Research Model

Middle Schools school teacher gender communication skills of perception, age, branch; seniority, is facing a descriptive research to examine whether it changes according to marital status.

The sample

This is the sample of the research, whereas in the academic year 2015-2016 in the Famagusta district of the Turkish Republic of Northern Cyprus Ministry of national education consisted of secondary school teachers at the center of 108. Teachers who participated in the study 108 % 72.2% (n=78) and Mrs. % 27.8% (N=30) were male. Teachers are given information about the purpose of the study prior to the data collection, the voluntary ones were included in the study.

Data Collection Tools

Communication skills teachers Scale (CSTS): Teachers to assess their perception of their communication skills Cetinkanat (1997) scale to 44 items. Empathy transparency, equity and efficiency

dimensions for each 10, there are four items to assess the adequacy size. Cronbach's alpha values of the subscales in the original study of the scale; empathy .71, .67 transparencies, equality, .59, .45 effectiveness, competence is .50, Cronbach's alpha coefficients for internal consistency of the scale: it is .81 (Çetinkanat, 1998). The reliability coefficient was found for this study was found to be .79.

Analysis of The Data

The statistical analysis of research data, Middle Schooling the teachers' gender, based on of occupational seniority and branches in a meaningful way to determine whether differed (One-way) one-way analysis of variance and t-test techniques were used. The difference in the results of one-way ANOVA to determine which groups were used stems from the LSD test. Analysis of the data in computer have been achieved by using SPSS 17.0 software package.

RESULTS

In the study, according to the teachers' communication skills and perceptions subscale is analyzed in terms of gender variable. The mean scores on the subscales for Women and communication skills of male teachers, standard deviation and t values are given in Table 1.

Table 1. According to gender, communication skills subscale scores, standard deviations t-Values.

Variables	Gender	n	\bar{x}	Ss	t	p	Cardinality
Empathy	Woman	78	47.564	3.566	3.947	.000	p<.05
	Man	30	44.466	3.875			
Transparency	Woman	78	33.461	4.176	-1.713	.090	p>.05
	Man	30	35.133	5.393			
Equality	Woman	78	40.179	3.737	-1.052	.295	p>.05
	Man	30	41.066	4.385			
Effectiveness	Woman	78	40.333	3.052	.492	.624	p>.05
	Man	30	40.000	3.403			
Qualifications	Woman	78	18.666	1.568	-.370	.712	p>.05
	Man	30	18.800	1.936			

Table A-1 as shown in Empathy, communication skills ($t= 3.947$, $p = 0.5$), the sub-dimension mean scores of male teachers were significantly higher than female secondary school teachers it was found that. Transparency ($t= 1.713$), the equality ($t= -1.052$), Effectiveness ($t= .492$), Qualification ($t= -.370$) is differentiate according to the gender of the teachers in the lower dimension's scores $p>0.05$).

Table 2. The Professional Communication Skills Teachers of the Teacher's seniority According to Results of Variance Analysis On Our Way of the Sub-Dimensions of the Scale

Variables	Variance Source	Sum of Squares	sd	Average Of Squares	F Value	P Value	Severity	LDS
Empathy	Intergroup	77.796	2	38.898				
	Groups within	1544.722	105	14.712	2.644	.076	p>.05	
	Total	1622.519	107					
Transparency	Intergroup	38.102	2	19.051				
	Groups within	2209.306	105	21.041	.905	.408	p>.05	
	Total	2247.407	107					
Equality	Intergroup	38.935	2	19.468				
	Groups within	1611.472	105	15.347	1.268	.286	p>.05	
	Total	1650.407	107					
Effectiveness	Intergroup	98.185	2	49.093				1<2
	Groups within	957.556	105	9.120	5.383	.006	p<.05	1<3
	Total	1055.741	107					2<3
Competence	Intergroup	6.519	2	3.259				
	Groups within	292.000	105	2.781	1.172	.314	p>.05	
	Total	298.519	107					

In Table 2, teachers' communication skills scale the average occupational seniority by their scores in Empathy, Transparency, Equity, and adequacy, it is seen that the size of the sub is not significantly different. Effectiveness ($F=5.383$, $p<.05$); bottom size differed among the groups is that the observed difference in a meaningful way in which LSD was used to test in order to determine that. The difference LSD test results 1) under 10 years and have seniority; 2) with seniority of 11-20 years; 3) 21 years and have seniority over effectiveness to sub-in size 1-2, 1-3, and 2-3 between groups; Between groups 1-2 and 1-3 2. and 3. 2-3 between groups in favor of group 3. has shown that is in favor of the group.

Table-3 Teacher Communication Skills by sectors of the teachers on the lower scale of the one-way analysis of variance results Size

Varieties	Variance Source	Sum of Squares	sd	Frames Average	F Value	p Value	Severity	LDS
Empathy	Intergroup	243.384	8	30,423	2.184	.035	p<.05	1<5,1<9, 2<5,4<5, 6<5,2<5, 5<8,
	Groups within	1379.135	99	13.931				
	Total	1622.519	107					
Transparency	Intergroup	272,356	8	34,044	1.706	.106	p>.05	
	Groups within	1975.0522	99	19.950				
	Total	247.407	107					
Equality	Intergroup	295.939	8	36.992	2.704	.010	p<.05	2<1,4<2, 8<2, 9<2
	Groups within	1354.468	99	13.681				
	Total	1650.407	107					
Effectiveness	Intergroup	144.915	8	18.114	1.969	.058	p>.05	2<1,4<2, 8<2,9<2
	Groups within	910.825	99	9.200				
	Total	1055.741	107					
Competences	Intergroup	41.388	8	5.173	1.992	.055	p>.05	1<2,4<2, 6<2,8<2, 2<5
	Groups within	257.131	99	2.597				
	Total	298.519	107					

Table 3, Teachers ' communication skills scale scores are not significantly different according to the size of the sub branches their transparency, Empathy (F=2.184, p<.05); the Equality (F=2.704, p<.05); Effectiveness (F=1.969, p<.05); and proficiency (F=1.992, p<.05); bottom size, it is observed that differed in a significant way. The difference is that in the lower dimensions in order to determine in which LSD was used to test among the groups. The difference LSD test results 1) Turkish, 2) guidance, special education, 3) mathematics, 4) science, 5) music, art, physical education, 6) foreign language, 7) religion and culture, 8) technology and design, Computing, 9) branches of social studies, including Empathy, sub-size 1-5,1-9,2-5,4-5,5-6 and 5-8 between the groups 5.and 9. the group in favor of equality of the size of the bottom 1-2,1-3,1-4,1-5,1-7,1-8 and among groups 1-9, 1.the group, to the detriment of effectiveness, sub-dimensions 1-2,2-4,2-8, 2-9 in favor of the group and between the groups 1.2 and qualification sub-dimension 2-1, 2-4,2-6,2-8,2-9, 2-5 and between groups 2 and 5. has shown that is in favor of the group.

Discussion

In this section, statistical analysis of data obtained as a result, have been discussed and interpreted in a way connected with the literature. As a result of statistical analysis conducted on the gender, empathy, communication skills of teachers by gender dimensions in favor of female teachers has been shown to significantly differ. Women communicate better with their teachers than male teachers said students could put themselves students. Transparency, equity, effectiveness and adequacy of the sub-dimension of teachers ' communication skills is not different depending on gender was observed. They didn't do the male and female teachers gender in the classroom among students, planned, they might turn out to be proficient at using the information in the field. When examining the findings of the literature, with regard to their perceptions of communication skills of female and male teachers are getting different results. Some research was no significant

difference between men and women ' perceptions of their communication skills (Öztaş, 2001; Günay, 2003 Acar ,2009; Keleşoğlu, 2009; Tek, 2008; Levent, 2011; Koçak, 2013; Posluoğlu ,2014).

Some research has concluded that the communication skills of female teachers is higher than male teachers (Şeker, 2000; Saracaoğlu, Öztürk ve Silkü, 2001; Ceylan, 2007; Özerbaş, Bulut and Usta, 2007; Toy, 2007). This work is consistent with the survey results. Cloud (2003), Booth, cool and Emirhan (2000) in their study of female teachers in total communication skills total score is higher than male teachers but there were no significant differences. According to gender, significant difference between the mean Score of communication skills scale of "effectiveness" and "competence" were found in the lower dimensions. According to the male teacher's female teachers, with good communication skills "effectiveness" and "competence", it was inferred that they have to average higher scores in the lower dimensions.

Generally speaking, the research; In terms of communication skills is understood that the differentiation of male and female teachers. In perceptions of being male or female differentiation according to the individual's communication skills, self-acceptance and self-confidence may be associated with motivation, as it is thought that gender roles may be associated with. Female teachers are facing many obstacles until it starts to impact on the profession from childhood and the role they play in society according to their male counterparts to have a profession demonstrate more effort (Bulut,2003). Accordingly, the communication skills of female teachers, with students than male teachers said students could put themselves they communicate better. This result, women are more sensitive to other people's problems and others as being in good standing of the teaching profession and the expectations regarding the role of women may be due to be adopted by female teachers.

Teachers ' communication skills scale the average occupational seniority by their scores in Empathy, Transparency, equality and adequacy is not significantly different, it is seen that the size of the sub. It is observed that the effectiveness differed in a significant way lower in size. Accordingly, eleven and teachers with more seniority ' communication skills according to the teachers with seniority of 10 years and under, they are more structured where students communicate better, it can be said that are more effective at using the information in the field. This result increases as occupational seniority, teacher's classroom management communication skills in the form of residue can be detected. Studies examined in the literature, Levent (2011) communication skills according to the findings of the research sub-equality of the dimensions of sub-size comparison in terms of professional experience, teachers who are over 21 years of professional experience and the equality of the values of the values of the effectiveness of teachers with 10 years of professional experience or less were found to be significantly higher. Şeker (2000), low communication skills to the task of beginning teachers, in terms of communication skills of 16-25 year has seen teachers working in the profession they have the highest performance. Günay (2003) and Gazelle (20007) communication skills of teachers who are above 21 years in the profession and have reached the conclusion that high. These results are in line with the work. Öztaş (2001) as the result of different studies have concluded that affect the communication skills of the teacher's seniority.

Teachers communication skills their scores on the scale according to the size of the sub branches is that transparency is not significantly different, Empathy, equality, effectiveness and adequacy differed in the size of the sub, it is observed that in a significant way. Accordingly, music, art, Physical Education and Social Studies teachers to establish better communication with other branches of communication skills of the students according to the students, it can be said that they could put themselves. Turkish Social Studies teachers ' communication skills among students of other branches of the gender they didn't do planned, they might turn out to be more proficient at using the information in the field. Turkish, guidance and communication skills of special education teachers communicate better when compared to other branches where they are more structured, it can be said that are more effective at using the information in the field. Music, art, Physical Education, and guidance, special education teacher's student characteristics in more detail, the adequacy and efficiency of the daily plan they developed more positive attitudes than teachers in other subject it can be said that.

Results and Suggestions

Here, based on research findings and interpretation is given to proposals for studies related to internet addiction. Statistical analysis for the variable gender, Empathy, equality, adequacy and effectiveness sub-dimension of teachers ' communication skills differed by gender in favor of female teachers, it was observed that in a significant way. Transparency, equity, effectiveness and adequacy of the sub-dimension of teachers ' communication skills is different depending on the gender of that is understood.

Communication skills of teachers according to their score and the average age of the scale Effectiveness, Transparency, Competence dimensions of differentiation is seen that in a meaningful way. The difference in effectiveness sub-dimensions were in favor of the 20-30 age group. Transparency and the lower dimensions in the age group of 41-50 and 51 and above were in favor.

Teachers communication skills their scores on the scale according to the size of the sub branches is that transparency is not significantly different, Empathy, equality, effectiveness and adequacy differed in the size of the sub, it is observed that in a significant way.

Based on the findings of male teachers in the direction of further improvement of communication skills training in-service training seminars can be prepared. Given that it is effective communication skills experience in education who will be graduating new teacher candidates and new teachers for this purpose, the Institute of Education and training in terms of quantity and quality of their high school program, teacher training programs and determination of what features to use in the carrying direction can be made to work. The Ministry of national education of the Republic of Turkey in February 2016 at the period of the assignments that will be assigned to this subject began to study with new teachers. Similar studies can be made in T.R.N.C. Our teachers can be given in-service training seminars to improve their communication skills “communication skills Training”.

Communication skills in teacher training institutions, a course that will give you the ability to be added to the program. For teachers, empathy, building positive relationships with others, as well as social skills in order to develop a variety of programs can be arranged.

In different cities of this research, teachers of different disciplines to be repeated with the Working Groups and wider, it is anticipated that it will provide the opportunity to make comparisons.

In addition to determining the level of communication skills of secondary school teachers how to more effectively use their communication skills should be improved, on issues such as the need to provide training on how to support qualitative research should be conducted.

Research results released in; According to school type-school teachers tend to use their communication skills disparities in the factors which play a role should be investigated.

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Examination Of Social Media Usage In Teacher-Parent Communication: Whatsapp Example

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ABSTRACT

The purpose in this study schools under the parent-teacher created with the purpose of ensuring the communication Whatsapp shared in the conversation history of Whatsapp in terms of the type of the media preferred, and investigate them separately about teacher and parents sharing. In addition, the viewpoints of the teachers on the subject have also been examined. In the study, which was designed as a case study, the example of Whatsapp was dealt with as a social media tools used in teacher-parent communication. The study was conducted with a guidance teacher who had instant messaging groups with the parents and who worked at a private primary school (4th Graders) in the city of Istanbul, since it was easily available. In examining the messages that were shared in the Whatsapp group in terms of the media type and the titles of the subjects that was preferred, the Whatsapp history was used; and in determining the viewpoints of the teacher on the Whatsapp group, semi-structured interview method was used. According to the findings of the study, the teaches considers the instant messaging group as a healthy social media platform for the purpose of establishing communication with the parents; however, is insufficient in informing the parents about educational and pedagogical instructions for them. It was observed that the group members were not sensitive about the private messages and about the messaging hours.

INTRODUCTION

School-Family and Student are the basic elements of the educations systems. In order for education systems to produce desired outcomes, these three components must be in a strong communication and cooperation. According to Kavak (2008), especially the family, which makes the children acquire personality traits, must be made more participative in this process. For this reason, if the school management wants to achieve success in education-training, it must care for the parent-teacher relation in order to make the parents participative as much as teachers (Kavak, 2008).

The studies conducted on teacher-parents communication report that there must be a strong interaction between the teachers and the parents in order to achieve success in education (Özgan & Aydın, 2010). Sutherland (1991) conducted a study on this topic and reported that the academic success and development of the children was influenced positively by the participation of the parents in the education process; and emphasized that the parents as well as the teachers and students were the beneficiaries in this process. In this context, the teacher faces less difficulties in education process, and the parents can be informed more on the development of the student and develop themselves. On the other hand, Epstein & Dauber (1989) conducted a study and revealed the expectations of the parents from the school (teacher). In this context, parents want to contribute to the education process of their children, and await advice from the school (teachers). Applications that will strengthen the teacher-parent interaction, and the regulations and developments that will meet the expectations of the students are among the expectations of the parents from school.

Şişman (2002) conducted a study and emphasized that the teacher and parents should know and determine the expectations and the needs of each other for a healthy communication. Even if the parents do not interact with the teacher, they must communicate with each other at least about the student and classroom activities, the needs of the student, teaching materials and the expectations. According to Özbaş & Badavan (2010), the interaction between the teacher and the parents develop the communication; and strengthens the connection between the parents and the teacher. Both school managers and teachers make use of many tools and methods in order to establish a communication with the parents. In this context, Mobile Information Services

(MoNE, 2016a) and electronic Parent Information Systems (MoNE, 2016b) may be considered as the models. The integration of technological devices to the education process prepare the opportunity for using the social network-based devices in this process (Sie et al., 2012).

Many social network platforms that have appeared in today's world have re-shaped the communication, interactions, cooperation, working and even the learning process of people. User-friendly interfaces and the secrecy of these tools attract the attention of many people no matter whether they are computer-literate or not. Millions of users are online with their true identities over the social networks. The social networks that are so much widespread are used for various purposes in educational processes in an efficient manner (Gülbahar, Kalelioğlu, & Madran, 2010). When the literature is examined, it is observed that Hrastinski et al. (2014), conducted a study and reported that social network platforms are beneficial tools that could serve as a coaching system for students. There are also authors that used these platforms as exercise technique (Özdener & Mıhçı, 2014), as foreign language improvement tool (Plana et al., 2013) and as a learning management system (Wang, Woo, Quek, Yang, & Liu, 2012). When the traditional learning systems and social network platform are compared, it is observed that students prefer the social networks more as a learning management system (DiVall & Kirwin, 2012).

One of the important developments about social networks appeared as the “instant messaging services” in our social lives and were accepted as a tool of communication among people (Yazıcı, 2015). Instant messaging service represents the simultaneous communication of two or more people in a communicative manner. The cooperation or the communication realized with these tools may occur in written, audio or video messages (Shank, 2008). With the appearance of smart phones in our lives, applications for instant messaging have been developed and are extremely popular nowadays. Social network platforms may be considered as a class material and may also be used to ensure the student-teacher, teacher-parent communication. One of the most-commonly used instant messaging applications is the Whatsapp. (Bansal & Joshi, 2014).

Whatsapp is a smart phone application that operates over the current devices and operation systems. Whatsapp has been on the market since 2010, and provides the users with messaging, sending video and voice recordings, and pictures over the Internet (Bouhnik & Deshen, 2014). Whatsapp reached 1 billion users throughout its history. 42 billion messages are sent a day in 53 languages, and 1.6 billion photographs and 250 million videos are shared in a day (IANS, 2016). Right at this point, Whatsapp may be considered as a social network that enables people reach a lot of data in a fast manner. One of the properties of Whatsapp that facilitates communication is the possibility of forming a group and communicate within this group. The founder of the group is at the same time the manager of it, and is in a position that has the privilege of adding or removing members without the approval of other members. In addition, all the participants in the group has equal rights. The application provides the opportunity of warning for each message and turning off the warnings for 8 hours, one day or for one week (Bouhnik & Deshen, 2014).

The possibility of establishing a group in Whatsapp is used widely in state and private schools to establish teacher-parent interaction. Class guidance teachers may form a group in Whatsapp application and add all the parents to the group, or the teacher are included in the group that is formed by the parents. In this group, the exam dates, parents' meetings, daily assignments and many other information is shared by teachers. Parents are informed about these situations and communicate with teachers and other parents as soon as possible.

Bouhnik and Deshen (2014) reported that teachers have missing points about the use of Whatsapp groups for educational and pedagogical purposes, and recommended that teachers should share their experiences and exchange opinions with each other. When the literature is examined, it is possible to see that there are studies that examine the teacher-student communication in the use of Whatsapp for student-teacher-parents communication; however, the number of the studies that deal with teacher-parents communication is inadequate. Revealing how the instant communication between the teachers and parents over Whatsapp occurs will cast a light for the teachers who want to use social media for this purpose.

The Purpose of the Study

The purpose in this study examining the messages that were shared in the conversation history of Whatsapp in terms of the type of the media preferred, and investigate them separately about teacher and parents sharing. In addition, the viewpoints of the teachers on the subject have also been examined. Answers for the following questions will be sought in the context of the study;

- What is the participation level of the teachers and parents in the Whatsapp group?

- How many of the messages arriving from the parents are answered?
- What kind of media (gallery, photograph, video, voice, location, and people) are shared?
- Which titles have been communicated in the group, are there any subjects other than the main purpose?
- What are the viewpoints of the teacher on the use of the group in communication with parents?
- How sensitive are the parents on the issue of *not* sharing “private messages” with the other individuals of the group?
- How sensitive is the teacher on *not* sharing “private messages” with the other individuals of the group?

METHOD

In the study, which was designed as a case study, the example of Whatsapp was dealt with as a social media tools used in teacher-parent communication. The study was conducted with a guidance teacher who had instant messaging groups with the parents and who worked at a private primary school (4th Graders) in the city of Istanbul, since it was easily available.

Data Collection Tool: In examining the messages that were shared in the Whatsapp group in terms of the media type and the titles of the subjects that was preferred, the Whatsapp history was used; and in determining the viewpoints of the teacher on the Whatsapp group, semi-structured interview method was used.

Whatsapp Conversation History: Whatsapp Conversation History, which was examined in the scope of the study, is the history of the group, which was formed by a parent. The guidance teacher of the class was added later by the parent. In the content analysis performed in Whatsapp Conversation History, the messages that were shared in the group were handled in terms of the media type and the titles of the subject that was preferred, and were examined in terms of teacher and parent sharing. In the content analyses, which were conducted separately by two authors, the titles of the subjects that showed differences in terms of frequency distributions were examined and discussed for the second time and a consensus was reached.

Semi-Structured Interview: It was used for the purpose of determining the viewpoints of the teacher on the use of Whatsapp group for the communication of the teacher with the parents. The interviews were performed under three basic headings, and lasted 45 minutes each. The questions used in the semi-structured interview are as follows:

- Do you think that the instant messaging service used is influential in the communication with the parents?
- What is your reason for choosing Whatsapp among the other instant messaging services?
- Do you know the features that may be used in instant messaging group (“silent”, “call”, “back-up” “last seen” “share location”) and do you use them?

FINDINGS

The Participation Level of the Teacher and Parents

An analysis was made to determine the participation levels of the teachers and parents in the group, and it was determined that 27 parents out of 31 parents participated in the instant messaging group. The group members participated in the instant messaging group with 1486 messages in total. The content analysis of the messages and the number of the media is provided in Table 1.

Table 1: The Content Analysis of the Messages and the Media Shared in Instant Messaging Group

	The Number of the Group People	Total Messages In The Group	The Number of The Messages sent To The Teacher	The Number of The Messages sent To The Parents	The Number Of The Media Sent In The Group
Teacher	1	85	-	85	4
Parents who are incorporated to the instant messaging group	27	1401	124	1277	154
TOTAL	28	1486	124	1362	158

When Table 1 is examined, it was observed that 1277(% 91) of the 1401 messages that were sent by the parents who participated in the group were addressed to the parents; the addressed person in these messages was mostly the parents, and there were 124 messages (9%) sent as addressing the teacher. The teacher answered all of the messages sent (100%), and participated in the conversations. When the number of the media sent in the group is examined, it was observed that the parents were more active in this process than the teacher.

The Media Types Preferred

When the media types that were preferred is examined, it was observed that 158 media were shared in the instant messaging group. 154 of these messages consisted of the photographs that were added from the gallery, 3 consisted of videos, and 1 consisted of a voice message.

Table 2: The Media Types and Titles of the Subjects Shared in the Group

	Titles of the Media Subjects	The Photos From Gallery	The Photos Taken By Whatsapp Application	Video	Voice	Location	Person
The Number of the Media Sent by the Parents	Class Materials	35					
	Teacher's Day Activities	69					
	Activities in which the Parents Participated	18					
	Good-Will Messages	22					
	Ring Type Preferences, and the Shows prepared by the Students		3				
	The Information of those who made Payments	5					
	Detailed Questions on the Homework			1			
The Number of the Media Sent by the Teacher	The Activities of the Students	4					
		154	3	1			

When Table 2 is examined it was observed that the most frequently preferred media type was photograph from the gallery. Photographs were used in 154 message bodies. 150 of these messages were shared by the parents, and 4 was shared by the teacher. When a topic-based examination is made it was observed that the photocopy materials, the pages of the course book, maps and solved test questions distributed in the classroom had the biggest frequency, and were shared by only the parents. 22 photographs that included messages like "Good morning", "Have a nice Friday", "Good night", "the first photographs of the parent who had her baby", "short study" and some similar other good-will messages. The voice messages were preferred in the least level; and the features like instant photograph, location and people were not preferred at all.

The Titles of the Topic

The titles of topics, numerical values and percentage rates in 747 (50.3%) messages that were sent in accordance with the purpose of the group, and the titles of topics in 739 (49.7%) messages that were sent as not related with the purpose of the group are given in Table 3.

Table 3: The Content Analysis of the Messages that were Shared in the Group

		f	%
Totally Messages In The Group		1486	
Messages Sent To The Teachers		124	8
Messages Sent Between The Parents		1362	92
Messages In Scope Of The Group Aim	Payment to the book company	106	14
	Determining the people who left and who were not in the group	23	3
	Sharing the link of a book campaign conducted for the children whose socio-economic status were inadequate	1	0
	Speaking about the missing keys of the Mangala Game bought for the students	3	0
	Asking and answering the homework of the day	123	16
	Determining whether a book series exist in adequate number in the students	74	10
	Sharing the current status of the homework of social sciences class	28	4
	Sharing a media showing that music is played in a school during breaks and statements of the parents	13	2
	Conversation about the organizations on the meeting of the teacher and parents	19	3
	Payment for the Science Test and study classes and the viewpoints of the parents	72	10
	Parents' exchanging viewpoints on a piece of information whose accuracy was suspicious for them about the exams	59	8
	The answering of a mathematics question asked by a parent by the parents	10	1
	Announcement of a celebration organization because the exams were over and sharing the images of the caterings	51	7
	An activity organized for the Teachers' Day	127	17
	Sharing the duties by the parents for the caterings	38	5
Messages Outside The Group Aim	Sharing a n image containing a goodwill and the comments on the image	191	25
	The other subjects	548	75

In the scope of the purpose, when Table 3 is examined, it was observed that the daily homework was asked and answered for the most time and there are 123 messages in this category. Again in the scope of the purpose, a link was shared by 1 parent for an organization for children whose socio-economic status were inadequate. None of the parents made a comment on this message or gave information on whether they would participate or not. The majority of the messages that were not sent in the scope of the purpose consist of goodwill messages (25%) ("Good morning", "good night", "Have a nice Friday"). The other issues were included in the study by considering that it would not be correct in terms of ethical concerns.

The Viewpoints of the Class Guidance Teacher

In the interview with the class guidance teacher, it was determined that the teacher stated that instant messaging group was a healthy social media platform in terms of establishing communication with the parents. When the teacher was asked why s/he preferred this social media tool, s/he said that s/he had used it before, and it was proper in terms of seeing all the parents in one single medium, showing whether the messages were seen by the parents or not, and seeing which parents read the messages.

Again, the class guidance teacher said that the messages were sent between 16:30 and 20:30, which was after the working hours, and this was good for him/her for being able to answer them, and s/he added that s/he also tried to answer the messages that were sent at other times. However, when the messages were analyzed, it was observed that the teacher answered until 21:53, and participated in the conversations. The teacher said that s/he knew the silent mode of the instant messaging group; however, since s/he was not disturbed by the contents of the conversations in the group, s/he did not use it.

The Sensitivity of the Parents and the Class Guidance Teacher on “Private Message” and the Distribution of the Messages according to Hours

It was observed in the content analysis that there was no limitations in the conversations in the group; however, the group members did not show the due sensitivity about the private message issue. Because it was observed that some of the parents had sent private messages to the group instead of sending it individually (like a parent asking for the recipe of a cake from another parent). Similarly, the group members are not sensitive on the hour they send the messages. The hours when the messages were sent are given in Table 4.

Table 4: The Distribution of the Messages according to the Sending Time

	07:06 - 09:00 (Morning Hours)		09:00 - 16:30 (School Time)		16:30 - 00:05 (Evening Hours)	
	f	%	f	%	f	%
Number of Messages The Teacher Has Sent to the Group	9	11	17	20	59	69
Number of Messages The Parents Has Sent to the Group	123	9	464	33	814	58
Totally Messages	132	9	481	32	873	59

When Table 4 is examined it is observed that the messages are mostly sent at 07:06 at the earliest; and at 00:05 at the latest. The message sending time intervals was examined in 3 groups as morning hours, school time, and evening hours. 0% of the total messages were sent in the morning hours; 32% of them were sent during school time; and 59% were sent during evening hours. The class guidance teacher sent messages mostly in the evening hours (16:30-00:05) (% 69). Similarly, it was determined that the parents also sent messages during evening hours (16:30-00:05) (%58).

CONCLUSIONS

In this study, the messages that were shared in Whatsapp conversation history were examined in terms of the media type preferred and in terms of the titles of the subjects; and the sharing of the teacher and parents were examined separately. In addition, the viewpoints of the teacher on this subject were also evaluated.

The group that was examined was established by a parent, and the class guidance teacher did not intervene about the rules that should be obeyed in the group. The subjects that were talked in the group were not described as unnecessary by the teacher and the parents, and it was observed that there was not an argumentative medium about the topics talked in the messages.

According to the study findings, it was observed that the parents were closely interested in the education process by staying in contact with the teacher (the books purchased, the examinations, the activities etc.), and that they were not only interested when there was a problem, but were in constant communication when decisions were made about the class. These results are in contrast with the results that was reported by Özgan and Aydın (2010) claiming that the parents did not support the teacher at an adequate level, the teacher-parents communication was performed in a limited frame, and that the parents were inadequate in cooperating with the teacher. Since the present study was conducted in a private school, similar studies must be conducted in wider groups and in state schools.

According to another study finding, the class guidance teacher said in the interview that the instant messaging group was a healthy social media platform in terms of establishing communication with parents. However, when the subjects that are spoken in the group were examined in educational terms it was observed that the teacher did not inform the parents about educational and pedagogical issues. It was observed that the teacher exchanged information about the success levels of the students, discipline problems, social and psychological problems, the success levels in the classroom, and the relations with their friends. When the issue was examined in terms of the interviews made with the parents, it was observed that it did not meet the parent expectations highlighted in the study conducted by Epstein & Dauber (1989). It may be recommended that the teacher should exchange information on more educational and pedagogical issues when the teacher is forming the general frame in his/her messages with the parents, and they should be included in these messages. Because, according to Bouhnik and Deshen (2014), this situation plays an important role in developing the parents on this issue.

In the content analysis, it was observed that the group members did not sue sensitivity about the private messages, and they sent the private messages to the group although they could send them to individuals. It is interesting that the teacher is not sensitive at an adequate level about this issue. Because it is a situation where the teacher is expected to be a role model for the parents. Similarly, the group members did not show the due sensitivity about the message hours, and wanted to be in contact with the teacher at any time during the day. This result coincides with the results of the study conducted by Bouhnik and Deshen (2014) to examine the teacher-student communication and reporting that the students expected that the teacher was available on a 7/24 hour basis.

According to the study results, it is possible to claim that there are important missing points in the use of social media by the teacher for communication with the parents. The missing points on this issue may be completed by providing training and education for the class guidance teacher candidates on “the Use of Social Media in Education” at universities. It may also be recommended that the current class guidance teachers should be provided with in-service training on the issue. The groups that will be formed by class guidance teacher will be more efficient for students and parents if parents are informed about the use of the group.

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Findings Of Social Gender Inequality In Counseling Process

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ABSTRACT

The general aim of the research is to identify the context of social gender inequality (SGI) encountered by psychologists and psychological counselors during the course of counselling, reveal their approaches, their opinions and perceptions about these contexts and bring into discussion their counselling approach considering SGI. The research is designed based on a phenomenological pattern, which is a qualitative research pattern. The study group consist of 10 psychologists and 8 psychological counselors, 8 males and 10 females from 8 different cities. The results of the study show that participants believe existence of SGI in Turkey and encounter SGI during the course of counselling. The greater part of the cases are female clients. The most preferred methods are creating awareness and insight about SGI. Solution Focused Brief Therapy and then Cognitive Behavioral Therapy are the most commonly-used approaches. The proper counseling environment is defined as to where the counselee feels free to explain her/himself truly comfortably. The participants recommend an environment that is purified from any material which can evoke SGI. They believe that the solution of the SGI depends on increasing the level of education.

INTRODUCTION

Social Gender Inequality has been researched frequently in countries all over the world in recent years and is an issue dealt with in several ways. SGI and the concepts associated with it like diversity, social justice and reflections, intersectionality and their reflections to the counseling environment have begun to be researched with a growing interest (Seedall, Holtrop & Parra-Cardona, 2014). According to the data from World Economic Forum Gender Discrimination Report of 2013, Turkey ranks the 120th in 136 countries which makes Turkey ranked with the countries that have the highest inequality between women and men (The Global Gender Gap Report, 2013). There is an increasing interest in SGI and issues associated with it like diversity, social justice, and reflections of these concepts on counseling environment and researches about this subject has begun to take place in recent years. For instance, between 2008-2013, National Plan of Action for Gender Inequality had been prepared by various institutions and organizations, and an action plan for 2014-2018 have been started with the lead of Prime Minister Status of Women (Toplumsal Cinsiyet Eşitliği Ulusal Eylem Planı, 2008).

However, issues such as detailed studies of the psychological counseling, matters to be considered at the session, qualifications of sensitive SGI counselor and how a SGI sensitive counseling session should be structured are not discussed or researched long enough in our country yet. Counselors, work as support profession for key areas like education, justice, health, social services, law enforcement, and industry and so on, and therefore their contribution to SGI is extremely important (Bilge ve Ulukaya, 2011). Preventive, developer, remedial, router characteristics, in brief all remedies of psychological counseling and guidance services, and all remedies overlap with the goal of achieving gender equality.

Counseling session that is processing with an effort to not to make any gender discrimination is not only more fair but also more inclusive and equitable. When counselors take equality as their guide in the sessions, they realized the discrimination in the relationship that they haven't realized before. If counseling session is not based on the hypothesis of "to be the opposite gender", it is possible that issues that haven't addressed before are brought to the session and clients rethink about what is normal or healthy. Counselors who prioritize gender equality in the sessions and listen to the clients without gender inequality is able to see perspectives that they haven't before. A counseling session conducted without gender discrimination, does not intend to make men and women similar, contrary it aims to give chance to live individual differences more freely (Knudson-Martin and Laughlin, 2005). Moreover, research results reveals that gender-sensitive approaches and therapy environment make it easier to have positive outcomes

from clients (Danforth & Wester, 2014; Strömbäck, Wiklund, Salander Renberg & Malmgren-Olsson, 2016; Waldegrave, 2009).

Psychological counseling's humanistic point of view could increase the success of SGI programs that are developed to increase awareness about the issue and counseling skills of counselors and can be used in future research.

However, as Chandler (2005) noted, the desire of a counseling relationship based on equality, is not enough to consider that relationship as an equitable relationship hence research on inequality in the counseling relationship shows the need for research and development in this regard. In this context, it is necessary for the counselor consult the client with client's identity that s/he carries to the session and try to determine what that identity and cultural norms mean for the client (Karairmak, 2008). On the other hand, counselors must have done the same questioning in themselves and should be aware of their prejudice and bias. At the same time, trying to find the impact of cultural factors on the problems experienced by the client is one of the main duties of psychologists and counselors as working on a core area working with people. It appears to be extremely important for our country forming policies and practices to provide information, create awareness and sensitivity about SGI. Researches about SGI sensitive counseling environment structuring should be done more sensitively especially in eastern countries where the roles of men and women is significantly dissociate from each other. Joshi (2015) emphasizes especially the decisive role of the mental health of gender in a patriarchal society and mentions it cannot be discussed separately from counseling services in his research on the need for gender-sensitive counseling interventions in India

Since children are considered as country's future and counselors constantly be together in the therapeutic interaction with children and young people especially in the school environment, it is required for counselors to gain a conscious awareness in this regard. A generation that grew up to be sensitive to SGI, will be a generation more to fulfill its social responsibility. To this end, the issues need to be addressed first are gaining a SGI concept, defining SGI sensitive counseling session and environment and stating necessary policies and practices. In such planning, instead of implementing foreign models one to one, taking into account of the cultural characteristics of the country and perform sensitivity studies on SGI will be much more functional.

THE STUDY

The overall objective of this research is to determine SGI content faced in the counseling process by counselors and psychologists, their attitude to this content; to reveal their views and perceptions and to discuss SGI regardful counseling approaches. Answers to the following questions were sought in accordance with the general aim of the research:

1. What are believes of psychologists and counselors in the existence of gender inequality in our country? What do they think about the things need to be done to solve this issue via their profession within the framework of their duties?
2. Have they ever encountered cases involving gender inequality in their profession? What did they feel and think about such a situation?
3. Which sex did they worked more in SGI cases? When working with these clients, which intervention methods did they use and what did they pay attention to?
4. What are thoughts on "a suitable consultant" and "appropriate counseling environment" in order to ensure gender equality?

RESEARCH MODEL

This research is designed in qualitative method to investigate the perceptions, opinions and attitudes of psychologists and counselors towards issues related to SGI that they encounter in counseling process. This study is designed with qualitative research design's phenomenology pattern. The aim of phenomenology pattern research is to uncover the perceptions, understandings and meanings that people assign to a phenomenon (Yıldırım ve Şimşek, 2011). In this context, the examined phenomenon in this research is contends about SGI that are encountered by counselors and psychologists in the counseling process and their attitude towards these contends.

STUDY GROUP

Participants of the study that is conducted in 2015 are 10 psychologists and 8 counselors, 18 people in total and from Istanbul (6), Ankara (3), İzmir (3), Balıkesir (2), Diyarbakır (1), Eskisehir (1), Hatay (1), Mugla (1); 8 different cities in total. 2 participants were between the ages 22-25, 8 participants were between the ages 26-30, 6 participants were between the ages 30-35, and 2 participants were over 35. 11 of them have undergraduate and 7 of them have graduate degree. The study is conducted with criterion sampling (Yıldırım ve Şimşek, 2011). The criteria is:

1. Participants should be seeing clients actively.
2. Participants should have attended the training program on social gender equality by The Ministry of Family and Social Policies of Turkey and United Nations Population Fund (UNFPA) and have information about content of SGI.

Participants who meet these criteria are determined according to voluntary basis and preliminary discussions. Also every effort was made to include participants from different cities to enrich the content of the responses.

DATA COLLECTION AND DATA COLLECTION TOOLS

The data is collected in 2015 fall semester with Semi-structured interview form consisting of four open-ended questions conducted by researchers. Questions are formed by experts who themselves had also received xxx training and had done relevant literature review. Questions are implemented after expert opinion is taken. Questions are implemented by researchers to volunteer participants with 20 minute face to face interviews and notes are taken during the interviews. During the interviews, anything that would lead the answers of the participants were avoided.

Forms used in the study gather demographic and professional information first, and then four open ended questions mentioned in the purpose of the research are discussed with participants.

DATA ANALYSIS

Each of the four questions posed to the psychologist and counselor in the study was assessed as a theme for the content analysis. Content analysis is a scientific approach that allows an objective and systematic way of research of verbal, written and other materials (Tavşancıl and Aslan, 2001).

Content analysis is used frequently in social sciences and can be defined as a repeatable technique in encoding book chapters, letters, historical documents, newspaper headlines and texts based on certain rules such as writing some words of systematic as outlined by smaller content categories. The study is done to determine the presence of certain words or concepts in a text or set of texts (Büyüköztürk, Kılıç-Çakmak, Akgün, Karadeniz ve Demirel, 2008). The main objective of content analysis is to achieve the concepts and relations that explain the collected data. Also it is possible to digitize the obtained oral data thus increase the reliability of the analysis and reduce the bias in the interpretation of the findings, and it became possible to make comparisons between emerging themes and codes (Yıldırım ve Şimşek, 2011).

The semantic analysis of the texts is done by two researchers in order to ensure the reliability of the coding first. Then, according to the stage of content analysis, qualitative research data obtained from documents carefully processed, the data is encoded, themes have been identified, codes and themes organized and findings are defined and interpreted. Each of the four questions posed to psychologists and counselors in the study was assessed as a theme for content analysis. Codes are generated based on the themes and their numerical values are given. Then, comments to explain the relationship between the findings are done in the framework of relevant literature and conclusions and recommendations are done in the light of findings.

FINDINGS

In this section, the findings are given in the order of purposes of the research. The first objective of the study is to determine the beliefs of psychologists and counselors about the existence of SGI. Only one of 18 participants said that s/he didn't think that there is SGI in Turkey. All of the remaining participants indicated in various statements that they believe SGI exists in our country. Findings and frequencies about solutions and recommendations for SGI in our country in the professional framework are given in Table.1.

Table 1: Solutions and Recommendations for Social Gender Inequality in our country in the Professional Framework

Solution Recommendations	f	%
Research should be conducted	1	4,76
Counselor should not use SGI language in the sessions	2	9,52
Education	16	76,19
Multi-Pronged solution process	1	4,76
Equal access to social facilities	1	4,76
Total	21	100,00

As seen in the table, the most identified solutions are encoded under content related to education and entitled as “education”.

Psychologists and counselors gave the most important emphasis on education about SGI. In the interviews as much as sentences that emphasis on parents’ role in SGI like: *“The most important thing is to educate mothers”, “Mothers should be educated in the first step, then father’s role should also be considered in the education process”, “I can inform parents about SGI to prevent sexist messages that they expose to their children through their entire upbringing”* are seen; sentences that emphasis on vocational perspective like: *“Educational modules can be presented to police, soldiers and professional institutions and organizations “Teachers and administers should be informed about SGI.”* are also seen. Another most common sentences in the content of education is about gaining social awareness. It is seen that the importance of public awareness emphasized like in the sentences: *“We can provide/increase the awareness of the society through education.”, “Conferences, trainings etc. about social gender can be arranged in order to gain awareness.”* These results show that psychologists and counselors give the most important emphasis on education in the context of SGI. In addition, two participants mentioned and emphasized the language in the counseling environment with sentences like: *“Not to place nor support sexist sayings nor sexist humor”, “To pay attention to the language used, make clients realize the language that they use, and investigate the main reasons beneath that language.”*

The second aim of the study is to question if psychologists and counselors encountered with cases involving gender inequality in their profession, and to reveal how it feels like to encounter such a case. Only two respondents said they haven’t encountered these types of cases. Other participants mentioned that they have encountered these cases with sentences like *“Because of our profession, we witness these cases every day,” “I encountered SGI cases many times and very often in my counseling sessions.”* It is seen that when investigating how encountering such cases make counselors and psychologists feel like, they mostly focused on negative thoughts and feelings as seen in table 2.

Table 2: What participants felt and thought about Social Gender Inequality cases that they have encountered.

	f	%
Distinguishing how common SGI is	1	4,00
Feeling of Anxiety	1	4,00
Realizing lack of awareness on the issue	3	12,00
Feeling of intolerance	2	8,00
Feeling of hope	1	4,00
Feeling of devastation	1	4,00
Feeling of despair	1	4,00
The idea of multi-stage solution process	4	16,00
Feeling of anger	7	28,00
Feeling of sadness	4	16,00
Total	25	100,00

As seen in the table, participants often mentioned that they feel anger when confronted with such cases. The feeling of anger is mostly towards men as seen in sentences like: *"Sometimes I hear anger in men"* or *"I feel angry towards cultural factors and men that make women feel insignificant"* as in the sentence, such as it is striking that rather than be directed to men. A multi-pronged solution process is mentioned with sentences like *"I think this problem needs a multi-pronged and multi-step solution process and a more social structure. However small but effective changes can be done through family or individual counseling"* as well as feelings like sadness and anxiety.

In addition, three participants, mentioned that they realized that due to low awareness of SGI, they didn't evaluate client's problem from the perspective of SGI.

Third objective of the study is to identify what psychologists and counselors think which sex exposed to gender inequality more, based on their session experiences with their clients. All participants stated that they encountered women clients more exposed to SGI, one participant mentioned about one male client who has exposed to SGI. Analysis about the methods that counselors and psychologists prefer to use when working with such clients are given in Table 3.

Table 3: Preferred Intervention Techniques When faced with Social Gender Inequality Cases

	f	%
Notifying about necessary information	3	12,00
Using cognitive techniques	4	16,00
Using behavioral techniques	1	4,00
Empathy	2	8,00
Creating awareness	8	32,00
Being Neutral	1	4,00
Using solution focused approach	6	24,00
Total	25	100,00

In the study it is seen that participants gave priority to the issue of raising awareness. As can be understood from the sentence *“Making clients notice the thoughts about gender roles and their perceptions about these roles and try to increase the level of awareness”*; awareness is used as making client be able to see their perceptions about SGI. Two participants also used the word insight with awareness. Solution focused intervention techniques are seen as more preferable. As seen sentences like: *“I would use solution focused approach. The most important thing, in working with such a client is to find its strengths”*, *“It will serve as a model for women the times that she broke the pressure, overcame the problems regardless the inequality and succeeded”*, participants emphasize on solution focused approach that stresses on client’s strengths. Also emphasis on doing something different is also seen in some sentences like: *“I am trying to approach to the issue with a perspective that is more focused on how we can change and what can be done different than previous ones and live in a more equal way.”* With the logic “to change something, change everything” in the systems theory, strengthening the context of women’s social-cultural role and status, will inflict everything more or less and will start the change.

Some participants stated that they use CBT techniques as intervention model. Some sample sentences are: *“It should be also questioned if the problem originates from SGI or personal perceptions.”*, *“CBT techniques that makes clients realize automatic thoughts can help clients aware of bias.”*, *“Directing clients to the necessary sources and notifying clients about necessary information, behavioral intervention techniques and creating empathy, and “Positive nor negative feedback should not be given to the clients about their gender and counselor/psychologist should have a neutral approach”* are the other highlighted ideas.

Fourth aim of the study is to determine the requirements appropriate counseling environment in the context of SGI. (see Table:4)

Table 4: Essentials of Social Gender Inequality Free Counseling Environment

	f	%
Something extra is not required	1	10,00
Easy Access to counseling	1	10,00
Use of non-SGI materials.	3	30,00
Proper seating arrangement	2	20,00
Free environment	3	30,00
Total	10	100,00

The importance of clients' freeness to express themselves in the counseling environment is emphasized like in the sentence: *"It should be an environment that clients can express themselves easily and openly."* Use of SGI free and suitable material for counseling environment is expressed by three different participants. Sentences like *"First of all, there shouldn't be any materials, magazines, books etc. symbolizing superiority of men or women, materials of sexual objectification in the counseling environment."*, *"Counselors should be careful about not having any materials, pictures, or furnishings that recall sexism."* can be given as sample sentences for SGI free counseling environment. Two participants mentioned it is important to have appropriate seating in counseling session. One of the participants stated the seating arrangement with his sentence: *"It is essentially important to arrange appropriate distance when working with opposite sex clients in order to not to discomfort the client."* However, there is also a participant stating that something extra is not needed to be done to make a more SGI free counseling session. The essentials of appropriate counseling in the context of SGI are stated as objectivity, awareness, sensitiveness and education.

Table 4: Essentials of Social Gender Inequality Free Counselor

	f	%
Unbiased Counselor /Psychologist	12	37,50
Counselor /Psychologist Awareness	6	18,75
Sensitive Counselor/Psychologist	2	6,25
Trained/Equipped Psychologist/Counselor	12	37,50
Total	32	100,00

Participants mentioned that psychologists and counselors should be well educated and equipped about the issue with the sentences: *"Counselors are expected to have done enough reading and to be up to date about the issue"*, *"Counselor should internalize the concept of gender equality"*, *"Counselors must be trained about social gender inequality"*, *"Counselors should be able to receive supervision from counselors who are experts of this issue"*, *"Counselors should be capable in working such trauma cases."* Also objectivity of counselors is another concept that is mentioned so often. Some sample sentences in objectivity of counselor could be: *"It is important not to give positive or negative feedback about client's gender."*, *"Especially in couple/family therapies it is important to create the environment of equality"*, *"The language of counselor should be unbiased and culture free"*, *"Counselors should be very cautious about the language and perspective that they have about SGI otherwise they could be a part of discrimination against women directly or indirectly."*, *"Clients must be listened with unconditional acceptance and*

respect, and nondirective language should be used in the sessions.”, “A way free from stereotypes should be approached in counseling sessions”.

Participants also mentioned about the importance of awareness of counselors and psychologists with the sentences: *“Counselors and psychologists should be aware of their perception of gender inequality first.”, “Counselors and psychologists should be aware of their own preconceptions about gender roles”.*

Sensitiveness of counselor and psychologist is also mentioned with sentences like: *“Especially working with these cases counselors and psychologists should know about their advocacy role and be able to remind legal rights of clients and direct them to relevant institutions and organizations.”*

CONCLUSION

Participant psychologists and counselors believe there is SGI in Turkey. When they were asked to consider what can be done about SGI in terms of their professions, their first suggestion was education. The importance of parental education is stated right along with creating social awareness starting from basic education. Education, paying attention not to use any SGI sentences, doing more research on the subject, creating multi-pronged solution process and equal access to social opportunities are some of the results obtained from the research. In their study with master's level counseling students, Dickson, Jepsen & Barbee (2008), have found that counseling students' attitudes towards all forms of discrimination and stereotypes are changed in a positive direction with appropriate training programs.

In the light of the data obtained from the second the purpose of the research, counselors and psychologists met frequently with SGI cases. Problems about psychological health and relationships that are stated in counseling sessions are generally about gender inequality, traditional gender roles and the roles of both women and men and meanings that are ascribed to both men and women (Knudson-Martin & Macfarlane, 2003). It is concluded that working with clients exposed to SGI raises negative feelings like anger, sadness, despair, anxiety and intolerance. There are participants who mentioned that they needed multi-phase approach when they faced SGI cases. Also, three participants accepted that they didn't see the SGI perspective in their cases because their lack of awareness as psychologists and counselors. Only one participant mentioned that potential changes and awareness made him excited when working in a SGI case. The findings based on the third goal of the research justifies a large majority of participants work with women exposed to SGI. The first intervention method that participants preferred to use when working with these clients is creating awareness. Creating awareness, gaining insight about the SGI events that are faced by clients and help them to deal with that situation seems to be the most frequently used ways. The incorporation of the gender equality perspective is extremely important in terms of eliminating inequalities in socio-economic and political indicators. Bilge and Ulukaya (2011) emphasizes the need of gaining awareness in social roles and stereotypes in counselor education. In order to make appropriate arrangements in SGI, psychological counselor and guidance education programs should be revised, relevant theoretical/practical courses should be created, it should be checked what can be done through social responsibility projects. As the second most preferred technique, solution focused approach is used with focusing on the power of the client and emphasizing doing something different and use of cognitive behavioral therapy working with client's automatic thoughts and personal perceptions has taken the third place. Increasing knowledge and therefore awareness, the importance of empathy, behavioral approach and doing session with a gender neutral style and not giving any negative nor positive messages about the gender of the client is also mentioned in the solution process. As part of the fourth goal of the study, participants were asked about a proper counselor and counseling environment in order to prevent SGI in counseling session. When describing an appropriate counseling environment it is seen that participants described that kind of counseling environment as a place where clients can feel comfortable and express themselves freely, free from all kinds of objects, books, magazines, pictures and furniture that evokes social gender inequality.

Counselor who is careful about SGI is described as a person who is trained about the subject, equipped with adequate awareness about the issue of gender discrimination, treat their clients equally, not doing any gender discrimination during the sessions, sensitive to the subject, and be unbiased. The allegation about the neutrality of psychotherapist cannot pass more than a myth these days and it became a requirement for counselors and psychotherapists to enrich their qualifications (Knudson-Martin & Laughlin, 2005). In their research Knudson-Martin, Huenergardt, Lafont, the

Bishop Schepper and Wells (2015) concluded that especially in couples therapy there should be seven clinical sufficiency in the context of gender and power. 1. *To identify laws in cultural discourses*. 2. *To attune with the emphasis of the socio-cultural sense* 3. *To name the underlying power relations*. 4. *To enable secure connection*. 5. *To strengthen public harmony*, 6. *To create an equation model* and 7. *To make couples share the responsibility of the relationship*. Knudson-Martin & Laughlin (2005) states that a SGI sensitive counselor should be careful about imposing his/her beliefs, aware of his/her own limitations in terms of SGI, and efforts to extend his/her limits. According to the authors, counselor is a person who is aware of the importance of his/her role in social change and should be mediator between the client and client's environment.

Even, counselors should ask themselves the question about women's and men's role in the society and the limits that are brought with this roles and must be aware of their prejudices and misunderstandings on this issue.

Chao & Nath (2011) revealed in their study with 313 college counselors that counselors should be aware of their own gender roles and ethnic identities first in order to develop SGI sensitivity. It is one of the most controversial topics in recent years to train counseling students with flexible thinking skills, avoiding generalizations, aware of the environment that influence the individual identity, and with cultural sensitivity especially in multicultural and diverse countries (Kararmak, 2008). It is necessary to detect evidence of SGI, cultural perspective on the role of women and men in society and reveal prejudice and bias. The findings about this subject should have the features to facilitate to encounter counselors' discriminatory tendencies. As the next step, the arrangements to transfer this information to create a sensitive counseling environment, course content or programs.

Then the arrangements of the transfer in the counseling environment sensitive approach to culture, this information should be designing course content or programs. It is hoped that detecting evidence about SGI in counseling environment in Turkey will contribute to creation of content in use of specific areas like psychological counseling, group counseling, family counseling, couples counseling, child and adolescent counseling.

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Implementing Open Source Platform For Education Quality Enhancement In Primary Education: Indonesia Experience

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ABSTRACT

Information and Communication Technology (ICT)-supported learning using free and open source platform draws little attention as open source initiatives were focused in secondary or tertiary educations. This study investigates possibilities of ICT-supported learning using open source platform for primary educations. The data of this study is taken from a 3-years ICT-supported education quality enhancement project involving 300 elementary schools and 200 junior high schools in the Special Province of Yogyakarta, Indonesia. In this research, 50 elementary and 50 junior high schools are used as samples for pilot observation. Technology Acceptance Model and Structural Equation Model are employed to analyze the findings. It is concluded that open source platform is accepted even in a low e-readiness environment such as in primary educations. Further, this research also develops strategies to successfully implement open source platform for ICT-supported learning in primary educations. However real e-learning outcome is not yet measured as this study is performed before the national exam of the participating students performed.

INTRODUCTION

Information and communication technology (ICT) is expected to produce positive effects in education not only because ICT can improve communications among relevant education stakeholders, such as students, school managers, teachers, and government staff responsible of education, but it can also increase motivation to study. It is believed that ICT will contribute in supporting teaching and learning process, enhance school governance by improving accessibility to useful Web sites, enhancing ICT skills, and improving interactions among schools and teachers. ICT is also often perceived as a catalyst for change; change in teaching style, change in learning approaches and change to access to education information (Hoskins & van Hooff, 2005), (Lee, Tseng, et al, 2007).

Funded by the Japan International Cooperation Agency (JICA), the Ministry of Communication and Information of the Republic of Indonesia together with the Government of Special Province Yogyakarta has initiated an information and communication technology utilization program for educational quality enhancement in Yogyakarta Province. The project involved selected 300 elementary schools and 200 junior high schools in the Special Province of Yogyakarta, Indonesia. This project is used as a model of ICT-based education quality enhancement implementation in Indonesia and expected to be replicated to other provinces in order to level up the quality of education.

The expected outcome of the project is to enhance the quality of primary educations in Yogyakarta Province especially in mathematics and science. The outcome will be observed through increase in the average score in National Exams, increase in Mathematics and Science Olympiad participation, increase in teachers' ICT competence in general ICT skills as well as in the utilization of ICT for teaching-learning process.

The study is important for three reasons. First, this is the first large scale ICT-supported learning project implemented in primary educations in Indonesia. Most of e-learning implementation project in developing countries focus on higher level educations such as secondary schools (Year 10 to Year 12) or even tertiary education or university level (Anonymous, 2008). The result of this study can be used further to formulate better strategy in implementing e-learning in primary educations in other provinces or countries. Secondly, the project is implemented using open source platform. OpenSUSE, a Linux distribution was chosen by the project to minimize project cost as well as an initiative to introduce open source at early age students. Even though National Education ICT Curriculum is based on Microsoft platform, the decision of using open source in developing countries struggling with copyright problems like Indonesia is deliberately taken as free and open source platform has many beneficial advantages (Orman, 2007). The third reason is that Yogyakarta Province, a relatively small and rural province, was chosen as the pilot province for the project. The project can be seen as a "model" for and open source based e-learning implementation in primary education in Indonesia as Yogyakarta Province can be considered representing average of Indonesian provinces. The scientific importance of this study is to investigate factors that determine e-learning readiness and e-learning implementation success.

However, due to that the project finished by end of 2012, the expected real outcome is not yet available to be measured. Kickul & Kickul (2006) described that e-learning outcomes are determined primarily by attitude towards e-learning. Therefore this study uses behavioral intent to use as a proxy to the e-learning outcomes. The limitation of this study is assuming that behavioral intent to use as approximation to the e-learning outcome. Further observation is undergone to investigate the real outcome of the project after one full cycle of study of the participating students from their National Exams results.

IMPLEMENTING ICT-ASSISTED LEARNING FOR EDUCATION QUALITY ENHANCEMENT

While most application of ICT were in the area of improving business competitiveness in business sectors, the application of ICT to improve quality of education has drawn attentions to researchers in the last decade. ICT is expected to generate breakthrough in education as what it did in the area of business. Various efforts in integrating ICT into educational settings to support teaching learning have been initiated since the 1980s (Starr & Milheim, 1996).

Research has shown that e-learning outcomes are influenced by a complexity of factors. Kickul & Kickul (2006) found that students' attitude towards e-learning, such as proactive personality and learning goal orientation, is an important determinant of e-learning outcomes. Beyond students' attitude, other researchers have shown that various factors such as learning strategy (Santhanam, Sasidharan, & Webster, 2008), technology acceptance, and system quality (Chang & Tung, 2008), effective or appropriate e-learning environment (Gregg, 2007; Wangpipatwong & Papasratorn, 2007), and also learning motivation (Meissonier, Houzé, Benbya, & Belbaly, 2006) have significant contribution to the e-learning outcome.

An observation by Ho (2009) with focus on analysis of e-learning system quality, technology readiness, online behavior, and learning outcome of students in urban junior high schools, concluded that the quality of the e-learning systems and the technology readiness supported by appropriate leadership behavior play a significant impact on the e-learning outcome.

MEASURING E-LEARNING READINESS IN THE SAMPLE SCHOOLS

As measuring readiness is important before implementing e-learning systems especially in schools that have little access to computers. Chapnick (2000) developed a model to measure e-learning readiness. She categorized readiness into 8 factors. The first factor is psychological readiness. This factor includes students and teachers attitudes toward e-learning initiative. This factor is considered one of the most important factors as it impacts directly the e-learning implementation process. The second is sociological readiness. This factor considers the interpersonal and cultural aspects of the e-learning environment. Learning preference of the students and teaching preference as well as existing learning culture may impacts e-learning outcome significantly. The third is environmental readiness. This factor considers education stakeholders support, education policy, and leadership's attitude toward e-learning. The fourth factor is human resource readiness. This factor considers the availability of human resources to support e-learning infrastructure and develop e-learning content. The fifth factor is financial readiness. This factor considers the availability of budget to support e-learning implementation and operation. The sixth factor is technological skill (aptitude) readiness. This factor considers observable and measurable technical competencies of the content developers, technical support staffs, and teachers' ICT competencies. The seventh factor is equipment readiness. This factor considers the availability of e-learning ICT infrastructure which includes workstations, screen projectors, network connection, and other relevant proper equipment possession. And the last factor is content readiness. This factor considers the e-learning material for relevant subject matters and suitability with applicable subject curriculum.

In this observation, 50 elementary schools and 50 junior high schools are selected as sample schools. Each sample elementary school is represented by its mathematics teachers in Year 4, Year 5, and Year 6 as the e-learning is only employed for Mathematics, while sample junior high school is represented by its mathematics teachers and science teachers in Year 7, Year 8, and Year 9 as in these years e-learning is applied for Mathematics and Science. The total number of respondents is 600 teachers. Most of the teachers were not exposed to open source before as the National Education ICT Curriculum is based on Microsoft Windows platform and the teachers are familiar with that proprietary platform. The sample schools are evenly distributed to all areas of Yogyakarta Province. The sampling method is convenience sampling method because the geographical span of the Province and the implementation duration of the project that span 3 years. The e-learning readiness is measured before the implementation of the project by distributing questionnaires to the teachers. All samples are tracked such that the respondents of e-learning readiness measurement and the respondents of technology acceptance model are the same teachers.

The e-learning readiness is measured using Chapnick's e-readiness model (Chapnick, 2000). However due to the nature of the project, only 5 out of 8 factors are measured. The 3 excluded factors are financial readiness and equipment readiness as the project was fully funded by JICA and block grant from the Provincial Government, and the schools are provided with necessary equipment to implement e-learning. Content readiness is also excluded as e-learning material suitable with national curriculum will be developed and provided by the Project. The digital content product of teaching material in multimedia format for subject matter of Mathematics for Elementary School Year 4, 5 and 6 and subject matter of Mathematics and Sciences (Physics, Biology and Chemistry) for Junior High School Year 7, 8 and 9 with a total of 75 topics has been developed and installed in the participating schools.

The 5 factors measured are psychological readiness (Psi), social readiness (Soc), environment readiness (Env), human resource readiness (Hum), and technological skill readiness (Tec). The result is shown in Figure 1.

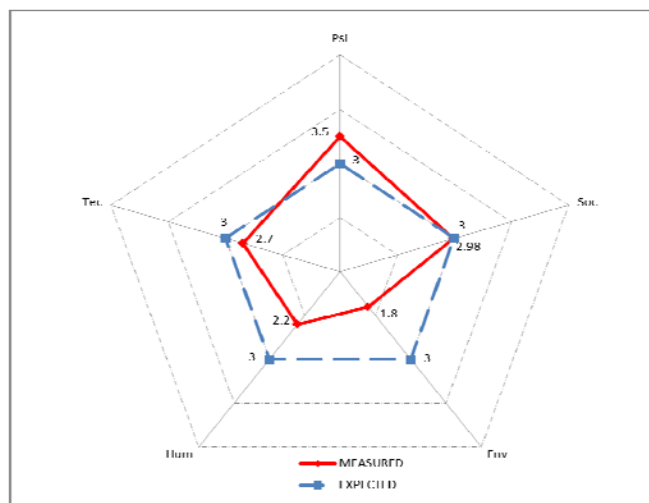


Figure 1. Measured e-readiness versus expected e-readiness in participating schools

It is shown that from Figure 1, psychological readiness is higher than what is expected. This shows that teachers and students in participating schools are very enthusiastic to be involved in the Project. Some observation and interviews confirm this. They are very eager to be selected as participating schools of the project and being included in the Project increase their motivation and increase also the school's reputation. High value of sociological readiness confirmed that Yogyakarta Province selection of the project was the right choice. Schools and teachers in Yogyakarta Province have sufficient interpersonal quality and culture to embrace ICT in their work. This is also confirmed by high percentage of teachers who own laptops and tablets than in other province in Indonesia. It is found that 89% of teachers own laptop or tablet.

Utilization of ICT in learning involved existing groups of teachers, both at the elementary and junior high schools. In elementary school domain, there are groups of teachers based on subjects or class called *Kelompok Kerja Guru* (teachers working group), while at the junior high schools there are groups of teachers based on the subjects referred to the *Musyawarah Guru Mata Pelajaran* (community of subject teachers). These forums aim to improve teachers' professionalism through systemically guided approach and active teaching and learning activities, and to improve the quality of taught subjects. The existence of the groups contributes to psychological readiness and sociological readiness as the groups facilitates teachers helping each other and sharing solution to the problems related to the development of teaching methods and materials.

However, while psychological readiness and sociological readiness are sufficient, the environment, human resource, and technological skill readiness are below expectation. There is a lack of support in this area from other stakeholders such as schools' inspector, parent association, and also lack of commitment from the school masters in some schools. It is found that ICT leaderships of the school masters, especially old school masters, are low. Many of them are still technologically backward and even have technophobia.

Junior high schools have ICT subject matter teacher with sufficient ICT skill available as ICT laboratory manager. Unfortunately their ICT skill is based on Microsoft platform which is not compatible with the selected open source platform of the Project. Meanwhile elementary schools have only class teacher who teach every subject, so there is no teacher with sufficient ICT skill available. Besides that, elementary schools only have

teachers and do not have administrative or support staff like in junior high or senior high schools, so they do not have ICT laboratory manager.

The low value of technological skill is due to the chosen platform of the project which is based on open source platform. The e-learning platform is based on OpenSUSE, a Linux distribution, while the students and teachers ICT skills are based on Microsoft platform as mandated by the National Curriculum from the Ministry of Education and Culture.

TECHNOLOGY ACCEPTANCE OF THE E-LEARNING SYSTEM

Before the e-learning system is implemented in learning process, further observation is made to formulate the right implementation strategy in order to ensure project success. Technology Acceptance Model (Davis, 1989) is employed to model how users accept and intent to use e-learning technology. Structural Equation Model (SEM) is applied for testing and estimating causal relations of factors that influence decision about how and when they will use e-learning when users are presented with a new technology.

The respondents of this survey are the same as the respondents of e-learning readiness measurement described in previous section. The data is taken after the respondents accomplish a training program on Linux environment and on the use of the e-learning in teaching-learning process. SmartPLS is used as analysis tool for path modeling of latent variables (Ringle, Wende & Will, 2005). Quality of the questionnaire is conducted by distributing the questionnaire to 100 respondents to perform reliability and validity test. The quality of the data can be seen from Table 1.

Table 1. Quality criteria of Linux questionnaire

	AVE	Composite Reliability	R Square	Cronbachs Alpha	Crossvalidated Redundancy	Crossvalidated Communality
INTENT	0.74	0.90	0.69	0.82	0.48	0.41
ATT	0.60	0.74	0.32	0.41	0.16	0.33
EASE	0.73	0.90		0.81	0.55	0.33
USEFUL	0.77	0.94	0.63	0.92	0.48	0.65

Using SmartPLS, the network is modeled into path diagram as shown in Figure 2.

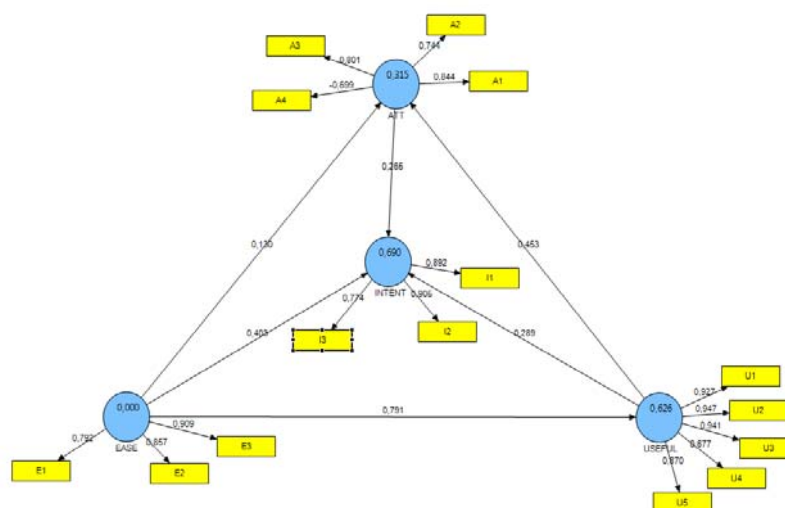


Figure 2. Path model for Linux acceptance from 100 schools. EASE = perceived ease of use, USEFUL = perceived usefulness ($R^2 = 0.636$), ATT = attitude toward using ($R^2 = 0.315$), INTENT = behavioral intent to use ($R^2 = 0.690$)

Table 1 shows that all indicators have composite validity > 0.70 , therefore the model is considered valid. The R^2 indicates that endogenous variables have either good (USEFUL, INTENT) or moderate (ATT). Perceived ease of use is the strongest predictor for behavioral intent to use (0.403). The teachers expect that using Linux should be as easy as using Microsoft Windows. Perceived ease of use strongly affects perceived usefulness (0.791)

while perceived usefulness strongly affect attitude toward using (0.453). However there is only perceived ease of use has significant effect to attitude toward using (0.403), but the other predictors only contribute moderate effects. This again confirms that teachers really do not care what the chosen platform is as long as it is easy to use.

Table 2. Bootstrapping Linux acceptance

	Original Sample (O)	Sample Mean (M)	Standard Error (STERR)	T Statistics (O/STERR)
ATT -> INTENT	0.27	0.26	0.09	2.94
EASE -> ATT	0.49	0.48	0.12	4.09
EASE -> INTENT	0.76	0.76	0.05	15.57
EASE -> USEFUL	0.80	0.85	0.05	16.42
USEFUL -> ATT	0.45	0.47	0.13	3.57
USEFUL -> INTENT	0.41	0.44	0.13	3.21

Bootstrapping the model as shown in Table 2 indicates that relationships are significant ($t > 1.96$) with perceived ease of use affect perceived of usefulness (0.80) and behavioral intent to use (0.76). An interesting finding is with indicator A4 which measured the question “I do not like to the idea of using Linux in my school” with a significant value of -0.699. The cross loading of indicator A4 shows also that this indicator has a high discriminant validity. Therefore it can be concluded that the choice of using Linux as the e-learning platform will not impact the outcome of the project as long as it is easy to use.

The survey is done to study factors related to the e-learning digital content using technology acceptance model to all respondents in 100 tracked sample schools after reliability and validity test.

Table 3. E-learning content acceptance data quality criteria

	AVE	Composite Reliability	R Square	Cronbachs Alpha	Crossvalidated Redundancy	Crossvalidated Communality
INTENT	0.82	0.93	0.83	0.89	0.65	0.60
ATT	0.72	0.82	0.75	0.55	0.51	0.55
EASE	0.73	0.91		0.87	0.53	0.53
USEFUL	0.79	0.94	0.76	0.91	0.57	0.63

From Table 3, it can be concluded that the data obtained is qualified for further processing. Using SmartPLS, the network is modeled as shown in Figure 3.

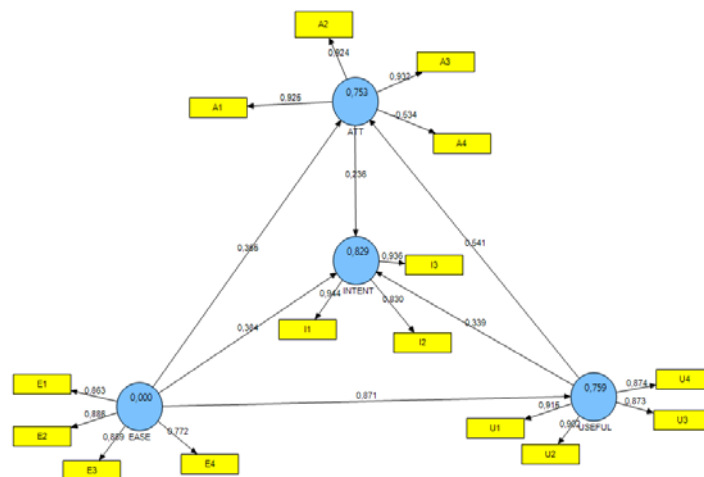


Figure 3. Path model for e-learning content acceptance of teachers in 100 sample school. EASE = perceived ease of use, USEFUL = perceived usefulness ($R^2=0.759$), ATT = attitude toward using ($R^2 = 0.753$), INTENT = behavioral intent to use ($R^2 = 0.829$)

Figure 3 shows that all indicators, except A4, have convergent validity > 0.70 , therefore the model is considered valid. The R^2 indicates that all endogenous variables have either good (USEFUL, INTENT, and ATT). Perceived ease of use is the strongest predictor for behavioral intent to use (0.384).

Table 4. Bootstrapping e-learning content acceptance

	Original Sample (O)	Sample Mean (M)	Standard Error (STERR)	T Statistics (O/STERR)
ATT -> INTENT	0.24	0.24	0.10	2.26
EASE -> ATT	0.83	0.82	0.05	14.59
EASE -> INTENT	0.87	0.86	0.05	15.96
EASE -> USEFUL	0.87	0.86	0.05	17.18
USEFUL -> ATT	0.54	0.53	0.11	4.77
USEFUL -> INTENT	0.47	0.47	0.10	4.30

Bootstrapping the model shown in Table 4 indicates that relationships are significant ($t > 1.96$) with perceived ease of use strongly affect perceived of usefulness (0.87) and behavioral intent to use (0.87). Perceived ease of use strongly affects perceived usefulness (0.87) while perceived usefulness affect attitude toward using (0.54). All endogenous variables show significant effect to attitude toward using being the smallest (0.24). Further interviews reveal that there are several factors affecting this.

First is that culturally in Indonesia, in primary education the teacher is the “guru” with all its attributes even though some active learning efforts have been introduced recently. Secondly, teachers do not possess suitable didactic method in technology-supported learning environments. Some of their fear is that computer will replace their “guru” status. They mainly use computer for preparing slides, exam questions, or searching teaching materials, not for teaching subjects. Thirdly, subjects like Mathematics for example, most teachers consider as a very clerical subject with full of hands-on exercises so teacher’s physical presence is a mandatory.

An interesting finding is with indicator A4 which measured the question “I do not like to the idea of using e-learning for my subject as it will waste a lot of my time” with a moderate value of -0.534. The cross loading of indicator A4 shows also that this indicator has a high discriminant validity, but lower correlation with variable INTENT. This also confirms that there is a slight sense of insecurity of the teachers related to the e-learning implementation. Further interviews show that this insecurity feeling mostly occurs with teachers who are above 50 years of age which consist of 23% of the sample.

CONCLUSION

The study has shown that open source based e-learning can be implemented even in a low e-readiness environment such as in primary educations. The existence of teacher groups and forums where teachers share solutions and support each other contributes to the success of implementation in this kind of environment. Users in such environment accept whatever platform as long as they perceive it to be easy to use. It is also found that even all factors contribute significantly to the e-learning intention to use; there is also some feeling of insecurity especially among teachers with over 50 years old of age facing with modern technology.

The limitation of this study is the use of behavioral intent to use as a proxy to the expected outcome as the expected real outcome is not yet available. Therefore further investigation should be performed to measure the real outcome of the project in enhancing the quality of education from the national exam results after one full education cycle of participating students. A strategy to maximize the impact based on the findings of this research has been developed. The findings are also used to develop a roll out plan to replicate this project in other provinces.

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Importance Of Practical Lessons For Students Of Technical And Engineering

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ABSTRACT.

The present work is dedicated to evidence the importance of the practical lessons with real tools and machines for the students of technical and engineering. A sample of 24 students in 4 groups participated during the evaluation of the practical lessons. These students take a course named manufacturing of mechanical components (MMC); here they are instructed about the employ of some tools and machines and how to perform during real manufacturing in small offices and laboratories to create special mechanical components. At the end of the course the students were agreed that practicing is absolutely necessary in technician and engineering courses and they coincided in the fact that this is also a good way to reinforce theory and recognize its importance for a better formation.

KEYWORDS: Practical lessons, Understanding and formation, Tools and machines, Young students, Engineering courses.

INTRODUCTION.

Nowadays, technology has been incorporated to all industries and the students on universities and faculties require being in contact with problems they will find in their professional future (Georgina D. A., Hosford C. C 2009); specially in technician and engineering studies where many abilities and criterions must be developed; moreover creativity to find the most intelligent solutions and the knowledge of some instruments and equipments are basic in order to build products and control procedures inside industries, thus the need for well-train students is very important.

Although technology has been quickly developed and allows to control many processes automatically (Georgina D. A., Olson M. R 2008); machines and tools continues being used in many industries due to many mechanical components with particular features must be manufactured; moreover many metallic and mechanical components must be repaired, the built of many prototypes also requires from particular pieces and many times the easiest way to solve these needs is to make them by human operation; this remains being the faster and cheaper option due to the use of numeric control machines is expensive and requires of programmers and expert designers.

Practical lessons are very important for teaching and learning processes, especially to develop abilities on students. Practicing helps the student to recognize many terms used in the engineering vocabulary moreover the practices reinforce theoretical concepts and put the students in contact with real situations. Thus the importance of a good instruction is essential. During the course of MMC, the students are taught about theoretical principles (Dornekamp B. Gerard 1993). They are instructed on how the machines work in two theoretical weekly lessons and then a third longer practical lesson is given to instruct the students about the real use of tools and machines.

The first step is to teach the students about theoretical of tools and machines. These lessons involve the physical and chemical principles and also the mechanical function; at the same time the appropriated technical vocabulary is introduced including the safety rules of the equipments to guarantee their own security, furthermore, the students are also instructed about the variables involved on every machinery process such as the control of machine speed and movements like RPMs, cutting methods etc. moreover the students are also introduced to relate other previous classes such as materials science or manufacturing with mechanical design; finally they relate their knowledge with real applications.

Practical lessons in all technological studies are very important not only allows the students identify technical elements (Kim Ch., et al. 2013); they are stimulated to develop new projects. The sample of 24 students for this study was divided in 4 groups of 6 persons to maximize their practical time with tools and machines.

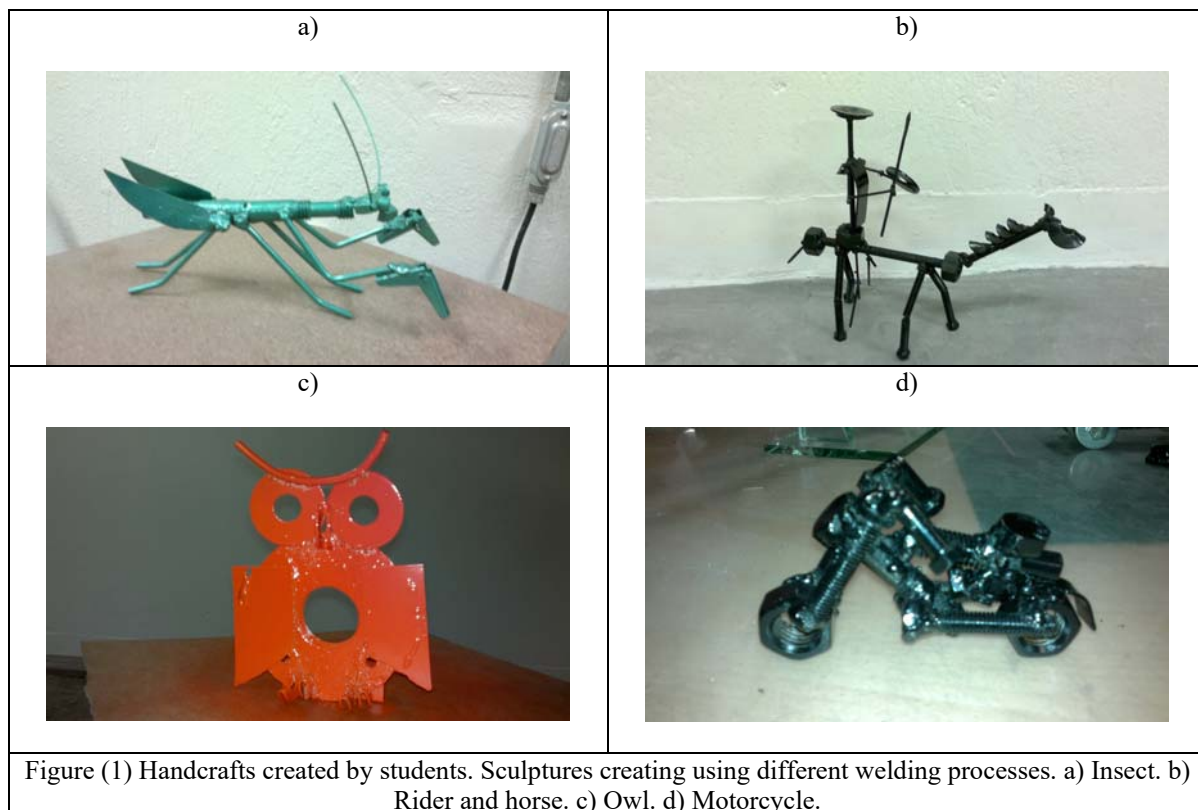
TEACHING AND LEARNING FIRST TOPIC OF THE COURSE (WELDING).

The first topic of the MMC course is welding. Welding is a very important topic due to welding is used nearly everywhere, different kind of welding methods are used for assembling of many electrical (Ertmer P. A., et al. 2012), electronic and mechanical products and devices such as vehicles, domestic instruments and personal

gadgets, welding is widely used in building companies; welding is also employed to repair some mechanical components such as gears, chains, pistons etc. and to create more complex elements based on other which are easier to be manufactured. Moreover the welding is widely used to repair pipelines and join metallic pieces for many industries like automotive and other transportation industries.

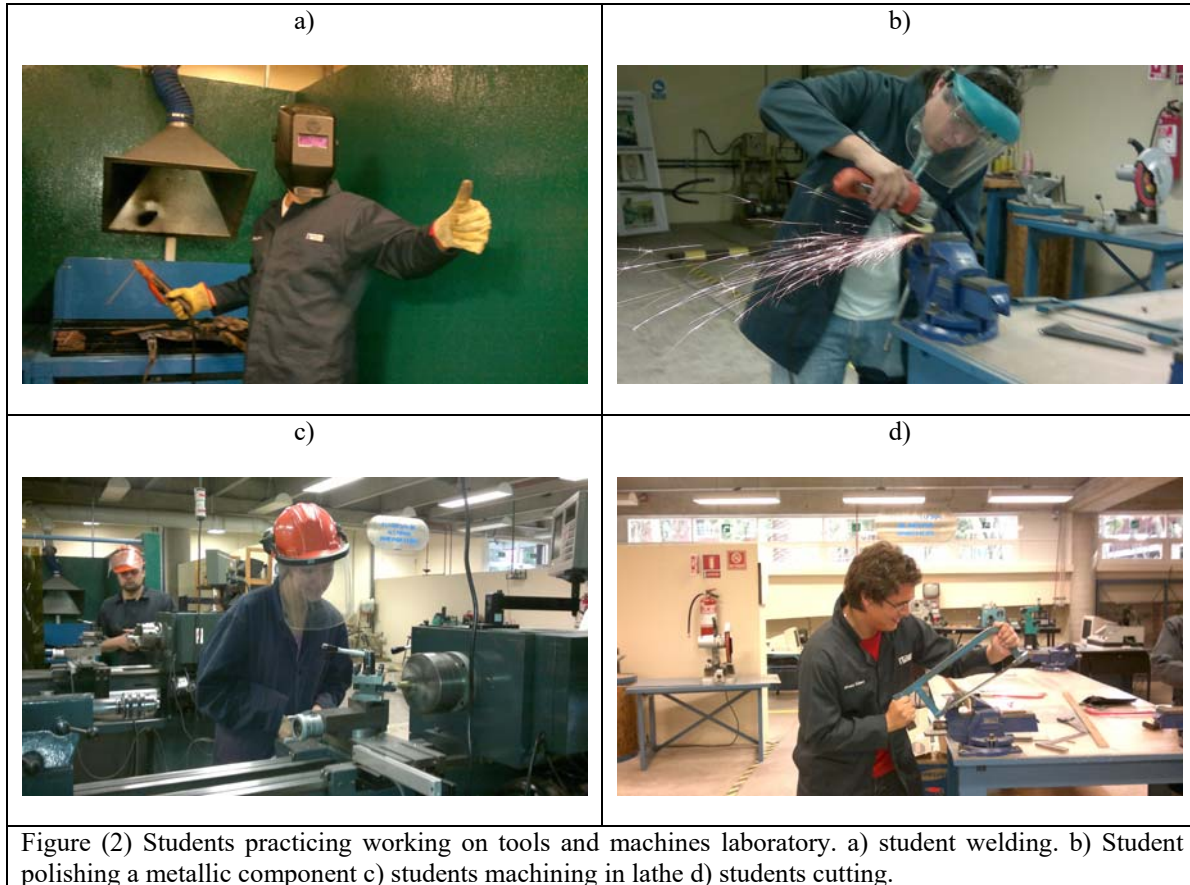
The welding topic in the course is divided in some short topics where the student are instructed about how the welding procedures were historically developed and how welding is classify according with its physical principles but also according with the uses these are focused; else the students are taught about the soldering process and the cutting procedure using flames at the beginning of the course. Soldering using flames energy is often employed to join some light metallic pieces especially in sheet metal working; here students are induced to work carefully. They learn about the gas safety use and how the power of a strong combustion is applied. The next topic is electric arc welding, here the students are taught to employ the electric parameters such as electrical voltage and current and how the use of supporting or adding materials can help to obtain a better and hardly weld of metallic alloys, the students learn about the appropriated employment of any type of electrode according with the materials to be joined etc. They also learn about the function of the slag and the gases shield during the solidification of the new metal over the original. Then the students are instructed about some more sophisticated welding procedures such as TIG and MAG which are technologically advanced procedures frequently employed inside industries to joint metals with a low weldability. Furthermore the students are induced to read short lectures or articles of journals about welding based on the fact that welding is an area in continuous improvement and technological development.

Practical lessons are focused to teach the students considering they are beginners due to the many of them never have been in contact with a hard or a real industrial working process. The students practice welding over steel sections marking and puddling; then they begin to practice joining some steel sections; then they practice joining strongly an oil pipeline. Moreover welding of complex mechanical elements is also included in this section of the course. Finally the students have three lessons to develop a personal project; here they create a handcraft work; they let fly away their imagination to weld anything. The sculptures created are used to evaluate them and help to improve their ability and develop their imagination. Figures (1a) to (1d) show some of the handcraft works created by the students. In addition, the students must solve 2 theoretical tests during this part of the course as a contribution for their evaluation.



TEACHING AND LEARNING SECOND TOPIC OF THE COURSE (MACHINING).

During the second part of the course the students learn about the use of tools and machines, they practice different machining operations such as sawing, grinding, engraving, polishing etc. using milling and lathes; here the students begin learning about the management and operational conditions of the machine, they also learn about how to control the variables involved such as penetration and cutting speed and their influence on the final quality and surface polished. Students are trained with the methods for frontal and cylindrical cutting, moreover they learn about milling, drilling and create a tape in different metallic materials and in the same way that welding topics, they are instructed about the security rules for working. Figures (2a) to (2d) show some students working in the manufacturing laboratory during different practice lessons. Finally they relate the machining procedures and methods with the materials properties such as hardness or ductility.



The students also learn to choose the most appropriated method for machining a mechanical work piece in order to save money and time. The students are also instructed to establish a relation between the properties of the metallic pieces and the manufacturing procedures with emphasis on the final finishing and tolerances for an appropriated assembly. In the same way than for the first topic of the course the students have 6 lessons to create another handcraft. The lathe handcrafts provides another partial evaluation of the students performance. Figures (3a & 3b) are some of the handcraft created by the students. In addition the students solve two more theoretical tests to obtain their final score.

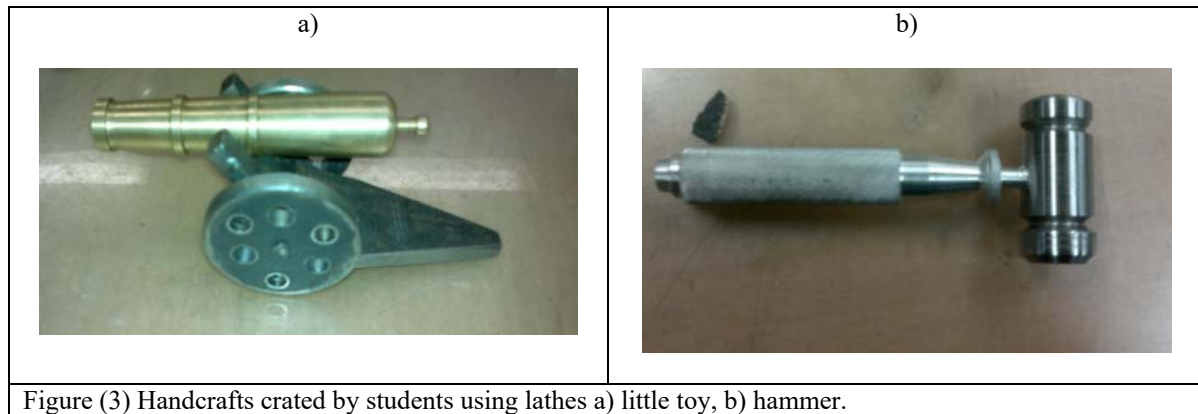


Figure (3) Handcrafts created by students using lathes a) little toy, b) hammer.

QUESTIONNAIRE TO KNOW THE STUDENT OPINION OF THE COURSE.

It is important to know the student performance but it is also important to know their opinion about the course to improve the teaching and learning process. The following questionnaire was asked to the students at the end of every course and the responses averaged are show in figure (4). During this evaluation the responses provided for the students were set in a scale from 0 to 10; here 0 represents that the students are absolutely disagree and 10 is the maximum opposite or agree.

1. Do you consider important the practicing lessons for the manufacturing course?
2. Did you feel in contact with real industrial processing and technical methods?
3. Do you consider that welding and machining practices are appropriated for this course?
4. Do you think that the course will help on your professional perform?

In addition a blank space was provided for the students in order they wrote their personal opinions and suggestions. Here the student told, once they were in contact with machines and tools they make a good break in comparison with other theoretical courses, moreover the students told that they felt a deep proud for their handcrafts and felt their performance were satisfactory.

The students also told that technology for machining has been incorporated in many industries; thus the requirement of good qualified technicians and engineers is very important. In consequence the incorporation of courses where the students learn to work with machines and industrial equipments is absolutely necessary.

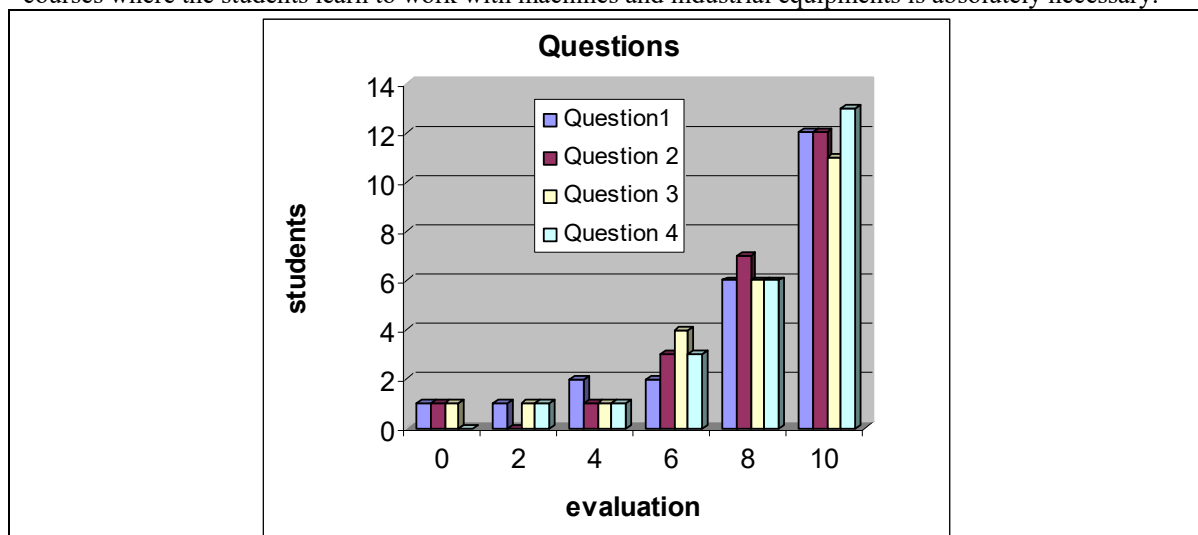


Figure (4) Answers provided by students about the questionnaire.

Students were agreed with the inclusion of the new manufacturing technologies during technical and engineering courses (Cox Kevin R. and Clark David 1994). Else, the students go further telling that they wish to incorporate more machining practices and elements due to technology is in constant evolution and more and more methods are developed day at day.

A high percent of the students felt happy to have been in contact with real tools and machines. Moreover a high percent of the students affirmed that their abilities improved during the course (Ramirez-Lopez A., Muñoz D.F., 2015); and a good percent of the student were agreed with the fact that their imagination and creativity was stimulated during the practical lessons specially for developing new projects.

CONCLUSIONS.

According the student performance and opinion at the end of the course we can affirm the following facts:

Practical lesson helped the student to identify the theoretical concepts and to know the specific technical terms used in the vocabulary which many times are new or difficult to understand.

Moreover, many students talked about that the manufacturing of mechanical components is a good complement for some other courses they took previously such as materials science or mechanical design.

In addition the students commented that their criterions about how to select the most appropriated method to produce an industrial or mechanical element were also improved.

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Improving Nos Understanding Through History Of Science Instruction: Contextualized Explicit And Reflective Approach

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ABSTRACT

The research objective of this study was to compare the relative effectiveness of history of science (HOS) integrated instruction and curriculum-oriented instruction on sixth grade students' understanding of nature of science (NOS). Accordingly, two classes were assigned to experimental group and other two were assigned to comparison group randomly. Experimental group was instructed by contextualized explicit and reflective approach in lessons that utilized history of science instruction on circulatory system while comparison group followed regular curricular activities suggested in national science curriculum. Both groups' NOS views were compared with pre, post and follow up measurements using VNOS-E. The result showed that, experimental group students' NOS views regarding targeted aspects improved in varying degrees after HOS instruction. The improvement in students' NOS views was discussed by attributing to contextualized, explicit and reflective NOS instruction.

Keywords: History of science, nature of science, contextualized instruction, explicit approach, reflective nature of science.

INTRODUCTION AND REVIEW OF RELATED LITERATURE

The development of students' understanding of nature of science (NOS) was emphasized as a major goal for science education (American Association for the Advancement of Science [AAAS], 1989; National Research Council [NRC], 1996). NOS has been conceptualized as "the epistemology of science, science as a way of knowing, or the values and beliefs inherent to the development of scientific knowledge" (Abd-El-Khalick, Bell, & Lederman, 1998, p. 418). Abd-El-Khalick et al. (1998) identified the characteristics of scientific knowledge as tentative (subject to change), empirically-based (based on and/or derived from observations of the natural world), subjective (theory-laden), partially based on human inference, imaginative and creative, socially and culturally embedded. Two additional aspects are the difference between observation and inference; and theories and laws.

There are few studies which explored students' NOS views at grade six level (Akerson & Abd-El-Khalick, 2005) and there is a need to explore elementary level students' understandings of NOS to help them develop their current views (Akerson & Abd-El-Khalick, 2005; Smith, Maclin, Houghton, & Hennessey, 2000), especially at an early age. Two main pedagogical approaches, namely implicit and explicit, have been used to develop students' NOS views by researchers (e.g. Abd-El-Khalick & Lederman, 2000; Khishfe & Abd-El-Khalick, 2002). Implicit approach assumes that when students engaged in scientific inquiry-oriented activities, they will automatically come to realize NOS tenets. On the other hand, in explicit approach NOS is viewed as a cognitive objective which requires planning instruction to teach NOS (Khishfe & Abd-El-Khalick, 2002). The literature supports that implicit approach is not as effective as explicit approach in developing informed conceptions of NOS (e.g. Abd-El-Khalick & Lederman, 2000). Smith and colleagues (2000) found that students who were taught NOS explicitly developed more sophisticated understandings than students who were involved in implicit teaching of NOS. The study of Khishfe and Abd-El-Khalick (2002) also supported that six grade students who participated in implicit-inquiry oriented instruction could not develop informed views of NOS. In addition to implicit and explicit approach, reflective elements were integrated to explicit approach in which NOS aspects first introduced to students then opportunities were provided for students to reflect on their understanding of NOS (Abd-El-Khalick, Bell, & Lederman, 1998; Khishfe & Abd-El-Khalick, 2002). Clough (2006) argued that explicit and reflective approach can be contextualized or decontextualized. NOS activities such as black box or discrepant events are examples of decontextualized NOS instruction while contextualized NOS instruction emphasizes NOS aspects explicitly embedded within the science content. Clough argued that while decontextualized NOS instructions provide important opportunities for developing NOS understanding; deep understanding of NOS requires contextualized activities.

There are a number of studies pointing out that history of science (HOS) should be incorporated into science education to develop students' NOS conceptions (e.g. Clough, 2006; Klopfer & Cooley, 1963; Matthews, 1994). It was stated that "generalizations about how the scientific enterprise operates would be empty without concrete examples...Without historical examples, these generalizations would be no more than slogans" (AAAS, 1989, p. 111). NRC (1996) also emphasizes that "the historical perspective of scientific explanations demonstrates how scientific knowledge changes by evolving over time..." (p. 204). However Abd-El-Khalick and Lederman (2000) argued that HOS instruction alone cannot be sufficient to develop NOS understanding and emphasized that students' attention should be directed to NOS aspects explicitly.

In lights of the literature, this study investigated whether sixth grade students develop informed NOS views through incorporating contextualized explicit and reflective approach in lessons that use history of science. In this study, students' attention was explicitly drawn to target NOS aspects then opportunities were provided for students to reflect on their understanding of NOS through contextualized activities from the history of the circulatory system. Being a part of dissertation study, following overarching research question guided this work.

1. How do experimental and comparison group students' nature of science views of targeted aspects change from pre-instruction to post-instruction?
2. How do experimental and comparison group students' nature of science views of targeted aspects change from post-instruction to follow-up measurements?

METHODOLOGY

The subjects of this study consisted of 95 grade six students from four intact classes. Two classes were assigned randomly as experimental group ($N = 51$) and two as comparison group ($N = 44$). The comparison group received curriculum-oriented instruction (COI) for circulatory system while the experimental group received history of science incorporated curriculum-oriented instruction (called HOS instruction throughout this paper). Both groups' views were compared with pre, post and follow up measurements using Views on Nature of Science Elementary School Version [VNOS-E] (Lederman & Ko, 2004).

The first author instructed the experimental group because studies supported that even if classroom teachers have adequate NOS understanding, they are not able to teach NOS aspects to their students or they are not motivated to teach it (Akerson & Abd-El-Khalick, 2003; Bell, Lederman, & Abd-El Khalick, 2000). The comparison group was instructed by their science teacher. Every effort (e.g. preparing lesson plans together and observing each other's practice, habituating the classroom before implementation) was undertaken to ensure that the teacher and the researcher implemented content-specific activities in the same way to the extent possible.

The historical materials developed for this study aimed to reveal how the knowledge of circulatory system evolved from ancient times to the present. Specifically how the function of heart was understood by different scientists and different societies, how the invention of microscope led to the development of knowledge on constituents of blood, how the blood transfusion developed throughout the history, and how the physiology of blood circulation was interpreted by different scientists (e.g. Galen and Harvey's Theory of Blood Circulation) were addressed. By means of historical materials, different aspects of NOS were emphasized. The historical materials were introduced in four phase. In the first phase students were engaged in specific historical document. Students studied the material either individually or as a small group (i.e. *Experiencing Historical Material*). In the second phase, handouts, containing probing questions about related historical material, were provided to students. The goal of this phase was to make them prepared for the next phase and organize their thoughts with reference to historical materials at hand (i.e. *Engaging in Probing Questions*). The aim of third phase was to provide students an open space to share their opinions with historical evidences. Students presented their ideas, elaborated others thoughts, challenged with counterclaims and provided evidence from historical material (i.e. *Whole Class Discussion*). In the last phase, students were guided to generalize the central historical material to the complex epistemology of science. In this phase, it was intended that students develop an appreciation of nature of science through making connections between the specific historical activity and scientific enterprise (i.e. *Creating Generalization*).

In order to investigate participants NOS views, a rubric was developed by two independent researchers. An inter-rater reliability analysis using the Kappa statistic was performed to determine consistency among researchers. The Kappa measure of agreement value was .78 with $p < .001$. The inter-rater reliability is statistically significant and met the expectations for reliable assessment (Landis & Koch, 1977). In this rubric,

students' NOS views were categorized as "naïve" "transitional" and "informed". Data analysis was performed through descriptive statistics and McNemar Test. The results were supported with qualitative data as well.

RESULT

In this study students' understanding of five aspects of NOS (i.e. *empirically based*; *tentative*; *subjective*; *creative and imaginative*, and *inferential*) were aimed to be developed. For this specified purpose, participants' NOS views were compared at each consecutive time of testing for each group. In other words, participants' pre-post and post-follow up NOS understandings were compared within each group separately. In a general sense, the result showed that experimental group students' NOS views regarding aforementioned aspects were improved in varying degrees after HOS instruction. They also articulated similar views when compared their follow-up views with post-instruction views. On the other hand, comparison group could not develop informed views of NOS during the course of the study. Table 1 summarizes the overall results found in this study.

Table 1. Overall summary of within group comparisons regarding targeted NOS aspects.

Aspect	Time Pair	Group	Naïve	Transitional	Informed
<i>Tentative</i>	Time 1-Time 2	Experimental	↓	↔	↔
		Comparison	↔	↔	↔
	Time 2-Time 3	Experimental	↔	↔	↔
		Comparison	↔	↔	↔
<i>Subjective</i>	Time 1-Time 2	Experimental	↓	↔	↑
		Comparison	↔	↔	↔
	Time 2-Time 3	Experimental	↔	↔	↔
		Comparison	↔	↔	↔
<i>Empirical</i>	Time 1-Time 2	Experimental	↔	↓	↑
		Comparison	↔	↔	↔
	Time 2-Time 3	Experimental	↔	↔	↔
		Comparison	↔	↔	↔
<i>Creative and Imaginative</i>	Time 1-Time 2	Experimental	↔	↔	↑
		Comparison	↔	↔	↔
	Time 2-Time 3	Experimental	↔	↔	↔
		Comparison	↔	↔	↔
<i>Inferential</i>	Time 1-Time 2	Experimental	↓	↑	↑
		Comparison	↔	↔	↔
	Time 2-Time 3	Experimental	↔	↔	↔
		Comparison	↔	↔	↔

Note: In Table 1, "↓" refers to statistically significant decrease; "↔" refers to statistically non-significant change; "↑" refers to statistically significant increase, based on McNemar Test result.

As represented in Table 1, the proportion of participants in experimental group who exhibited a naïve view about tentative aspect of NOS changed significantly right after HOS instruction, $\chi^2 = 5.88, p = .013$. Participants were more likely expressed naïve views before HOS instruction (52%) than after HOS instruction (29%). The following quote pairs exemplify how participants' tentative views change before and after HOS instruction.

Student A before HOS instruction: ... Science is to come up with an invention. In science, scientists make various inventions in different areas... I don't think what scientists know will change in the future.

Student A after HOS instruction: Science is any attempt in which scientists try to find new and different knowledge about a topic... I believe that scientists conduct study in order to modify or change what they know at present... Yes, every scientific knowledge is subject to change.

Before HOS instruction, participant A elucidated naïve views while s/he articulated informed views after the instruction regarding tentative aspect of NOS. Before the instruction s/he seemed to believe that scientists invent the things around us. S/he also explicitly underlined that scientific knowledge is not subject to change. But after HOS instruction, s/he could perceive that science has evolutionary characteristics, therefore s/he stated that every scientific knowledge is subject to change.

The proportion of participants in comparison group who held naïve ($\chi^2 = .21, p = .648$), transitional ($\chi^2 = .00, p = 1.000$), and informed views ($\chi^2 = .17, p = .687$) about tentative aspect of NOS did not change significantly from

pre- to post-instruction. The following quote pairs show how comparison group participants' views on tentative aspect were consistent from pre- to post-instruction.

Student B before COI instruction: *There are always realities in science and scientific knowledge is proven by research and experiments...*

Student B after COI instruction: *Science covers everything, at least partly. By the help of scientific methods scientists can prove scientific knowledge and find the realities.*

In terms of subjective aspect, the proportion of participants in experimental group who held naïve views decreased significantly (40% to 17%) right after HOS instruction, $\chi^2 = 5.26, p = .019$. Moreover, there was a significant change in the proportion of participants who demonstrated an informed subjective views after HOS instruction, $\chi^2 = 7.68, p = .004$. Participants were more likely in informed level after HOS instruction (48%) than before HOS instruction (19%). The following quotes pair illustrates how experimental group participants' views about subjective aspect of NOS changed after HOS instruction.

Student C before HOS instruction: *The trace and the fossil of each dinosaur are different from each other. Therefore the fossils they [scientists] are working on belong to different dinosaurs. So, they disagree about them [dinosaurs' extinction].*

Student C after HOS instruction: *Each scientist has different point of view. They are interpreting the evidence based on it. That is why they don't agree with each other about the reason why dinosaurs disappeared.*

The proportion of participants in comparison group who held naïve ($\chi^2 = .21, p = .648$), transitional ($\chi^2 = .00, p = 1.000$), and informed views ($\chi^2 = .36, p = .549$) about subjective aspect of NOS did not change significantly from pre to post-instruction. Following quotes pairs exemplify representative responses of students in comparison group regarding subjective aspect.

Student D before COI instruction: *Dinosaurs are appearing on TV, so scientists could gather information about them from TVs. They [scientists] might collect information from computers too. Therefore they [scientists] know that dinosaurs lived on the Earth... Weather people are sure about weather pictures because they [weather people] obtain that information from scientists.*

Student D after COI instruction: *Scientists collect information about dinosaurs from TVs, other people, and computers. Therefore they [scientists] know that dinosaurs' survived in ancient times... Weather people are 100% sure about weather picture because they broadcast the report of experts and scientists.*

It was evident in Student D's responses that her/his views about subjectivity in scientific endeavor was durable from first to next measurements. In other words COI did not lead her/his subjective NOS views to develop.

Regarding empirical aspect of NOS, the proportion of participants whose response revealed a transitional view changed significantly before and after HOS instruction ($\chi^2 = 9.38, p = .002$). Participants more likely exhibited a transitional views before HOS instruction (50%) than after HOS instruction (17%). There was also a significant change in the proportion of participants who elucidated informed views ($\chi^2 = 16.53, p < .0005$). Participants were more prone to appreciate the role of empirical evidence in science after HOS instruction (75%) than before HOS instruction (25%). The following quotes show how the participants' views on empirical aspect changed from pre- to post-instruction in experimental group.

Student E before HOS instruction: *Science is arising from mental thoughts of a person... Science is different from other subjects because science is the accumulations of those thoughts. There are also some thoughts in other subject but they are limited.*

Student E after HOS instruction: *Scientists always reasons about situations. In science people do research, observe the nature, and conduct experiment on scientific topics. This is the difference between science and other topics.*

Student E could not make a distinction between science and other disciplines in terms empirical based nature of science before the instruction. After HOS instruction, however, s/he could acknowledge that science is different from other disciplines due to its empirical nature and s/he referred to the observation, research, and experiments in science.

Consistently, there was not a significant change in the proportion of participants who expressed naïve views ($\chi^2 = 2.50, p = .109$); transitional views ($\chi^2 = .31, p = .581$); and informed views ($\chi^2 = .36, p = .549$) after COI when

compared with proportion of participants before COI. The following quote pairs show how the participants' view on empirical aspect was consistent from pre- to post-instruction in comparison group.

Student F before COI instruction: *Science is one of our courses in the school. Others, for example literature and art, are also courses in the school. I mean no difference exist between science and others.*

Student F after COI instruction: *There is nothing that makes science different from other school courses. They are all one of the school subjects and they are all identical...*

Student F failed to understand the empirical nature of science before and after COI. In her/his response to the second questionnaire item about the distinction between science and other subjects, s/he could not differentiate science from other disciplines by taking into account the empirical nature of science. S/he considered science as a school subject in both measurements.

In terms of creative and imaginative tenets of NOS, there was a significant increase in the proportion of participants who articulated informed views after HOS instruction, $\chi^2 = 4.5$, $p = .031$. Before HOS instruction, only 25% of all participants in experimental group articulated informed views. However, almost half of the participants (46%) expressed informed views after HOS instruction. The following quote pairs show how the participants' views on creative and imaginative aspect developed from pre- to post-instruction in experimental group.

Student G before HOS instruction: *Scientists have conducted scientific research; therefore they are sure about dinosaurs' appearance... No I don't think that scientists use their imaginations when they do their work. They inform us about the knowledge they obtain. If they incorporated it [creativity and imagination] into their work, then we would have incorrect knowledge.*

Student G after HOS instruction: *Scientists may not be exactly sure about dinosaurs' appearance. On the one hand, they [scientists] seem to be created dinosaurs' appearance. On the other hand it was reported that they once lived on the Earth through photography and etc.... Yes I believe that scientists use their imagination... I think that scientists utilize creativity and imagination during the beginning of any scientific study.*

Before HOS instruction, student G elucidated naïve views regarding creative and imaginative NOS. S/he seemed to believe that scientists know about dinosaurs because they conduct scientific research. S/he did not make any reference to the role of creativity and imagination in science. S/he also explicitly stated that creativity and imagination would make scientists to arrive wrong conclusions. But after HOS instruction, s/he articulated transitional views regarding the same aspect. S/he seemed to have undecided about the role of creativity and imagination in science. S/he could not decide whether scientists use their creativity or whether they only report what they see. S/he also stated that early stage of scientific investigations include those skills.

In comparison group, the proportion of participants who demonstrated naïve ($\chi^2 = 2.12$, $p = .143$), transitional ($\chi^2 = 1.89$, $p = .167$), and informed views ($\chi^2 = .00$, $p = 1.000$) about creative and imaginative aspect of NOS did not change significantly from pre- to post-instruction. Following quote pair demonstrates one of the students' views before and after COI. It was evident in those students' responses that comparison group students could not make progress in their views regarding creative and imaginative NOS after the instruction.

Student H before COI instruction: *... Yes. Scientists use their imagination in planning and in conducting experiments. By this way they decided on how to precede their work. But scientists are supposed to be objective in other phases such as reporting their result...*

Student H after COI instruction: *Of course scientists use their creativity and imagination in their study. They hypothesize what to research and then conduct their experiments. I think they use their imagination during stating hypothesis and their creativity during experiments. But final part should be imaginative and creativity free...*

Before the instruction student H expressed that scientists use their imagination and creativity only in some particular phase of their studies, planning and conducting experiments. After the instruction, s/he accepted the role of creativity and imagination as well; but stated that scientists use them only during hypothesizing and conducting experiments. In short, s/he expressed transitional views on both measurements.

Regarding inferential aspect of NOS, the proportion of participants in experimental group who held naïve views, ($\chi^2 = 16.06$, $p < .0005$); transitional views, ($\chi^2 = 4.50$, $p = .031$); and informed views, ($\chi^2 = 4.90$, $p = .021$) changed significantly right after HOS instruction. The proportion of participants holding naïve views decreased,

while the proportion of participants articulating transitional and informed views increased right after the HOS instruction. Before the instruction, while 36 (75%) students held naïve views; 18 (38%) students expressed naïve views after HOS instruction. Only 7 (15%) students articulated transitional views before the instruction. This number increased to 17 (35%) after HOS instruction. Compared to 5 (10%) students prior to instruction, the number of students who articulated informed views increased to 13 (27%) after HOS instruction. The following quotes show how the participants' views on inferential aspect of NOS developed from pre to post-instruction in experimental group.

Student I before HOS instruction: *Scientists are certain about it [the way dinosaurs looked]... Dinosaurs' traces reveal their appearance.*

Student I after HOS instruction: *By combining the parts of skeleton, scientists created possible appearance of dinosaurs. In this way they gained knowledge [about dinosaurs' appearance]. I think they are not sure about it because those shapes are scientists' own design.*

It was also evident in the following student's (E27) response that experimental group student could expressed more adequate understanding about the distinction between observation and inference after HOS instruction.

Student J before HOS instruction: *They [scientists] are not totally sure about the way dinosaurs looked. Because they [scientists] didn't see them [dinosaurs].*

Student J after HOS instruction: *They [scientists] are struggling to join the different fossils of dinosaurs together. Scientists don't have all the information about them. Based on what they have, they are trying to estimate their appearance.*

This students (Student J) articulated naïve and informed views before and after HOS instruction respectively. Before the instruction, s/he held the stereotypic naïve conception that "knowing is seeing". After HOS instruction, however, s/he could demonstrate informed understanding of the distinction between observation and inference in the construction of scientific explanations. In her/his post response, s/he referred that scientists are attempting to estimate dinosaurs' appearance (inference) based on studying ever found dinosaurs' fossils (observation).

For the comparison group, the proportion of participants who held naïve ($\chi^2 = .27, p = .607$), transitional ($\chi^2 = .17, p = .687$), and informed views ($\chi^2 = .00, p = 1.000$) about inferential aspect of NOS did not change significantly from pre to post-instruction. The following quote pairs show how the participants' view on inferential aspect was consistent from pre- to post-instruction in comparison group. Participant K expressed naïve views before and after curriculum-oriented instruction.

Student K before COI instruction: *...by analyzing the bones of dinosaurs which dates from past, they [scientists] have had information about their [dinosaurs] existence on the Earth... They [scientists] are conducting DNA tests on the bones [fossils] of dinosaurs. By this way, they obtain their appearance accurately.*

Student K after COI instruction: *Geologists found the traces of dinosaurs under the soil and scientists analyze them in the laboratories. They have discovered their existence by this way... They [scientists] also examined their DNA sequence and found how they [dinosaurs] appeared.*

Students K believed that direct evidence is the only source of scientific knowledge and nothing else is relevant to scientific explanations. Her/his response illustrated her/his understanding of science as strictly evidence based. S/he could not demonstrate an understanding that scientists inferred the way dinosaurs looked by grounding their inference to fossils of dinosaurs. In brief, s/he could not demonstrate an adequate understanding of the distinction between observation and inference at both measurements.

So far, students' pre- and post-instruction views on targeted NOS aspects were compared. Based on this evaluation, results indicated that students in experimental group revealed better understanding in all targeted aspects of NOS after receiving HOS instruction. Comparison group students, on the other hand, did not show any improvement about these aspects after getting curriculum-oriented instruction as expected.

When experimental group students' post and follow-up NOS views were compared within the group, it was found that they expressed quite similar responses to the VNOS-E items at both measurements. Moreover, comparison group students articulated quite similar responses at post and follow-up measurements too. This means that both groups retained their post views five weeks after the instructions.

DISCUSSION

This study investigated the influence of HOS instruction including contextualized explicit and reflective NOS discussions on students' understanding of NOS views. The results revealed that students involved in HOS instruction developed informed conceptions of NOS. This study provided empirical evidence for the influence of HOS instruction on the development of NOS views among grade six students. Khishfe and Abd-El-Khalick (2002) pointed out to the lack of research on explicit and reflective approach among younger students because most studies investigated science teachers' understanding of NOS. The improvement in students' NOS views can be attributed to contextualized, explicit and reflective NOS instruction. Clough (2006) argued that decontextualized NOS instruction is not adequate to develop NOS understanding. He further stated that contextualizing NOS through "integrating historical and contemporary science examples that are tied to the fundamental ideas taught in particular science subjects. Such examples illustrate the complexities and challenges individual scientists and the scientific community experience in constructing ideas and determining their fit with empirical evidence" (Clough, 2006, p, 474). The incorporation of history of science supports students to further develop and acknowledge adequate NOS understandings. This study implies that HOS should be a part of science education to draw students' attention to the development of scientific knowledge.

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Increasing Undergraduate Students' Exam Performances In Statistics Course Using Software Socrative

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Abstract

Socrative is a free online assessment tool that empowers instructors to engage and assess their students as learning happens. Through Socrative, instructors can design assessments online and students can access the assignments with any device or browser. In this study, the Socrative was used to increase students' exam performances in Canik Basari University- Turkey, in fall semester of 2015-2016 academic year. The paper describes how a consistent use of Socrative facilitated students' exam preparation in an introductory statistics course. A post-test design with control group was deployed to examine the effect exam preparation through Socrative on students' grades. The ANCOVA results showed that there existed a statistically significant difference between control and experimental group students' final grades ($F(1, 92) = 6.92, p = .010, \eta^2 = .07$), once their means had been adjusted for midterm grades. Further, results showed that the students are satisfied with this preparation style likely because the immediate feedback given helps to improve student understanding of the concepts. This study indicated that along with usual usage it can also be burdened to increase students' performances on exams by sharing homework sets through Socrative.

Keywords: Software Socrative, Exam preparation, Statistics course, Online homework

INTRODUCTION

Quick advancement of technology is transforming the educational environment. Schools nowadays are more equipped with smart boards, tablets, Internet, and computers than a decade ago. Along with the technological growth the teaching and assessing approaches also change. For instance, it is now easier to apply a survey, instantly aggregate the results and analyze more quickly than two decades ago. One of the emerging technology is the web based student response system (SRS) which was generally operated with clickers. The use of SRS is becoming more widespread in higher level education (Heaslip, Donovan, & Cullen, 2014). There are several online SRS programs such as Socrative, Edmodo, Weebly, and Class Dojo. This study is dealing with Socrative which is popular among the instructors of Canik Basari University.

Socrative software

Socrative is a free online assessment tool that empowers instructors to engage and assess their students as learning happens. Through Socrative, instructors can design assessments online and students can access these assignments with any device (laptops, phones, or tablets) or browser. More specifically, it allows instructors to administer in-class surveys, homework assignments and quizzes, aggregate result in real time, generate reports to monitor and visualize student learning (Socrative, 2016). When quizzes are completed, teachers have the option to generate reports to email, save to Google Drive, or download as Excel or portable document format (PDF) files.

One of the most beneficial aspect of Socrative platform is that it allows the instructors to mix both the order of questions and the order of their choices. For instance, during a quiz different questions appear on the mobile phone of each student. Moreover, the process of creating and reordering questions is very intuitive. Another, useful application is that, it allows groups of students to work through quizzes in a race to answer the most questions correctly. Where correct answers move an avatar forward and incorrect answers keep it in place.

Teachers and students will log in to Socrative software in different way. As such, an instructor must sign up for a teacher account. Upon creating an account, so teachers will assigned in a unique room code. In terms of students, they will use this code to identify the virtual classroom, in this way they can gain access to quizzes, homework or surveys that teachers share. Importantly, logging on to Socrative using the room code does take a few minutes for students.

Socrative platform allows to create quizzes and homework sets that can include any combination of multiple choice, true or false, and short-answer questions. Furthermore, it include the ability to attach images to questions as well as to add explanations of correct answers so that students can have immediate feedback. Moreover, the prepared materials can be shared with colleagues and one can import preexisting quizzes into his/her virtual classrooms, allowing collaboration with colleagues. Overall, this user-friendly tool is very convenient. It is highly recommended for those who are looking for a means of assessing student learning as well as increasing classroom engagement (Nawalaniec, 2015).

The use of Software Socrative in university teaching is rapidly increasing in contemporary time. It can be used for several aims such as; improving student engagement and the learning experience (Dervan, 2014; Liu & Taylor, 2012), just-in-time teaching (Krause, 2013), active learning (Coca & Slisko, 2013), making the lecture more enjoyable both for the students and for the teacher (Piatek, 2014), collaborative learning (Awedh, Mueen, Zafar, & Manzoor, 2014), and receiving immediate feedback about instruction (Hadiri, n.d.).

Web-based homework

Homework is traditionally assigned to students by instructors to be completed at home, for students to increase their content knowledge. However, students require feedback after completing any assigned homework. Once instructor's feedback is executed, students are then able to adjust their errors (Leong, 2014). On the other hand, some students need special supports to be motivated, to study systematically and to prepare thoroughly for the exams. One way to give feedback to students' homework solutions is web based homework platform, which, in general, refers to any system of homework problems made available online to students with automatic answer grading capability and immediate feedback on correctness of student solutions (Demirci, 2010). A student then retries the question again receiving feedback if an incorrect solution is given. Given the crowd nature of typical statistics classes at the university level and the inability of teachers to provide such feedback consistently to every student in the room, where software that is able to do so, provides a solid support to students and serves to support in-class instruction. In doing problems and assignments with the aid of their hand on technological devices, students are able to practice the material, refine their understandings and arguably improve their ability to master the content.

Rapidly growing technological development and widespread use of the Internet in instruction encourage teachers to assign web based homework (Altun, 2008). On the other hand, the use of online homework by instructors has led to search on several aspects of web-based homework applications, such as, students attitudes toward online homework (Altun, 2008; Leong, 2014), the effect of web-based homework on students' achievement (Babaali & Gonzalez, 2015; Chow, 2014; Demirci, 2010), and student perceptions of online homework use (Ongun, Altas, & Demirag, 2011; Richards-Babb, Curtis, Georgieva, & Penn, (2015).

This study has further burdened Socrative and used it as a web based homework platform. The aim of this study was to increase students' performances on exams by sharing homework questions through Socrative. The research described herein, was driven by the following research questions.

1. What affect does the use of Socrative as an online homework system have upon students' exam grades in the undergraduate statistics course?
2. What is the attitude of the students towards the use of Socrative as an online homework system?

METHOD

In this study, the Socrative was used to increase students' exam performances in Canik Basari University (CBU), Turkey. The paper describes how a consistent use of Socrative facilitated students' exam preparation in an introductory statistics course for business, international commercial and business (ICB), and psychological counseling and guidance (PCG) majors. The methods used included both quantitative and qualitative data. A post-test design with control group (Fraenkel, & Wallen, 1996) was deployed to examine the effect exam preparation through Socrative on students' grades. Qualitative data were collected to identify the strengths and weaknesses of using Socrative as a tool to give homework to enhance students' exam performances through an online questionnaire.

Participants

Canik Basari University is a four-year degree granting private institution located in Samsun, Turkey. It is one of two universities in Samsun which has four faculties: Education, economics and administrative sciences, architecture and engineering, and arts and sciences. While the faculty of education offers four-year degrees in areas: Turkish education, foreign languages education and, psychological counseling and guidance; the faculty of economics and administrative sciences offers four-year degrees in areas of: business, international commercial

and business, and political science and international relations. The faculties offers an extensive list of courses in these areas. Among these is Statistics-I: The research presented here focuses on this course. Specifically, we look at data collected in the form of final exam scores and analysis of students' attitudes on using Socrative as a tool for exam preparation.

In total, 46 students in their second year in business major, 23 students in their second year in ICB major and 78 students from PCG major at their first year were taking introductory Statistics-I course. This was a course including descriptive statistics along with correlation and regression topics. It is a pre-requisite for Statistics-II course which contains inferential statistics concepts. The course proves to be a challenge to many students who do not have a strong mathematics base. Fifteen, eight and six students respectively from aforementioned majors were repeating the course. Since they were not required to attend the lessons they were excluded from all analysis. Moreover, since 23 students did not indicate their amount of participation to the homework activities were also excluded. Thus, a total of 95 undergraduate students, 58 female and 37 male, were used for all analysis.

Table. 1. Demographics of the participants

	Variable	f	%
Gender	Men	37	39
	Women	58	61
Major	Business	23	24
	International commercial and business	15	16
	Psychological counseling and guidance	57	60

The intervention

In CBU the fall semester of 2015-2016 academic year ended in December. All students were allowed one week to prepare for their final exam. During this break two snowy days elongated the gap to nine days. The instructor (the first researcher of this study) of Statistics-I course shared seven homework sets during the break. The homework sets comprising various types of questions were shared each evening and was replaced with a new one after 24 hours. The homework questions were shared through Socrative which allowed the instructor to see students' performances on each question. The instructor shared the answer of each homework set after 24 hours and he shared questions similar to those least answered in the previous homework in new homework sets.

During the last lesson of the course students were announced for this application and the announcement was shared in students' email, Twitter and Facebook groups. Besides, Socrative was used in several lessons so that all students were familiar with its usage. Totally seven homework collections were shared and students participated to these homework sets in different percentages. Of the 95 students 32 never participated and 5, 4, 12, 13, 11, 9, 9 students participated 1, 2, 3, 4, 5, 6, and 7 times respectively. Students that never participated and those participated one and two times were taken as control (41 students) and those who participated three or more times were taken as experimental group (54 students).

Instruments

Three sources were utilized to collect data. First, students' midterm grades was used to equate the groups' initial differences. The midterm was a regular exam applied to assess students' knowledge related to descriptive statistics topics, such as mean, median, mod, standard deviation, quartiles, Box and Whisker Plot, standard normal distribution, and Z and T scores. The midterm consisted of 41 multiple choice questions prepared by the first author from various statistics books, such as "Statistics for the behavioral sciences" (Gravetter, & Wallnau, 2006) and "Statistical Methods for Psychology" (Howell, 2012).

Second, students' final exam grades were used to reveal group differences after the intervention. In other words, some of the students prepared for the exam through Socrative however some of them did not. On the final exam students were asked 8 open ended questions assessing students' knowledge on correlation and regression at basic level. These questions were also selected from various statistics books such as "Introduction to Statistics and SPSS in Psychology" (Mayers, 2013) and "Statistical Methods for Practice and Research- A Guide to Data Analysis Using SPSS" (Gaur & Gaur, 2009).

Third, an online questionnaire of eight Likert type (1 – Strongly Disagree, 5 – Strongly Agree) items and three essay questions to extract information on the students' judging of the use of Socrative for exam preparation. The questionnaire items (see Table 1) were prepared by the authors. The final version of the questionnaire was decided after several electronic mailing between the authors. Then, the questionnaire was administered to three

students in a one-on-one situation to make sure that students interpreted the questions unambiguously. We observed that they answered all items without hesitation and were able to interpret all questions correctly. During the last homework sharing, the students filled out this online questionnaire which was published on Socrative. On the other hand, the internal consistency of the survey questionnaire; Cronbach's alpha value obtained was .913.

RESULTS

The effect of doing homework through Socrative on final exam results were analyzed with ANCOVA where students' midterm grades were used as covariate. The aim behind using ANCOVA was to equate the pre-existence differences between control and experimental group students (Pallant, 2013). The strong linear correlation (.64) between students' midterm and final grades allowed using it as covariate. The correlation coefficient .64 suggests a fairly predictable relationship between students' midterm and final grades. Two of the most important assumption of ANCOVA; Levene's test for homogeneity of variances and the homogeneity of regression slopes, were tested. It was found that the error variance of the final grades was equal across the groups (those who participated and who did not participated to homework activities), and no interaction between the covariate and the independent variable (final exam scores) was detected ($F(1, 91) = 1.67, p = .20$).

The descriptive statistics indicated that the mean of final grades of students who did not participate in Socrative-assisted homework activities was 31.51 and for those who participated in the activity was 58.24. The difference between group means was assessed with ANCOVA (Table 1).

Table 1. ANCOVA results

Source	Type III Sum of Squares	df	Mean Square	F	p	η^2
Corrected Model	38450.74	2	19225.37	37.85	.000	.451
Intercept	326.95	1	326.95	.644	.424	.007
midterm	21801.10	1	21801.10	42.92	.000	.318
group	3516.69	1	3516.69	6.92	.010	.070
Error	46729.01	92	507.92			
Total	292411.00	95				
Corrected Total	85179.75	94				

The ANCOVA results showed that there existed a statistically significant difference between control and experimental group students' final grades ($F(1, 92) = 6.92, p = .010, \eta^2 = .07$), once their means had been adjusted for midterm grades (see Table 2). This means that when students' midterm grades are controlled there is a significant effect of sharing homework sets through Socrative on students' final grades. Meanwhile the eta square value, .07 indicated a moderate effect size. The moderate effect is based on the Cohen's (1988) conventions for effect sizes; $\eta^2 = 0.01$ (small), $\eta^2 = 0.06$ (medium), and $\eta^2 = 0.14$ (large) effects. Finally, the adjusted means with the effect of covariates was found 41.14 and 50.43 for control and experimental groups respectively. In other saying, after ANCOVA adjustment, final grades of the control groups increased for 9.63 points while that of experimental group decreased for 7.81 points.

The results of the attitude survey indicated that students have a positive moderate attitude toward preparing for exam with Socrative application. The maximum average score that could be obtained from the survey was five and average of all students was calculated as 3.81 showing a moderate attitude. Table 2 includes the items of the questionnaire along with mean and standard deviation of each item.

Table 2. Descriptive statistics of questionnaire items

#	Items	Mean	SD
1	This application serve my purpose	3.92	0.98
2	I liked Socrative	4.08	0.95
3	I regularly prepared for the exam with this application	3.69	1.04
4	With this application I perpared for the exam with relish	3.56	1.14
5	With Socrative I prepared more for the exam	3.84	1.02
6	I want this application to be used in the next exam also	4.01	1.09
7	Socrative should be used in other subjects as well	4.06	1.08
8	I hope to get a high mark in the exam with this application	3.35	1.06

As seen in Table 2, three items (2, 5 and 7th items) are related to Socrative software and the others (1, 3, 4, 6, 8th items) are assessing the use of Socrative as a tool for homework sharing. While the mean for items that asses Socrative was found 4.00, the mean for the usage of Socrative for sharing homework sets was found as 3.71. Students have scored the item “I liked Socrative” the most (4.08) and the item “I hope to get a high mark in the exam with this application” the least (3.35).

Besides the Likert type questions assessing the students’ attitudes toward the use of Socrative as a homework platform, there was a question asking students amount of participation to the homework activities. Seven homework sets were shared within 9 days and students’ participation rates varied between 1 and 7 times with mean and standard deviation of 4.33 and 1.77 respectively.

Another positive indicator of using Socrative to prepare students for exam by sharing homework sets is the correlation between students’ final grades and amount of participating to homework question solutions. The Pearson correlation results indicated that there was a significant positive large association (.52) based on Cohen’s (1998) classification (.10 are “small,” those of .30 are “medium,” and those of .50 are “large”).

The last two items on the questionnaire were “What was the best use of sharing homework questions on Socrative?” and “What are the problems associated with sharing homework questions on Socrative?” To represent the students’ responses we constructed two answer sculptures as shown in Figure 1 and Figure 2. In the answer sculptures rounded rectangles denote responses related to use of Socrative as homework sharing platform, trapezoid ones represent responses directly related to Socrative software and the elliptic ones symbolize other types of responses.

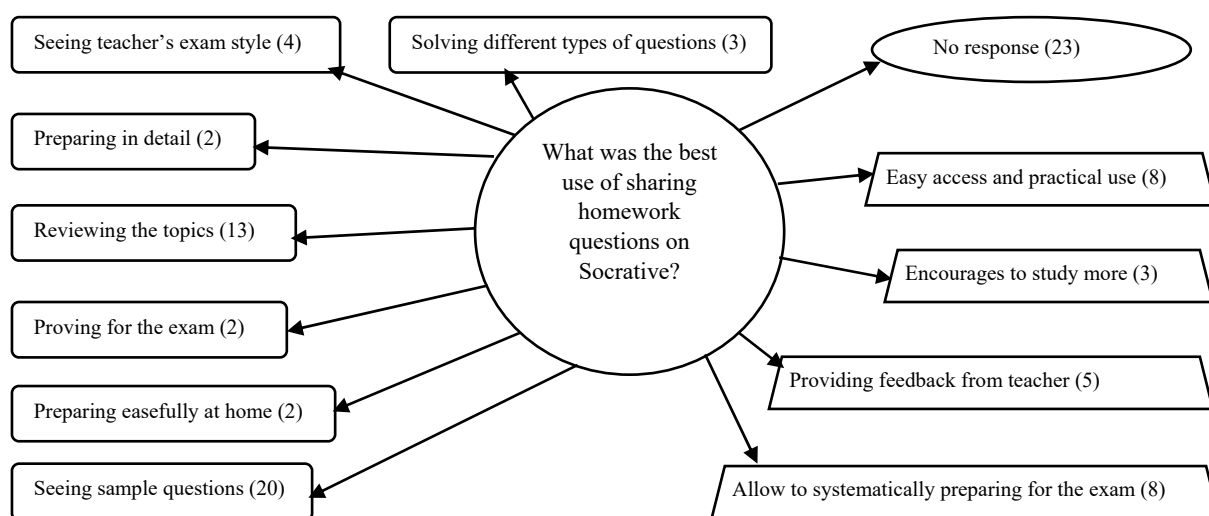


Figure 1. Answer sculpture for best use of Socrative as a homework sharing platform

As seen in Figure 1 %25 of the responses are directly related to proving the Socrative. For example, 8 students found it useful in allowing to systematically preparing for the exam and 3 students declared that it encourage them to study more. Similarly, %24 of the students did not supplied any responses and %48.4 of the students supplied responses related to best use of Socrative as a homework sharing platform. For instance, 20 students found that platform is useful, where it allows seeing sample questions, and 2 students found it helpful by allowing to calmly studying at home.

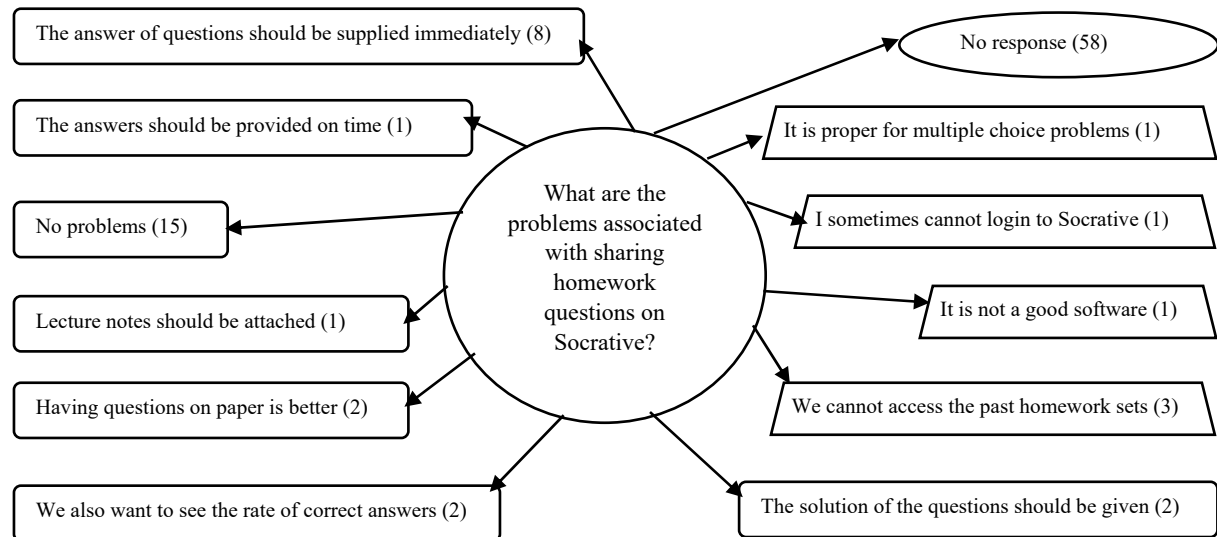


Figure 2. Answer sculpture for the problems associated with the use of Socrative as a homework sharing platform

As seen in Figure 2 %61 of the students did not supplied a response for the problems associated with the use of Socrative for sharing homework sets and %16 of them found no problems. However, %23 of the students stated various problems. For instance, the fact that students could not immediately get the answers of the homework sets (8 students) and instead of on paper, having question on their tools' screen (2 students) were seen as problems. Similarly, could not accessing the past homework sets (3 students) and sometimes could not logging to Socrative (one student) was the problems directly related to Socrative that students mentioned.

DISCUSSION and CONCLUSION

As is evidenced by the data presented, those students in the treatment group had a higher average on the final exam than those in the control group. In other words, participants having the Socrative-assisted homework before the final exam performed well within the range of those without the Socrative-assisted homework. This conclusion do agree with those of (Altun, 2008) who indicated that online assignments increased student motivation and academic achievement, and those of (Babaali & Gonzalez, 2015) who showed the effectiveness of an online homework system to supplement instruction. However, (Chow, 2014) and Sosa et al. (2011) found that the students using the computer-based homework instruction are just as successful as those using the traditional method of homework instruction. Contrary, (Demirci, 2010) and Bonham, Beichner, and Deardorff (2003) reported that students who used the WebAssign system experienced no significant differences in learning gains comparing to students using the traditional hand-written homework. These findings implies that more rigorous studies, perhaps those control the experience of the instructors and students' prior knowledge, are needed.

The results also indicated that students' attitudes toward use of Socrative as a homework assignment platform or toward preparing for exam through Socrative was moderate. Similarly, (Hadiri, n.d.) indicated slight positive changes toward Socrative when it was used for formative feedback. Other studies (Altun, 2008; Leong, 2014) concerning students attitudes toward use of Socrative was also positive.

Some studies (Dervan, 2014; Godzicki, Godzicki, Krofel & Michaels, 2013); Heaslip et al., 2014; Manuguerra & Petocz, 2011) have indicated the increase in the students' engagement when they use technology in or outside classroom. The results gathered from the open ended questions of study correspondingly specified that students became more engaged with their exams when Socrative was used as an online homework platforms.

The students in the sections utilizing the Socrative to complete the homework assignments are assumed to have increased students' time on task in general. This most likely have positively impacted their ability to understand the material and influenced their performance on the final exam as well. In other words, the differences in students' success can be attributed to the support and feedback that the software provides coupled with an increase in the time spent doing homework. Moreover, despite the fact that students in the treatment sections did significantly better on their final exams, there is still a group of students who scored incredibly low on their final exam. Still, the high correlation between students' final grades and their amount of use of Socrative for preparation, indicate the general effectiveness of Socrative software.

Obviously, doing homework sets with Socrative, the environment provides a sense of distance and protection from the audience not available in the classroom.

Incorporating the Socrative in the exam preparation enables students to prepare for the exam with relish, regularly prepare for the exam and prepare more for the exam. Moreover, it provides opinions to questions from the instructor, receive feedback from the instructor while outside the classroom, and also the instructor assess their understanding of the course materials from distance. These results are valid for the statistics course, however, we envision that this would be the same if the Socrative be utilized in other, similar courses, as well.

First the questionnaire was applied than students' final scores were declared. This was done because of the probability of students being affected by their score on the final exam. There were two groups of items on the questionnaire; those assessing the Socrative and those assessing the usage of Socrative a homework sharing platform. The results indicated that attitude word Socrative (4.00) was more positive than using it for homework platform (3.71). The meaningfulness of the difference was searched by conducting independent sample t test. It was found that the difference was statistically significant; $t(145)=12$, $p=.00$. This finding implies that students have enjoyed with Socrative more than using it as a homework sharing platform. Which further implies that Socrative should be used for other purposes such as engagement and motivation. The students' scoring the least on the eighth item might have been affected by their belief that the Statistics-I course was a difficult course.

As a conclusion, the results revealed that preparation for exam using Socrative led to an increased exam grades. Further, results showed that the students are satisfied with this preparation style likely because the immediate feedback given helps to improve student understanding of the concepts. This study indicated that along with Socrative's usual usage it can also be used to increase students' performances on exams by sharing homework questions through Socrative. Based on the feedback received from students it is recommended that Socrative to be applied frequently in higher education institutions and in other subjects as well.

Many students struggle to keep up with the courses possibly because of do not knowing how to prepare for exams and needs motivation. Instructors' homework sharing on the web may be a solution to this problem. Further studies are necessary to generalize that the use of Socrative as homework platform will have the same learning results.

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Integration Of Technology-Based Resources In Adult Learning And Teaching Contexts: A Literature Review

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ABSTRACT

The purpose of this paper is to provide the reader with a comprehensive review, drawing on the current education in technology literature. With this review, the reader is expected to expand their horizon of some of the instructional design related considerations and issues pertinent to the incorporation of technology-based resources into adult learning and teaching settings. This extensive review can particularly shed light to why, for whom, and how these technology-based resources are to be integrated into curriculum, rather than whether or not they should be. Two specific technologies were selected for this literature review: *Social networks* and *podcasts*. With the writing of this review, it is the hope that the reader can widen their current knowledge of both the pedagogical value of these web 2.0 technologies and potential challenges they pose as they are integrated into educational activities at schools—in this study, adult learning and teaching contexts.

Key Words: Literature review, technology-based resources for effective instruction, instructional design related considerations, adult learning and teaching environments, web 2.0 technologies, social networks, podcasts, pedagogical value, advantages, challenges.

INTRODUCTION

Ongoing debates among believers and skeptics of the pedagogical value of technology supported learning and instruction is not an indicative of a one-size-fits-all model in the 21st century classroom. While some school systems adopt and implement a completely face-to-face approach to getting students to interact with the content, with each other, and with their instructor, some others fully opt for online education to leverage students' learning and teachers' instructional practices. The debacle here does not stem from whether or not instructors should implement technology-based resources in their class-related activities. Paramount instructional decisions are made not based on the "usage level of technological resources, but the [proper] usage of technology in educational environment with convenient pedagogical approach" (Sezer, Yilmaz, & Yilmaz, 2013, p. 141). As such, in order to optimize effective learning and teaching with various web 2.0 technologies both inside and outside of the classroom, instructors need to consider several factors. These design considerations involve instructors' own design-related decisions in conjunction with the learning objectives they determine, the educational context they are teaching in, their personal attitudes towards and perceptions about integration of technology-based resources into curricula, types of learner groups they are working with, these learners' previous educational backgrounds, differences in their learning styles, modes and preferences of learning, study skills, and cognitive processing competencies (Clark & Mayer, 2011). Learners' current level of confidence and comfort in their use of these technologies, along with their preferences on their hardware and software use, administrative issues such as budgeting and school administrators' support on the use of technology-based resources in class, determiners of educational policies, involvement of parents and other stakeholders, as well as legal and ethical issues with intellectual property use—proper conduct of copyright laws—can be cited as additional considerations for design of effective instruction. Given the current educational milieu where millennials (Tomei & Morris, 2013) rule their own learning processes with rather a student-centric approach, a thorough review of the literature needs to be conducted.

SOCIAL NETWORKS

According to Tomei and Morris (2013), "social networking is defined as a web-based service that allow individuals to construct a public profile within network parameters that permit the user to admit or restrict those with whom they mutually agree to share a connection" (p. 141). Applications such as blogs, social networks, content communities or virtual social worlds can all be placed under the umbrella of social media, which can be referred to as "a group of Internet-based applications that build on the ideological and technological foundations of Web 2.0" (Aymerich-Franch & Fedele, 2015, p. 54). College students tend to adopt social media applications both for entertainment and learning purposes (Cao, Aijan, & Hong, 2013). Dahlstrom (2012) asserted that "students use various social media applications and it has become an indispensable part of their everyday life for personal and learning purposes. Mobile technologies and smartphones interweave social media in their palms and at their command"

(as cited in Cao, Aijan, & Hong, 2013, p. 582). Bicen and Cavus (2011) posited that there are several social networking sites that have come to existence with the advances in information and communication technologies (ICTs) (as cited in Benson & Morgan, 2014). However, Facebook has prevailed among all. Boyd and Ellison (2008) asserted that social networks allow for the following three: 1) construct a profile that is either semi-public or public in an online system, 2) create a user list based on the individual's connections, and 3) view other users' profiles and shared friends, as well as their connections through the systems, in addition to those of their own (as cited in Benson & Morgan, 2014).

SOCIAL MEDIA AND A PARADIGM SHIFT FROM TEACHER-CENTERED TO STUDENT-ORIENTED LEARNING

Regarding the utility of social media on today's students' transformation into self-directed learners, it is possible to assert that as various mobile learning technologies came to existence, they have had a tremendous impact on students' transforming into autonomous, independent learners. This role is evident in the emerging paradigm shift from yesterday's traditional, teacher-centered learning is replaced by student-centered learning and/or learner-generated content. With respect to this, Kukulska-Hulme (2010) stated that social media act as a catalyst, enabling a "pedagogical refocus from teacher-directed content delivery to student-generated content and student-generated learning contexts" (p. 2).

ROLE OF SOCIAL NETWORKS IN STUDENTS' TRANSFORMATION INTO SELF-DIRECTED LEARNERS

In their recent study, Yildiz and Scharaldi (2015) found that "there is a growing number of research and support by academics" in this field (p. 259). The *Digital Media and Learning Initiative* funded by the McArthur Foundation released the report findings of the Digital Youth Research project back in 2008, in support of kids' using digital media for informal learning. The research findings reported that "youth engage in peer-based, self-directed learning online" (Ito, 2008, Digital Youth Research, para. 9). Ito (2008) noted that social media lead to freedom of expression for younger learners and allow for "autonomy for youth that is less apparent in a classroom setting. Youth respect one another's authority online and they are often more motivated to learn from peers than from adults. Their efforts are also largely self-directed" (para. 11) when compared to learning objectives predetermined by their instructor and in a classroom environment.

SOCIAL MEDIA TOOLS UTILIZED IN THE WORKPLACE

Today's learning organizations have begun to ensure that their employees receive not only formal training, but also informal forms of education and professional development for the entire success of the workplace. For example, these organizations have begun to adapt to current demands of the global economies today, by fully adopting social media tools to several of their departments. Muiya and Nafukho (2015) underscored that "as social media penetrates our everyday lives, organizations and human resource development professionals are looking at how to leverage social media tools to enhance workplace learning and development" (p. 93).

There is no doubt that employers in this day and age are searching for the top talent; that is, the type of diverse workers—or global citizens—that have technical expertise that calls for a vast array of digital skills and a high level of adaptability to both formal and informal learning settings, with quite a lot of cultural sensitivity and receptivity for constructive feedback. Workers today need to be able to respond to the wants and needs of the customers and consumers. Hunt (2010) drew attention to a *Career Builder* survey, which demonstrates that today's employers increasingly use social media for recruitment purposes. The author also discussed that "at this point in time, social media neither can, nor should replace traditional recruiting methods; however, it is necessary for organizations to supplement their efforts online. Fueling traditional recruiting strategies with social media requires understanding how the different sites operate" (Hunt, 2010, p. 38).

PODCASTS

"A podcast is a digital media file, or a series of such files, distributed over the Internet using syndication feeds, for playback on portable media players and personal computers" (Tomei & Morris, 2013, p. 84). Design and delivery of effective teaching heavily relies on instructors' ability to connect with their students on both personal and social levels, especially given that today's learners comprise progressive, self-directed, diverse communities of knowledge builders, content creators, and information disseminators. The "millennials (born 1982-2002)" (Tomei & Morris, 2013, p. 84) do not just accept the given message as the *de facto* reality, yet question it. They recreate content with a myriad of web-based tools, making it more authentic for not only their individual learning, but for that of others on a

global scale. As such, “podcasting provides one of the most widely recognized formats to reach millennials” (Tomei & Morris, 2013, p. 84). According to Tomei and Morris (2013), Podcasts are easy technologies to locate on the Internet, especially though specific online “warehousing services such as Apples iTunes and iTunes University. Information gathered from a simple search often produces volumes of downloadable resources for listening and viewing on virtually every noteworthy academic content area” (p. 84).

Podcasts are referred to as audio instruction designed with the following four design principles: 1) Selection of the narrative format, 2) fleeting nature of spoken words, 3) environmental soundscape, and 4) difference between hearing and listening. Ferrington (1994a) contended that the goal of good audio design with podcasts is to “effectively engage the listener in active and attentive listening” (as cited in Carter, 2012, p. 55). Both the weakness and the strength of the audio medium, from Arnheim’s (1986) viewpoint, is a “blind medium that relies on the elements of sound and silence to communicate information or emotional content to the listener” (as cited in Carter, 2012, p. 55). Podcasts achieve both.

EVALUATION OF SOCIAL NETWORKS AND PODCASTS: ADVANTAGES OF INTEGRATING SOCIAL NETWORKS INTO LEARNING AND TEACHING

A plethora online social networking sites (SNSs) has arisen due to today’s technological advances. Some of these are Facebook, Myspace, twitter, wikis, blogs, and virtual worlds (Bicen & Cavus, 2011, as cited in Benson & Morgan, 2014). Welcoming social media tools into the classroom environment is significant, for they are very powerful tools of learning. The members of the *net generation* (Glenn, 2000) recognize their own important role in helping “shape the future of this increasingly global, interconnected society” (Wesch, 2008, p. 7, as cited in Yildiz & Scharaldi, 2015, p. 259). Through SNSs, students can create new forms of expression and new rules for social behavior. They can share their creative works such as a video they produced, an online, interactive game they designed, or a SNS they customized based on their personal preferences. They can then receive feedback and response from their peers online which is often immediate, and includes breadth of information. Such information exchange greatly adds to these learners’ media skills and knowledge repository, particularly because this online, often asynchronous exchange provides them with the ability to learn, create, and share at their own pace and based on their own learning needs and personal learning styles. These learning gains through social networking explain that the social media and the digital world are very likely to lower barriers to students’ autonomous learning in the digital age.

Today, it is undoubtedly that social networks have demonstrated their ability to encourage collaborative and real-life skills through which learners can transfer their knowledge to real-world scenarios. Thanks to social networking technologies, students can find the opportunity to collaboratively engage in knowledge building communities with their cyber peers and their instructors, and thus feel like they are part of a virtual, yet a legitimate learning environment wherein they can easily socialize. According to Moore and Kearsley (2012), “for many students, this is a valued way of reducing their feeling of isolation” (p. 171). Social networks promote meaningful and much richer communication between learners and learners, learners and faculty, and learners and content. The last type of interaction (i.e., learner-content interaction) stands out among all three, because it allows for a new paradigm shift in today’s digital education: Learner-centered approach to learning versus yesterday’s obsolete teacher-focused education. Finally, group thinking and positive interpersonal interactions among learners, instructors, and the content can provide instructors with an invaluable pedagogical toolkit that facilitates their assessments of their students’ academic performances.

DISADVANTAGES OF INTEGRATING SOCIAL NETWORKS INTO LEARNING AND TEACHING: CHALLENGES SOCIAL NETWORKING SITES POSE TO BOTH STUDENTS AND INSTRUCTORS

The extent of social media use depends on not only the positive aspects (i.e., perceived benefits and opportunities), but also negative factors (i.e., perceived risks and challenges) (Cao, Aijan, & Hong, 2013). Cao, Aijan, and Hong (2013) found in their recent work that “external pressure, perceived usefulness, perceived risk and task– technology compatibility are all important in explaining social media use decision” (p. 591). Negative implications of social media use in learning and teaching should be understood especially from an ethical perspective, when the personal and public domains overlap on the same platform. In another recent research investigating this issue, Aymerich-Franch and Fedele (2014) contended that “as any other revolution in the human history, the incorporation of social media in the different social spheres comes with reactions of both fear and enthusiasm” (p. 57). When “Facebook, MySpace, and Twitter are unsupervised and must be used by instructors” (Tomei & Morris, 2013, p. 89), potential

pitfalls of integrating such open public online communities into learning/teaching practices should be fully understood by these learning agents.

Based on the findings of their study, Aymerich-Franch and Fedele (2014) indicated that besides their positive implications, social media tools such as Facebook, MySpace, Twitter, Skype, weblogs, and other such SNSs also raise concerns on the part of the students. Rather than indicating how the faculty intend to use SNSs in their teaching or what function they perceive SNSs to have in their instructional design and delivery, the study results actually demonstrate the perceptions and attitudes of several college-level students towards their SNSs use. These students' responses appear to have affected the findings of this inquiry in the way that it turns out that social media do, indeed, raise serious concerns and moral questions in the minds of these young users/learners. The large sample of the study includes university students who constantly utilize SNSs as part of their private sphere. According to Livingstone (2008), "despite the strong connection of this first generation of digital natives and new media, the increasing use of social media among teenagers and teens is also of concern of both public opinion and scholars" (Aymerich-Franch & Fedele, 2014, p. 56).

The findings of this research indicate that social media may impose risks for these young people, particularly on their privacy. Youth seem to have created a *bedroom culture*, which, in the digital learning landscape, represents these young learners' private, leisure activities they hold separate from their school or family-related obligations. Simply put, they want to socialize by use of these social media tools, instead of using them primarily as a vessel for learning. Some studies even show that "students believe that certain social media such as Facebook are not designed for education but for socializing" (Hewitt & Forte, as cited in Aymerich-Franch & Fedele, 2014, p. 58). On these digital spaces, young learners tend to create for themselves identities that are both individual and group-based and what they experience here is a sense of intimacy and community (Aymerich-Franch & Fedele, 2014). As paradoxical as it sounds and although they do not want public sphere to clash with their private sphere, young people seem to frequently use social media publicly. Because of this reason, the study results reveal that students often opt out of using them as part of their private lives. In other words, they do not want their personal boundaries to be crossed. In support of this argument, the study results inform that as they choose to rather learn in an informal manner through multiples modes of media that help enhance both their verbal and visual literacy (Clark & Mayer, 2011), they tend to exclude formal educational activities from their private sphere. Now, this brings to mind the question, *will youth ever acknowledge the use of social media tools in the context of a blend of both formal and informal learning where visual communication is concerned?* This remains yet to be further inquired.

IDENTITY MANAGEMENT AND PRIVACY: ANALOGY TO FOCALT'S PANOPTICON DESIGN

According to Benson and Morgan (2014), privacy refers to the "right of individuals to freely decide the aspects of their lives to remain in the private domain and those belonging to the public one" (p. 57). However, the more public these young learners go by using these social media tools, the more vulnerable their identities become to potential online predators who might stalk them, by picking them as their cyber victims. Also, while some students report that they positively perceive social media to be a potential vehicle for learning (e.g., watching faculty's lectures, engaging in discussions with the faculty and peers, listening to topic-related podcasts, etc.), some others (almost other half of the respondents) state that they have serious concerns as to whether these media might cause issues with identity management and privacy. Thus, students appear to reject to use social media they normally "use in the private arena for educational purposes in order to keep a separation between their social and academic life" (Hewitt & Forte, 2006; Selwyn, 2009, as cited in Aymerich-Franch & Fedele, 2014, p. 58).

Young users of these social media sites "may reveal information that may be used for marketing and commercial purposes, which, according to Barnes (2006), makes their private spheres open to redundant online advertisements. I have additionally found that these social media sites may "allow for high levels of surveillance. Governmental agencies, college officials or parents can access networking sites while young users think of it as private spaces" (as cited in Aymerich-Franch & Fedele, 2014, p. 57), which, once again, precludes these young users from trusting these sites or perceiving them to be completely private. A good metaphor to use at this point can help describe such surveillance mechanism, and that would be *Focault's Panopticon design* (Barnes, 2006; Fuchs, 2010, as cited in Aymerich-Franch & Fedele, 2014, p. 58).

ADVANTAGES OF INTEGRATING PODCASTS INTO LEARNING AND TEACHING

Audio created good design principles play a crucial role in effective learning and instruction, for they positively contribute to the learning processes of especially learners who have lost their sight. In other words, podcast scan significantly contribute to visually impaired students' learning. Integration podcasts into curriculum can additionally facilitate learning experiences of non-traditional, diverse learner populations, including limited English proficient (LEP) students. Common knowledge within the second/foreign language field provides that LEPs are often described as linguistically and culturally diverse students that speak a second/foreign language other than native tongue. Thus, by use of audio presentations (i.e., podcasts) in class—or outside of the classroom environment—instructors can leverage the effectiveness of their teaching practices. Podcasting implemented in second/foreign language learning and teaching settings can significantly enhance LEP students' listening skills in the English language despite the fact that English is not their comfort zone to comfortably listen to and verbally communicate with others.

Particularly the third audio instruction design principle mentioned earlier in this paper requires a special address and understanding, because of the presence of Environmental Soundscape (e.g., attending to foreground or background sounds in the podcast). According to Ferrington (1994b), "active listening involves the ability to discriminate between sounds within a multi-pattern context" (as cited in Carter, 2012, p. 56). Regarding this (instructional) design principle, Carter (2012) posited that this "multi-pattern context (soundscape) has three layers through which the listener will isolate, identify, integrate, inspect, and then interpret spoken words to seek meaning in the sounds" (p. 56). Podcasts unequivocally enable such a learning environment for listeners as they internalize the given message(s). Tomei and Morris (2013) found in their recent study that "users find podcasting convenient [and] listeners control all aspects of the process and can use podcasting technology for a variety of educational (or entertainment) reasons" (p. 84). "Perhaps at a more elementary level, podcasting allows parents to take a more active role in the children's education while enabling teachers to reach students through a medium that has become part of their daily lives" (Tomei & Morris, 2013, p. 85).

DISADVANTAGES OF INTEGRATING PODCASTING INTO LEARNING AND TEACHING

One of the concerns related to the negative aspects of integrating podcasts into learning and teaching is appropriate content use and creation. Because it is easy to create, publish, and distribute information created through podcasts and with minimal technological skills, teachers and parents need to be more involved in the student-created content both at school and at home. They need to be cognizant of whether students are able to use and/or create content appropriately. Appropriate content use and/or creation depends upon the manner in which students use the language, whether they are offending others advertently, recklessly, or irresponsibly—or even doing this inadvertently. Students may not be aware of the consequences of, according to them, an innocent and ignorant cyber attack on others' cultures, languages, ethnicities, races, religions, and political ideologies. It is thus imperative that parents and teacher get more closely involved in the extent to which students upload content on podcasts accurately and truthfully.

On legal and ethical levels, unseen dangers may also emerge when students use podcasts for learning in the online environment. They may upload content, by potentially distorting or falsifying the original piece of information, simply by violating copyright laws. Regarding the aforementioned cons of podcast use in learning/teaching processes, Tomei and Morris (2013) stated the following:

Without the historically safe environment of the printed text, the quality, accuracy, and suitability of podcasted, content is a concern to educators, parents, and students themselves. To be effectively used for classroom learning, close scrutiny by educators remains a critical aspect of podcasting in the classroom. Also, in the open and collaborative environment of the Internet, anyone can easily acquire copyrighted material without the permission of copyrights holders and adds a new dimension to the issues of intellectual property for many educators. (p. 85)

Violation of laws pertinent to intellectual property rights might pose huge risks not only for students themselves, but also for their instructors, their families, the school system, and on a greater scale level, for the entire community. Not to mention the ethical aspect of violation of copyright laws when these tools are integrated into learning and teaching activities—this is yet another con of podcast use inside and outside of the classroom, which needs further address and inquiry. Parental and teacher involvement related to these negative aspects and repercussions of

podcasting is utterly important, and therefore, the issue needs to be more closely watched by students' parents and teachers.

On another level, Tomei and Morris (2013) maintained that when students create their own podcasts to interact, share, and learn together with their instructors and their peers, they may not be aware of the safety of the online environment they are engaged in. Cyber stalking, online identity theft, and online privacy concerns are new terms that have recently entered in today's online learning platforms (Aymerich-Franch & Fedele, 2014), posing serious risks on the part of the students. Hence, this issue, too, needs further address and investigation by school administrators, instructors, parents, and the greater community. Further studies should be conducted in terms of the ramifications and future implications of cyber stalking where podcast integration into learning/teaching is involved.

FACTORS TO CONSIDER WHEN USING EACH TECHNOLOGY WITH ADULT LEARNERS: SOCIAL NETWORKS AND ADULT LEARNERS' MOBILITY IN THEIR LEARNING PROCESSES

Social networks have considerable potential for adult learners and are cost-effective because they not only support the type of learning that is socially networked, but also the type of knowledge that is constructed by learners recreating the content themselves. As such, instructors should consider the vitality of creating meaningful and relevant learning experiences for their adult learners. Current literature on adult learners' use of social networks in their learning processes informs that social media tools allow them to continue to autonomously learn the world outside of their classroom first through modeling their teachers and their peers, and finally, by themselves with support of mobile technologies. Mazman and Usluel (2009) found that social media enable adult learners to collaboratively interact with their lecturers and engage with other students on a common platform where they all share the same interests. When learning of adult English as second language (ESL) students is under focus, these adult learners ultimately end up mastering an array of competencies in the English language. If so, then instructional designers and instructors should take into account the huge impact of handheld devices on adult learners as they use these tools to socialize and learn via online, social platforms.

Adults' learning is best facilitated in an environment where students socially network, collaboratively engage in problem solving, and construct knowledge at their own pace (Newby, Lehman, Rushell, & Stepich, 2010). With respect to the collaborative knowledge construction theories, Yang (2012) further found that students learn more conveniently in a mobile learning (m-Learning) environment, for it enables cooperative learning. Students' use of social networks is promoted by this type of learning, which explains the degree to which adult learners' use of mobile technologies and social networks comeingle. Drawing from the current literature, it is thus feasible to conclude that adult students'—in our context, adult ESL students'—(language) learning experiences with mobile technologies both inside and outside of the classroom environment are optimized.

With the overlap of social networks and mobile technologies, instructors should additionally attend to the most recent pedagogical design frameworks as they create their lesson plans for this learner group. One of the most outstanding m-Learning frameworks that can facilitate a deeper understanding of how social networking and m-Learning comeingle is Park's (2011) four-type pedagogical framework. The framework involves the following four categories: 1) high transactional distance and socialized mobile learning activity, 2) high transactional distance and individualized mobile learning activity, 3) low transactional distance and socialized mobile learning activity, and 4) low transactional distance and individualized learning activity. It is noteworthy that the third category (i.e., low transactional distance and socialized mobile learning). This specific domain of Park's (2011) m-Learning related framework can have pedagogical implications for learners socializing and learning through SNSs. This third category clearly demonstrates the aforementioned overlap between social networking and learning with mobile tools. The inference in this context should be that as learners get on SNSs by use of mobile technologies for the purpose of socializing, networking, and most importantly, for learning, they become closer to one another and the barriers of geographic distances are almost removed. This (i.e., m-learning—social networking collaboration) could be a good pedagogical analysis for instructional designers to consider at the onset of their instructional design process involving social networks and adult learners.

Another consideration by instructional designers and instructors should be positive communication and dialogue as students and instructors engage in informal learning and teaching activities by mutual use of social media. When creation of an informal learning community is considered by learning agents who are to design effective instruction, they will also recall Keegan's (1995) *intersubjectivity* element embedded in his Equivalency Theory (as cited in Simonson, Smaldino, Albright, & Zvacek, 2012). *Intersubjectivity* comes to existence between teachers and learners

as they recreate an informal learning environment in an artificial manner (Simonson et al., 2012)—or recreate the reality. It is through these socially networked, recreated, online, informal learning communities that instructional designers or teachers can possibly observe the level of *unstructured and yet continuous, dialogic interplay* between instructors and their adult learners.

PEDAGOGICAL VALUE OF PODCASTS: MOTIVATION, CULTURE, AND MORE

In the article they co-authored on podcast pedagogy, Dennen and Myer (2010) contended that “in the context of podcast-based learning, students need to be motivated to not only listen to a podcast, but also to pay attention to the message within the podcast for the podcast to be a successful learning tool” (p. 44). Other than motivational factors, instructional designers need to keep in mind that student-created podcasts can be very informative in their learning processes. Understanding the overlap of the podcast pedagogy in instructional design and student engagement and motivation in learning is pivotal for the salience of the entire design process. The most recent literature on podcasting pedagogy informs that “individual preferences for podcasts versus other learning technologies have been aligned with learning styles, with podcasts being a match for sequential, reflective, and verbal learners (Saeed, Yang, & Sinnappan, 2009, as cited in Dennen & Myer, 2010, p. 44).

Instructors also need to remember that teaching would be more effective if podcast creation were congruent with *Keller’s Attention, Relevance, Confidence, and Satisfaction (ARCS)* systematic motivational design model. This is a solid guide for instructors to follow, for it poses interplay between appropriate design principles and learner motivation mentioned earlier (Dennen & Myer, 2010). Considering motivational factors that play a substantial role in students’ learning via podcasts, Dennen and Myer (2010) asserted that “through careful scripting and the selection of an appropriate narrator, podcasts can be optimized for each of these motivational concepts” (p. 44).

In conjunction with teacher-generated podcasts, it is always a good idea to use a *female narrator* that uses a conversational tone and first person subject pronouns, instead of a more formal tone. Dennen and Myer (2010) provided that a female narrator “who uses more informal language and who speaks directly to the learner with statements about “I” and “you” will have the most positive impact on student learning and motivation” (p. 44). With this in mind, it is essential that those who are to design effective instruction not overlook the role of inclusion of a female narrator when creating a podcast for their course. The narrator’s conversational, informal, and yet informative tone should also remind these instructional designers of a paramount design principle, which is the *personalization principle* (Clark & Mayer, 2011).

As for student-created podcasts, as they integrate podcasts into their lesson plans or curricula, instructors should set certain assessment criteria such as students’ unique tone of voice, flow of sentences, as well as coherence and unity in meaning of the message transmitted (Dennen & Myer, 2010). Other evaluation criteria could be determined and announced to learners as their speaking fluency—in terms of pronunciation and enunciation of vocabulary words, use of expressions, idioms, local vernacular, and humor. Humor added to a podcasts not only helps present the content in a more informal manner, but allows learners to feel like they are an organic part of the podcast script. In this way, students engage in the content which they find authentic. Also, although they learn informally, they acquire information more comprehensively as opposed to the pedagogical impact of what formal—and possibly overwhelming—learning methods would do. Once again, adding the humor component into a podcast should remind instructional designers the *personalization principle* suggested by Clark and Mayer (2011). In his much acclaimed work on guiding adult learners (i.e., college-level students) toward gaining critical media literacy by use of audiovisual elements, Daniels (2012) found that humor is a fundamental design element used to evoke students’ emotions, thereby, leaving an emotional impact on them.

Gaining a richer understanding of the real world in which they live is attributed rather to adult learners compared to younger learners. Adult learners deepen their current knowledge and enrich their previous and current experiences more effectively and efficiently through student-created podcasts—or also through teacher-generated podcasts following up on lectures (Dennen & Myer, 2010). When it comes to English language learning environments, current literature indicates that through podcasting tools both inside and outside of the classroom, these learners can understand and appreciate the cultural value of their language learning processes. Teachers should take this exceptional *metacognitive* aspect of adults’ learning by use of podcasts into serious consideration. They should not underestimate the pedagogical and pragmatic values of podcasting on a cultural level and across disciplines—or, in our case, in second/foreign language learning/teaching contexts. By listening to podcasts, by generating podcasts

themselves, and by sufficient practice with podcasts, students can start picking up on U.S. cultural and linguistic cues, social norms, cultural symbols, cultural values, as well as the social etiquette in use of the language.

Students can appreciate societal, cultural, or verbal symbols around them, which can lead them to reflect on their learning. Self-reflection has a tremendous pedagogical value as far as the learning experiences of language students are concerned. Thum (2008) contended that self-reflection is a personal journey, a process of “bringing inner road-blocks or wishes to the light, [which] is one of the most important things to do for personal inner growth. It is one of the best ways to attain clarity and by that immense power” (para. 3). Through self-reflection, students are somewhat compelled to reevaluate their own strengths and weaknesses as they use their verbal skills by creating or listening to these audio presentations. When they engage in self-reflection, students end up gaining and/or developing higher levels of listening and speaking competencies in the English language. Podcasts are great instructional technologies to achieve this educational goal.

CONCLUSION

Issues with proper implementation of intellectual property rights will continue to be a part of the aforementioned web 2.0 technologies integrated into curriculum to enhance 21st century literacy. However, keeping it legal should not be exclusive to these technologies—and to adult ESL learning/teaching settings—in particular. There is still much needed research to be conducted on whether or not or to what degree a majority of these technologies poses legal and/or ethical challenges as instructors incorporate them into their curricula. Unethical and illegal use of intellectual property can spark much controversy in the field of instructional media and design. Yet, it will be through these debates that scholars in the field can conduct solid research and propose concrete solutions to optimizing effective teaching both inside and outside of the classroom. If the aim in today’s technology-based education is to help learners gain 21st century skills on several aspects of their learning experiences, then, it would not be unviable to conclude that best practices in learning/teaching settings cannot come without addressing these issues and proposing pragmatic solutions to them with appropriate pedagogical approaches held. As Sezer, Yilmaz, and Yilmaz (2013) put it earlier in this paper, what is pivotal is “not the usage level of technological resources, but the usage of technology in educational environment with convenient pedagogical approach” (p. 141).

On a final note, of the most recognized factors to consider in the process of creating learning environments that involve a convergence of pedagogy and technology is attending to the learning needs of the digital natives (Prensky, 2010), in addition to their learning differences and preferences. This instructional design principle holds true across all disciplines, offering pragmatic solutions in today’s web-based, technology-supported educational environments. Further review needs yet to be conducted in the field, addressing these issues and providing a more comprehensive understanding of and appreciation for the aforementioned overlap and impact of educational technologies implemented in the 21st century classroom. Only then can pedagogical, instructional, technological, design-related, legal, and ethical implications for and ramifications of technology integration into learning and teaching be better comprehended and appreciated.

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Interactive Learning By Using Augmented Reality Technology: The Development Of Electronic Publication Course For Education In Thailand

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ABSTRACT

The purpose of this study were to determine that the interactive learning with using AR technology has more or less in higher education in Thailand, the satisfied to use AR applications, and how can teachers and students get benefit from learning and teaching with this method. The research survey was conducted through online questionnaires. A sampling frame is the group of 26 master degree students who learning in the development of electronic publication course at the Educational Technology Department, Kasetsart University Thailand. The results showed that students who have never interactive learning by using AR technology before with up to 90% and after they have learned in the course of 12 weeks, the students' behavior of learning developed into cognitive 55%, psychomotor 30% and effective 15%. They were satisfied with in using AR applications at the highest level. AR technology get starts electronic publication to life interactive with video, 3D model, info-graphic, audio and multi-scene. Educators can seamlessly enhance learning materials with digital content and students can participate interactively with smart devices and applications to tracking textbooks or digital materials that come to life.

KEYWORD: Interactive Learning, Augmented Reality, Electronic Publication

INTRODUCTION

Interactive learning is a pedagogical model that encourages students to be part of the lesson instead of passive observers, quietly sitting at a desk taking notes or memorizing information. Students interact with the material, each other and the teacher in an active way. Interactive learning can take many forms in the classroom, hands-on group projects, lessons using technology, class discussions and simulations replace traditional lecture-based instruction (Susan Revermann, 2015). Historical interactive activities are available online to engage the history or social studies students. Some activities ask students to become involved and learn more about journeying to a new world. History is not the only subject area with activities. There are a variety of science activities as well (Lindy Hatten, 2015). Students can learn from the new interactive learning environment with smart devices and interactive real world. One of the interactive application type of learning is called “Augmented Reality” (AR). AR aim at simplifying the user’s life, by bringing virtual information not only to his immediate surroundings, but also to any indirect view of the real-world environment, such as a live - video stream, AR enhances the user’s perception of and interaction with the real world (J. Carmigniani, B. Furht, 2015). AR is a term used for a wide range of related technologies aimed at integrating virtual content and data with live, real-time media. The idea of AR is to mingle what is not really there with what is there as seamlessly as possible, and to present users with an enhanced, or augmented, display of the world around them (Tony Mullen, 2011, p.13). The nature of the augmentation could be anything from a textual display of data overlaid on real scenes or objects to complete, interactive 3D graphical scenes integrated into real ones.

STUDY

For this study, the researchers have developed an interactive electronic publication including digital files, e.g. .jpg, .pdf, documentary, poster, brochure and book by using the free AR applications (Fig. 1). The students can use a smartphone or tablet tracking at trigger image or marker contains to interact with some contents, graphics, 3D models, videos, multi-scenes, audios, and info-graphics.

Tools and Technologies – For this study there are varieties of equipment such as, smart devices, networking, applications, technology, in working with AR applications, ranging from free solutions including Aurasma, Blippar, Augment, and Zappar (Fig. 2) that is reasonably accessible, inexpensive or free, minimally restrictive, and versatile while also enabling nontrivial programming.

(Electronic Publication)

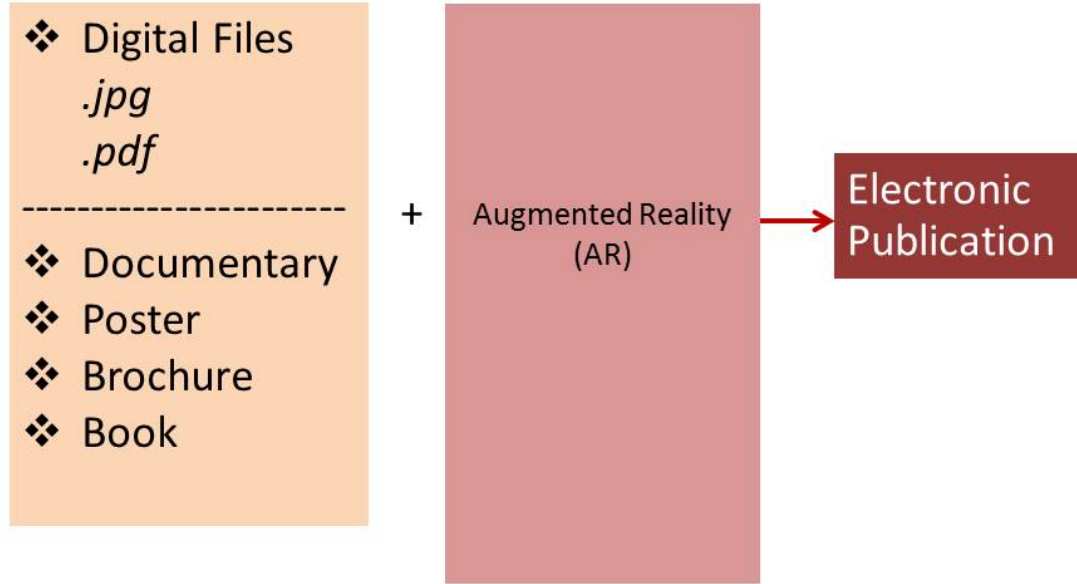


Fig. 1 Electronic Publication Elementary



Fig. 2 The free applications of AR

-Aurasma is a free app of iOS and Android devices that uses advanced image recognition to blend the real-world with rich, interactive contents, such as videos, audios, animations and website. Step by step to using Aurasma : (1) Download free app from Play Store or App Store and installed. (2) Follow auras channel with key words “paitoonsrifa”. (3) Scan the trigger image to alive.

-Blippar is the augmented reality and image recognition technology for transforming classrooms into

digital interactive learning environments. Stoke the imaginations of students of all ages with textbooks and materials that come to life with their mobile device.

-Augment is an app that allows to visualize 3D models in a real environment, synchronize multiple mobile devices or tablet and create multiple custom trackers. The 3D visualization and simulation of augmented reality in a familiar environment facilitates students' understanding of concepts hard to interpret in 2D (Fig. 3).

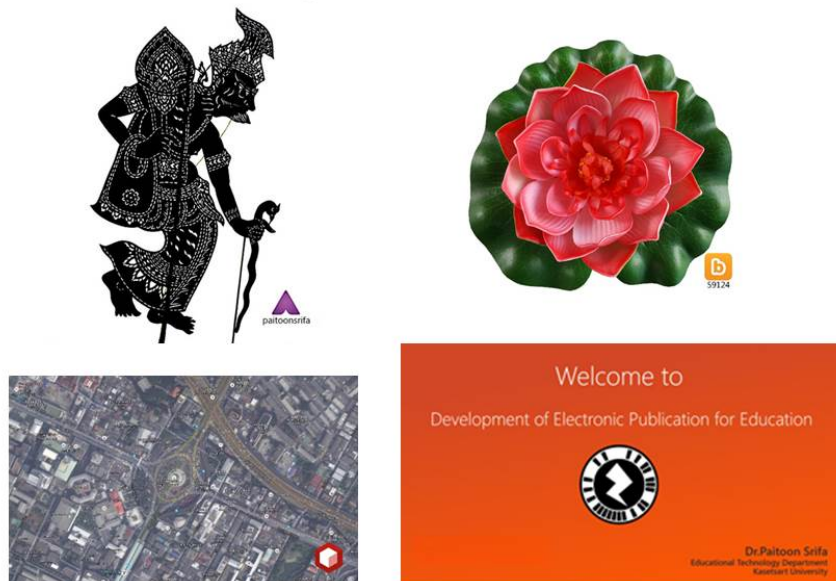


Fig.3 Student scan the map by using “Augment” application to see 3D model of Monument of Democracy, Bangkok Thailand

-Zappar is the application that can see and recognize images and objects in the world around. Zapcode can appear on just about anything; delivering video, audio, 3D animation, photos, games, links and a whole bundle of mind-blowing fun to mobile devices.

In addition to Smart Devices, Internet and Applications, the important elements of AR including with “Trigger images” sometimes called “Tracker” (Fig. 4).

Tools and Technologies (*Trigger Images or Tracker*)



Trigger Images or Tracker

Fig. 4 The Trigger Images or Tracker

FINDINGS

Augmented Reality is the integration of graphic content into live videos or user environment. AR apps for smartphones and tablets analyze web camera or GPS data to provide users with relevant content (Andrei Klubnikin, 2015). AR technology, which is a computer-generated technology that enhances user perception and experience (Poonsri Vate-U-LAN, 2015). Research results showed that interactive learning, students had used social media as tools, e.g. Facebook, Website, Line, Telephone and AR technology affect to learning in the development of electronic publication course for behavior of learning into cognitive 55%, psychomotor 30% and the effective 15%. The student satisfaction with using AR applications at the highest level. In the classroom (2015) almost of students in Thailand never used AR technology before, they used smartphones for tracking trigger images more than the tablet and interested in AR technology to look alive on textbooks with video, 3D model, info-graphic, audio and multi-scene by using Aurasma, Blippar, Augment and Zappar applications. When we are using AR in the classroom, it had a fun and creative way for students to learn. As more students and teacher have access to mobile phones or tablets to explore new interactive learning techniques.

CONCLUSIONS

To study the interactive learning with the AR technology quite a new model in Thailand, most of the learning interactive ways in the classroom through the CAI, Web-based, Social Media, but not for publication or documentary. AR is being used to create richer social networking experiences that allow to use mobile devices and appeals to the education approach that students learn the most when they take control of their own learning and interaction with the real world (Gregory Kipper, Joseph Rampolla, 2012, p.19). AR In particular, due to the recent advances in mobile devices and networking technologies, the use of mobile collaborative augmented reality (Leila Alem, Weidong Huang, 2011, p.6). The interactive learning system can create an appropriate situation for knowledge, exploring and constructing and automatically offer deliberately designed stimuli corresponding to the learner's input (Jiyoun Jia. 2012). AR is changing the way to interact with the world. Turn everyday objects, images, and places into new opportunities for engagement through striking augmented reality experiences, bring handouts and presentations to life with video, photos, audio, etc. and give students a new way to learn and visualize ideas.

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Intercreativity and sMOOC. The importance of the Collective Intelligence in the ECO European Project

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ABSTRACT

The ECO European Project funded by the European Commission is dedicated to bringing MOOCs to a new dimension by taking advantage of the possibilities offered by the Web 2.0. This paper focuses on the second iteration of the sMOOCs, after a previous research done on the first iteration (Osuna et al., 2016). This research studies the characteristics of the ECO sMOOCs in order to see if they are designed and implemented within an intercreative environment that leads towards collective intelligence. The methodology followed is quantitative and data collection was conducted using self-administered questionnaires with closed or semi-closed questions.

KEYWORDS

Intercreativity, collective intelligence, smart mobs, sMOOC, MOOC, e-learning, m-learning

INTRODUCTION

The ECO project (eLearning, Communication and Open-data: Massive Mobile, Ubiquitous and Open Learning) is funded by the European Community “Competitiveness and Innovation Framework Programme” (CIP). Theme 2: “Digital content, open data and creativity”. Obj. 2.3.a: “Piloting and showcasing excellence in ICT for learning for all”. It started in February 2014 and will last for three years. This project was conceived to create and implement sMOOCs in regional hubs with the ultimate goal of showing teachers at all educational levels how to design, organise and develop their own sMOOCs using mobile technology. Its objective is to extend to a pan-European scale the most successful learning experiences based on MOOCs in Europe. ECO works on increasing awareness of the benefits of Open Educational Resources (OER) for citizens as well as for institutions. A main key of the ECO sMOOCs is the accessibility for all kind of users, i.e. removing barriers in the learning processes making them accessible for people with special needs, those at risk of exclusion due to social status, age, etc.

The ECO project is a consortium of twenty-two partners, that is: eleven universities and two specialised higher education centres from six countries, seven small and medium enterprises specialised in social media, and institutions from outside the EU. The sMOOCs are offered in six languages: English, Spanish, French, German, Portuguese and Italian.

Firstly, we presented a previous research called “The ECO European Project: A New MOOC Dimension Based in an Intercreativity Environment” (Osuna et al., 2016), where it was pointed out that the ECO sMOOCs are based on both theories Connectivism (Siemens, 2004) and Social Constructivism (Vygotsky, 1978). It was demonstrated that the ECO sMOOCs are built up within an intercreative environment where learners can create their learning communities in order to develop social engagement and their own knowledge. This teaching and learning methodology where each user, teacher and student, can be a ‘webactor’ (Pisani & Piotet, 2009), helps to promote the collective intelligence of all the participants.

Secondly, this study focuses on the variables that promote intercreativity in the second iteration of the fifteen sMOOCs offered by ECO in order to expand the research throughout all the calls. Thus, it will be possible to get more data that will help factors such as intercreativity and collective intelligence to be deeply understood.

THEORETICAL FRAMEWORK

The ECO project is based on the sMOOCs. The first *s* stands for social because the learner is put at the centre of a social networking approach, learning through interaction and conversation with other learners and seamless because of the inclusive model and approach that crosses borders and allows access across devices (Fueyo et al., 2015). Thus, “ECO sMOOCs are “social”, since they provide a learning experience marked by social interactions and participation, and “seamless”, since ideally they should be accessible from different platforms and through mobile devices and integrate with participants' real life experiences through contextualisation of content via mobile apps and gamifications” (Fueyo, et al., 2015, p. 8). A sMOOC follows the culture of participation which according to Henry Jenkins (2009) it pursues the following features:

1. relatively low barriers to artistic expression and civic engagement,
2. strong support for creating and sharing creations with others,
3. some type of informal mentorship whereby what is known by the most experienced is passed along to novices,
4. members who believe that their contributions matter, and
5. members who feel some degree of social connection with one another (at least, they care what other people think about what they have created). (pp. 5-6)

As stated in the first report “The ECO European Project: A New MOOC Dimension Based in an Intercreativity Environment”, these are the main characteristics of the ECO sMOOCs:

They are multilingual courses designed with special attention to both people in risk of social exclusion and people with visual and hearing disabilities; they facilitate interaction, communication and feedback with other students doing the course and with the academic staff; they promote collaboration, creativity and personal reflection; the learning environment facilitates participation in a multicultural context and a variety of scenarios, game-based exercises and technologies; they allow maximum accessibility and usability and are available on mobile devices; structure of the courses is flexible and based on Constructivism, Connectivism and social networking where everybody being involved is *EMEREC* (Cloutier, 1973). (Osuna et al., 2016, p. 119)

One of the key factors of sMOOCs is intercreativity. Tim Berners-Lee came up with the term in 1996 by joining the words interactivity and creativity. This author explains:

We should be able not only to follow links, but to create them – between all sorts of media. We should be able not only to interact with other people, but to create with other people. Intercreativity is the process of making things or solving problems together. (Berners-Lee, 1999, p. 182)

It refers to the idea of creating new knowledge and more creative and productive content thanks to the collaboration and the participation of each participant. This type of intercreative environment is typically found in “techno-social communities” (Camarero Cano, 2015). As explained by Lucía Camarero Cano (2015): “one way or another, we live in a society in which analogue and digital social networks are interconnected, forming traditional (analogue) and virtual (digital) communities whose indissoluble convergence is what we call technosocial communities” (p. 188). Hence, the ECO sMOOCs are developed in these techno-social communities where the intercreative flourishes in order to promote collective intelligence. That is possible because the sMOOCs are not enclosed in themselves, but they incorporate in their everyday *praxis* social networks such as Facebook and Twitter among others, open webinars in which anyone can participate, as well as other open resources.

As was seen in the research that took place in the first iteration (Osuna et al., 2016), the ECO sMOOCs have been created within an intercreative environment, that is why, it is possible to talk about a common brain, that is, the development of collective intelligence (Lévy, 1994) and smart mobs (Rheingold, 2002). No one knows everything, but everyone has certain skills and some knowledge. Collective intelligence is much more than the sum of individuals. If everyone joins in and shares their bit of knowledge, society will be one step closer to achieving one stronger common force with everyone working in the same direction (Lévy, 1994). So that, Howard Rheingold (2002) states that:

Smart mobs consist of people who are able to act in concert even if they don’t know each other. The people who make up smart mobs cooperate in ways never seen before because they carry devices that possess both communication and computing capabilities. (p. xii)

The collective intelligence and the idea of the smart mobs will benefit the sMOOCs in order to boost social engagement and intercreativity. The more it increases these factors, the more it will expand a common brain and vice versa. Howard Rheingold (2002) explains how important is to be aware of some aspects in order to be able to make intelligent decisions via technology:

- How to regulate the mobile Internet in ways that free innovation and promote competition without undermining the foundations of democratic societies
- The interdisciplinary dynamics of cooperation systems, natural and artificial
- The cognitive, interpersonal, and social effects of mobile, pervasive, always-on media
- How ubiquitous mobile Internet Access and information embedded in places might reshape cities. (p. 202)

The sMOOCs endeavour to give these capabilities and training to all their participants. Thus, the teaching and learning experiences will take place ubiquitously, anywhere, anytime and from any kind of device, within techno-social communities. It is not possible to achieve goals individually that will be accomplished collaboratively. Hence, the ECO sMOOCs work on improving all the small factors that are involved and make a difference regarding intercreativity and collective intelligence achieving a more interconnected society.

RESEARCH METHODOLOGY

This research along with the previous one (Osuna et al., 2016) was a first approach to the study of intercreativity and collective intelligence from a quantitative methodology perspective. Afterwards, a second research will be done within the three iterations focusing on the qualitative aspects. Thus, both results will be contrasted for a more complete evaluation of the data. As was done in the previous research regarding the first iteration, this second one aims to analyse how the sMOOCs offered by the ECO project promote intercreativity and contribute to developing collective intelligence.

Therefore, the dimensions taken into consideration were:

- “To examine the gender of the students enrolled in the sMOOCs.
- To evaluate content assessment.
- To analyse course content.
- To study communication e interaction.
- To evaluate user satisfaction” (Osuna et al., 2016, p. 120).

In the following table, there are listed the four intercreativity-related dimensions and their respective categories analysed:

Table 1: The dimensions and categories evaluated (Osuna et al., 2016, p. 120).

Dimensions	Categories
Content assessment	<ul style="list-style-type: none"> - suit the course - are interesting - are rigorous - are up-to-date - accessible to all people
Content course	<ul style="list-style-type: none"> - Technical problems support - Suitability of tasks and games - Platform usability - Design of collaborative tasks - Video subtitles - Responses given by teaching team - Design of individual tasks - Load distribution during the course - Audiovisual materials - Documents provided - Videos and video lectures
Communication and interaction	<ul style="list-style-type: none"> - Social interaction and support given by other participants - Posts and comments made by students - Posts, educational artefacts and shared resources - Feedback and comments on the work done
User satisfaction	<ul style="list-style-type: none"> - Designed to achieve the proposed objectives - Promotes learner creativity - Promotes discussion and personal reflection - Promotes learner engagement

Data was collected using a self-administered questionnaire with closed or semi-closed questions. It was deployed using the LimeSurvey open source platform and the data collected was analysed with SPSS (Statistical Package for Social Sciences). Given its universal scope and the diversity of the courses, a tool had to be designed that:

- a) It could be applied on every MOOC designed.
 - b) Comparison of results between different MOOCs could be done.
 - c) Information on people following the MOOCs could be achieved.
 - d) It allowed collect opinions from the people in the MOOCs.
 - e) It was easy and quick to answer, given that who participated in the MOOCs come from very different life situations, cultures and professional experiences.
 - f) It covered the main dimensions of relations with MOOCs.
 - g) Left aside the features of the MOOCs that could be monitored through other channels of information, as tracks left in participation in tasks, forums, quizzes, etc.
 - h) Itself could be evaluated, with a view to its application in future developments of the ECO project.
- (Fueyo, et al., 2016).

The sample used was the seventeen sMOOCs in six different languages offered by the ECO Project:

1. Alfabetización Digital para Personas en Riesgo de Exclusión: Estrategias para la Intervención Socioeducativa.
2. Competencias creativas para el profesorado (Creativity MOOC Camp).
3. Competências digitais para professores.
4. Comunicación y aprendizaje móvil.
5. DIY Education aux médias et à l'information.
6. ELearningProjektmanagement an Schulen.
7. Flipped Classroom.
8. Innovación Educativa y Desarrollo Profesional. Posibilidades y límites de las TIC.
9. Introdução aos Sistemas de Informação Geográfica.
10. M'appare il mondo: dalle carte alla Terra digitale partecipata.
11. PreCalculus: Introduzione alla Matematica per l'Università.
12. MPSW: "Ma pédagogie à la sauce web 2.0".
13. Necessidades Educativas Especiais. Como ensinar, como aprender.
14. Recursos Educativos Abiertos. Aplicaciones pedagógicas y comunicativas.
15. Videos for teaching, learning and communication.
16. Estrategia en la gestión de comunidades Online. El Community Manager
17. sMOOC Step by Step

FINDINGS

Below is a summary of the results for each variable related to intercreativity:

A total of 725 people completed the questionnaire: 51% were women, 46% were men, 3% either did not answer the question or declined to. There is a significant variation from the data of the first iteration, where men only reached 38% of total.

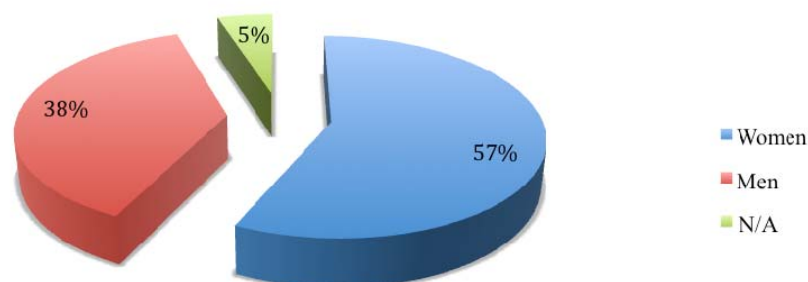


Figure 1: Gender first iteration (Osuna et al., 2016, p. 121).

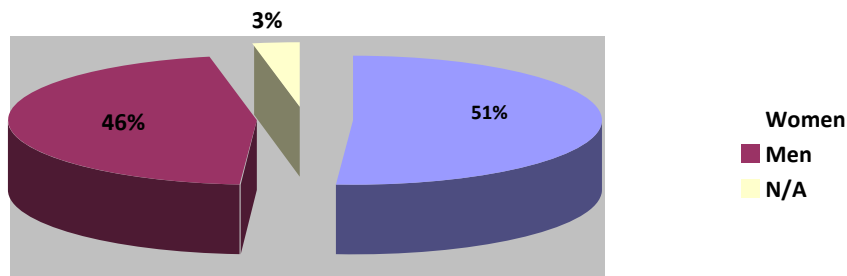


Figure 2: Gender second iteration.

Most of the participants gave positive values when assessing the content. Five aspects were taken into consideration: 'suitability of the course topic', 87% in the first iteration and in the second 97,4% of the people gave a favourable assessment whereas the opinion of 10% in the first iteration and 2,6% in the second was negative; 'Content is interesting', 87% in the first iteration and 97,1 in the second was favourable while 10% in the first iteration and 2,9 in the second was negative; 'Content is rigorous', 82,5% in the first iteration and 96% in the second one offered a positive assessment while 14% in the first iteration and 4% in the second was negative; 'Content is up to date', 88% in the first iteration, 97,1% in the second was favourable assessment and just 9% in the first iteration and 2,9% in the second was negative; and the biggest criticism was for 'Content is accessible to all people', where the assessment in 72% in the first iteration and in the second 94,6% of the cases was favourable and in 24% in the first iteration and 5,4% in the second it was negative because the course content was not always accessible by people with different learning experiences. As can be observed by comparing both iterations, the positive percentages of favourable valuations contained in the second edition are much higher than in the first one.

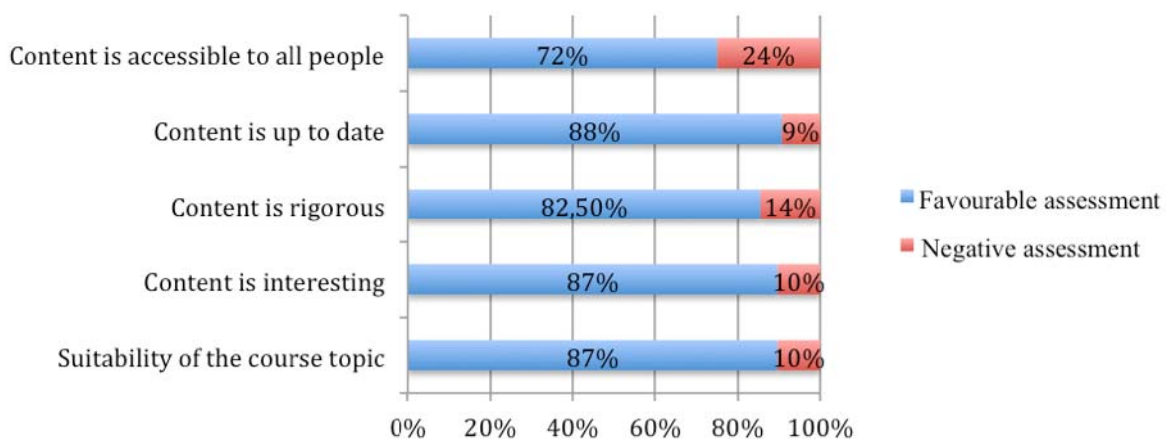


Figure 3: Content assessment first iteration (Osuna et al., 2016, p. 122).

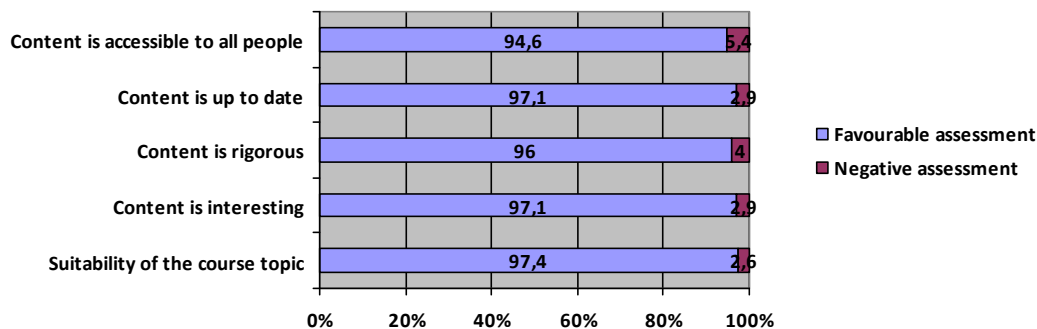


Figure 4: Content assessment second iteration.

When it comes to course content the picture was different: on one hand, satisfaction was high regarding the material prepared for each course (videos, video lectures, documents); on the other hand, users continue to be more critical of the technical infrastructure, platform usability, technical support and the design of collaborative tasks. It continues to be important to bear in mind that a high percentage of students did not answer due to lack of technical experience and this should be considered a training obstacle more than a technical problem. Should be noted that the assessment given by the students regarding the documents produced by peers have a good assessment. Regarding the written materials, it necessary to point out that they have had an improvement in the assessment of students approaching the Good valuation of video materials. That is to say, “the dimensions related to the materials have gained importance” (Fueyo et al., 2016) On the other hand, “the other critical aspect, to the extent that exceeds a 13% of learners who describe it as poor or very poor, is related to the answers by the teaching staff, followed by the design of collaborative tasks (12.1%)” (Fueyo et al., 2016). Global data have not changed from one edition to another, so it remains an important task for the future.

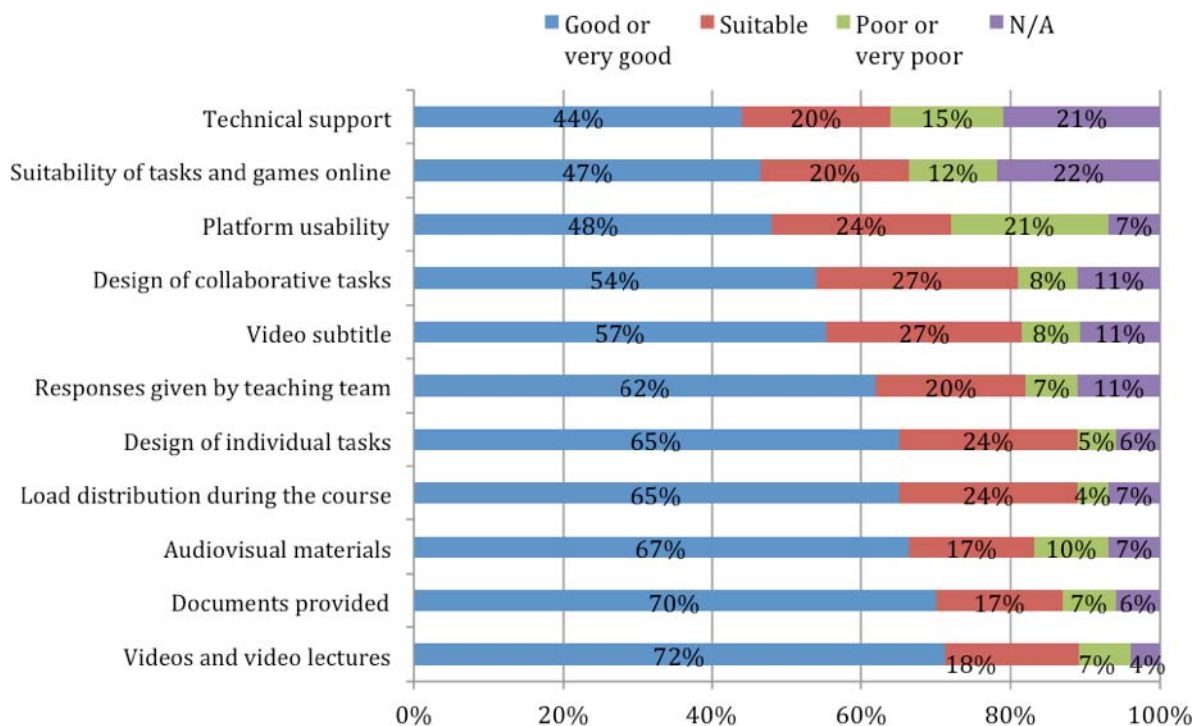


Figure 5: Course content first iteration (Osuna et al., 2016, p. 122).

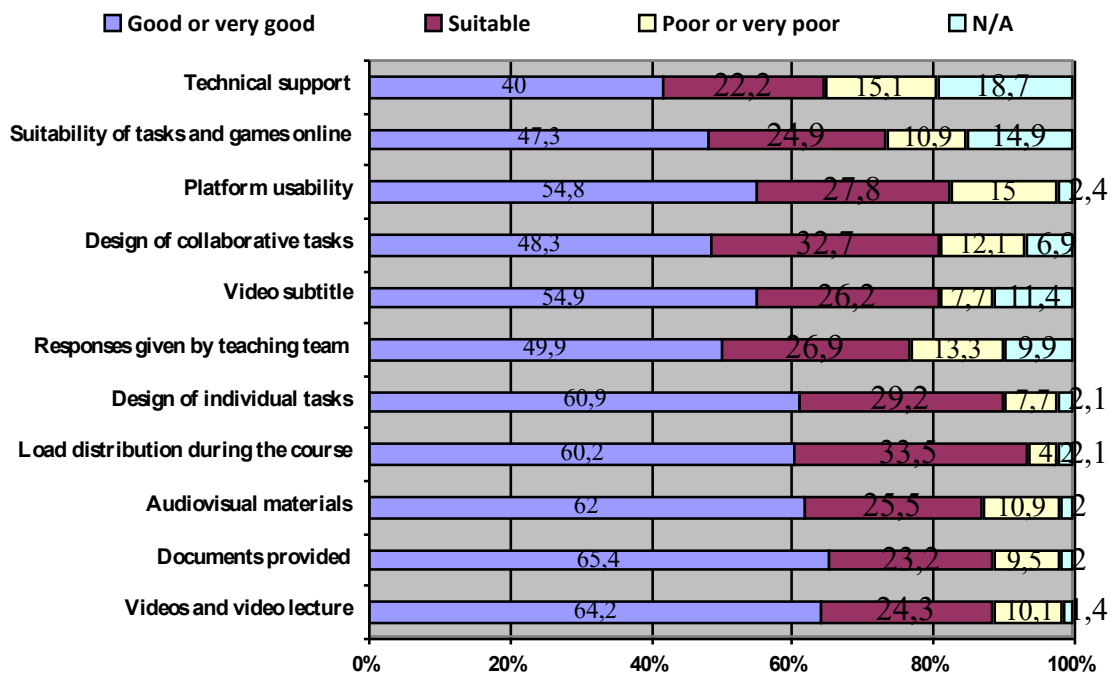


Figure 6: Course content second iteration.

Design aspects of the course instructions are rated very positively. The design of individual tasks and the audio and video materials development, as well as their distribution, have found positive responses (Good and Very Good) over 60%. Likewise:

The comparison of the values obtained by these aspects in the first and second evaluation is of special interest. It is thus seen that, except for the usability of the platform and the adequacy of quizzes or tests, the project has experienced a decline in the percentage of those who qualify the course dimensions as good or very good. However, differences between the two assessments are very scarce, except for the teaching staff support and, to a lesser degree, the videos. (Fueyo et al., 2016)

The feedback given regarding course communication and interaction was mainly positive. When considering the four aspects within this variable, the courses were seen as participative and encouraging social engagement. However, continual improvement in this area is needed to achieve higher levels of satisfaction. Participants expressed generally that peers are potential partners in the learning process:

The social interaction generally experienced during the course was considered excellent by 18.7% of those polled and good by 42.6% of them. In fact, there are four dimensions of this social experience - overall interaction, posts and materials shared by peers- whose positive rating (excellent or good) exceeds 60%. (Fueyo, 2016)

The courses' effort to generate interaction among participants is recognised by the participants themselves.

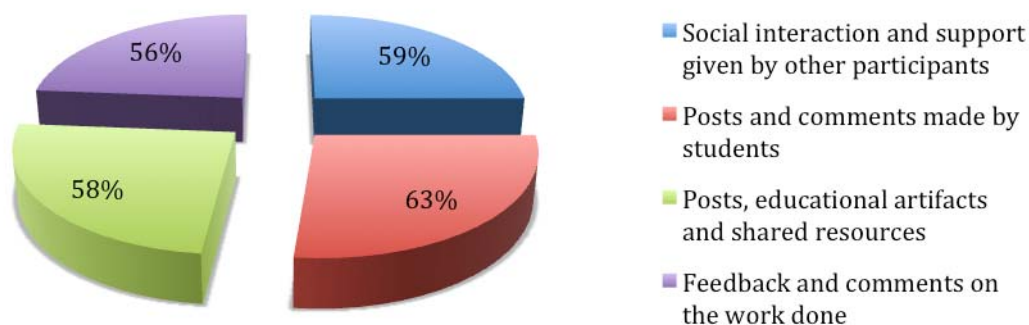


Figure 7: Communication and interaction first iteration (Osuna et al., 2016, p. 123).

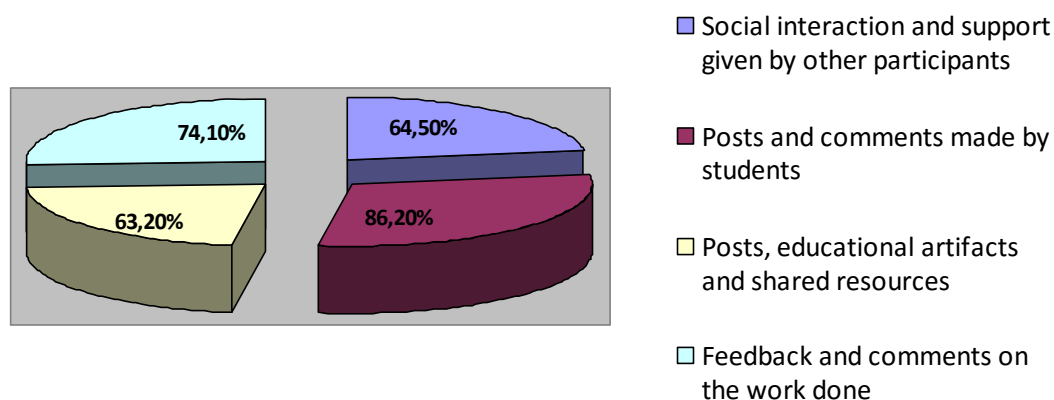


Figure 8: Communication and interaction second iteration.

User satisfaction focused on expectations, creativity, discussion and personal reflection, and engagement and interaction among participants. The five aspects received favourable reviews and verify that the design of the courses actively enhances these points.

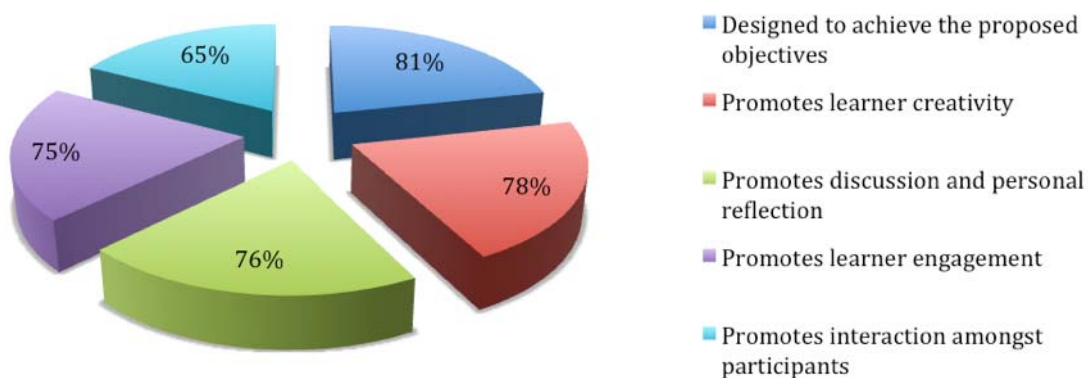


Figure 9: User satisfaction first iteration (Osuna et al., 2016, p. 123).

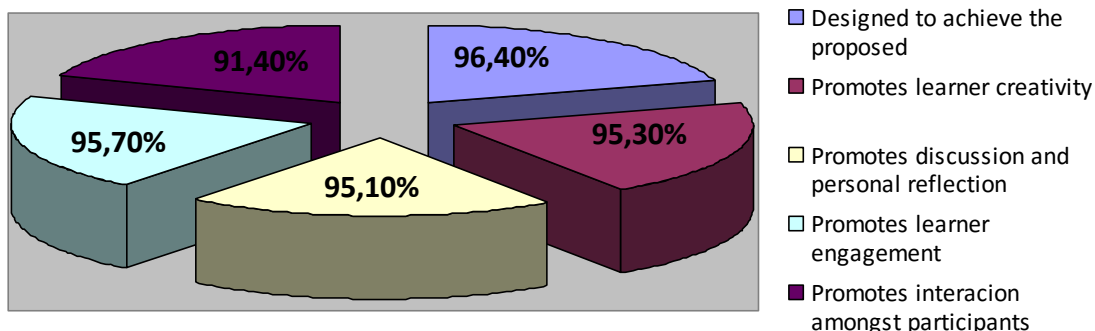


Figure 10: User satisfaction second iteration.

The high degree of overall satisfaction of participants in the sMOOCs can be seen in almost every aspect of the questionnaire. The results reaffirm the achievement of the objectives and, in particular, “over 80% believe that the course is correctly designed to achieve the objectives, being probably one of the most important criteria from a quality standpoint” (Fueyo, 2016). The aspect that has received very good scores, but less than other sections is the promotion of the interaction among students course. Overall, the general results achieved are much higher than those of the first iteration .

CONCLUSIONS

As was found out within the first iteration research (Osuna et al., 2016), the overall results showed that the ECO project sMOOCs were designed and implemented under the prism of intercreativity. The design of the courses, their content and their teaching and learning methodology, based on Constructivism and Connectivism, are part of an attempt to develop the courses taking into account the characteristics of intercreativity. Thus, this second research performed within the second iteration, shows that the sMOOCs are developed within an intercreative environment. That is, the ECO sMOOCs promote interaction among all the participants, students and teachers, turning both into active producers of knowledge as well as they having a high ability to spark discussion and personal reflection, critical thought and creativity.

The areas that need improvement are mainly technical support and the usability of the platform. On the other hand, all the gamification tasks need to be improved, since the valuation of students has not improved in the second iteration. Another aspect to focus on is the interaction among all the participants in the courses because although it has increased, it is something that has continue to be boosted and enhanced in order to get an intercreative environment. Finally, a fact to be highlighted is the regression regarding the assessment of students within the second iteration in comparison with the first one.

A new qualitative study of intercreativity in the sMOOCs of the ECO project has been launched. The results of both will allow new strategies to be designed and implemented to improve the courses, so that it will be possible to build and strengthen the collective intelligence.

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Investigation Of Anger Expression Styles Of The Secondary School Students Through Picture Drawing Method

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ABSTRACT

Aim of this study is to find out anger expression styles of secondary school students through drawing pictures. For this reason, students were asked to draw a picture that reflects their thoughts about “how they express themselves when they get angry”. In this qualitative research, content analysis was used. Sample group is comprised of 150 students (50 female, 100 male) between the ages of 15 and 18 high school students from İstanbul (25) and Balıkesir (125) in 2014-2015 academic year. Collected data was analyzed by categorical analysis method. Data was evaluated by calculating frequency (f) and percentage (%). Drawings of the students were categorized by types of anger expression (anger-in, anger-out, anger control) in “The State Trait Anger Scale” which was developed by Spielberger et. al (1983). The obtained expressions are grouped under 27 titles regarding to similar properties. The most frequent behavior patterns of students when they get angry are respectively “shouting”, “physical damage”, “swearing” and less often “riding a motorcycle”, “talking to oneself”, “exercising with sandbag”. Then the expressions which fall into the categories of anger-in, anger-out, anger control was evaluated by accounting frequency (f) and percentage (%) in terms of gender and disciplinary penalty variables.

Keywords: anger expression, picture, behavior pattern, gender, disciplinary penalty

INTRODUCTION

Anger is an emotion with varying degrees of intensity but that may led to positive or negative results in almost every individual's life. Anger might be expressed varies with context and shows an alteration by means of the ongoing developmental period or conditions. In recent years, coping with anger and the ability of expressing in acceptable levels of social life have been the focus of several researchers and practitioners. There are many researches and training programs available in order to reduce, cope with and control anger (Duran & Eldeleklioğlu, 2005; Karataş, 2009; Serin & Genç, 2011; Sorias, Aydın & Sütçü, 2010; Cenkseven, 2003). When the aforementioned studies examined, effectiveness of reducing and controlling adolescents' anger was evaluated by means of cognitive behavioral techniques for reducing anger and aggression, and group therapy programs using these techniques. Besides, a considerable part of these studies has been applied to adolescents within preventive counseling activities. Adolescents have a complex and changeable mood due to the secreting hormones. Expecting social acceptance the adolescents, cannot comprehend the reasons of the rules which are strict and stereotyped for them and have difficulty in adapting the environment. This situation makes them fragile, furious and even aggressive (Adana & Arslantaş, 2011). Adolescents need to have a healthy period in puberty in order to grow to required maturity and meet the expectations. The fundamental condition of a healthy period in puberty is to recognize the strong emotions and control the behaviors during puberty (Duran & Eldeleklioğlu, 2005).

Anger is one of the basic emotions such as love, fear and enjoyment that experienced intensively in puberty. Anger is an emotional reaction to repression, disappointment, hurt, fear and violation of our rights (Kulaksızoğlu, 2001). Anger arises in individuals in different ways. These are anger-in, anger – out and anger control (Bostancı, Çoban, Tekin & Özen 2006; Lerner 2007; Özer 1997; Starner & Peters 2004; Sung, Puskar & Sereika 2006; Tambağ & Öz 2005). Anger-in is an alternative adjustment mechanism that the individual uses against anger factors by hiding or holding inside of oneself. Anger - out is abreacting the anger by verbally or acting it. Anger control is the state that in what extent the individual control his/her anger or tend to calm down

while involved in an interaction and the controlling experiences that express the anger with personal reactions (Starnes & Peters, 2004).

It is stated that failure in appropriate expression of anger led to some behavioral (timidity, silence, crying, sadness, anorexia, bulimia, etc.) and physiological (sweating, headache, difficulty in breathing, etc.) problems which seen particularly in adolescents (Balkaya & Şahin, 2003), and factors such as health status, gender, academic success, family and peer relationships may determine the adolescents' way of anger expression. Better recognition of anger is important. In this way, school counselors may have a key role in developing appropriate coping skills for adolescents and early detection of mental and physical problems.

In the literature, there are many studies about investigating the anger of adolescents (Albayrak & Kutlu, 2009; Aslan & Sevinçler-Togan, 2009; Balkaya & Şahin, 2003; Gülveren, 2008; Kanoğlu, 2008). Albayrak and Kutlu (2009) found a positive significant correlation between trait anger and anger – in, anger – out and anger control in a study which aims to determine 16-18 years old adolescents' anger expression styles and relationship between their individual/family characteristics and anger expression styles. The study reveals that, as trait anger level increases, anger – in and anger – out levels increase but anger control level decrease. However, as anger – out level increases students' anger control decreases. The results of the study conducted by Starr and Peters (2004) show that there is a positive correlation between trait anger and anger control, anger – in and anger – out.

There are many ways to evaluate the anger of individuals. In this regard, quantitative methods were used more frequently. State-Trait Anger and Anger Expression Scale (Albayrak & Kutlu, 2009; Gülveren, 2008; Serin & Genç, 2011), State-Trait Anger Expression Inventory (Kanoğlu, 2008), Multidimensional Anger Scale (Balkaya & Şahin, 2003) and Locus of Control Scale (Gülveren, 2008) were used as data collection tools in the quantitative studies related to anger. At the end of analyzing these studies, it is seen that the State-Trait Anger Expression Inventory is mostly used for finding out anger expression styles of high school seniors and university students and their anger management skills. State-Trait Anger Scale and Locus of Control Scale are mostly used for measuring anger levels and anger expression styles of high school students and Multidimensional Anger Scale for determining emotions, thoughts and attitudes of individuals between the ages of 15-65 related to the anger. Also, Aslan and Sevinçler-Togan adapted Burney's (2001) Adolescent Anger Rating Scale to Turkish and made the analysis of linguistic equivalence, reliability and validity.

The use of drawing method for anger expression may provide an advantage in terms of acquiring more and diverse data without qualitatively categorizing individuals' opinions. Adolescents' reflecting feelings of anger and expression of life through picture drawing method is important in order to understand their inner world and mentality. Therefore, it is aimed to investigate the anger expression styles of the adolescents through picture drawing method. The research questions have been listed below:

1. *How did secondary school students express their feelings of anger in their drawings regarding the moments when they get angry?*
2. *Do anger expression styles of secondary school students vary in terms of gender?*
3. *Do anger expression styles of secondary school students vary in terms of whether they get disciplinary penalty or not?*

METHOD

This research is a qualitative study investigating high school students' perceptions about their anger expression styles through the pictures they draw.

Study Group

The sample was comprised of 150 adolescents (50 female, 100 male) between the ages of 15 – 18 who study at four public school in Istanbul and Balıkesir during the 2014 – 2015 academic year.

Instruments and Data Collection

Data were collected during the fall semester of the 2014-2015 academic year. Students have been interviewed individually or in small groups at the counseling service. Consisting of 5 adolescents; the group members were positioned different places in the room in order not to be affected from each other. First, they were asked to fill an A4 – sized form, then the following instructions were given; "Think of a time you get angry, what makes you angry? How do you express something that makes you angry? Draw it back of the paper". There was no time limitation. After the students who feel sure about completing the picture were interviewed individually then their expressions which they used while drawing and incoherent parts were noted down to the back of the paper with the help of some questions.

Data Analysis

In this study, content analysis method was used to investigate anger expression styles of adolescent students through picture drawing method. Content analysis is a scientific approach that allows investigating the verbal, written and other materials in an objective and systematic manner (Tavşancıl & Aslan, 2001). In the social sciences frequently used content analysis is described as a systematic and reproducible technique that is summarized with some words of a text such as book, book chapter, letter, historical document, newspaper headline and article with coding which based on certain rules. Study is conducted aiming to determine the presence of specific words or concepts in a text or a set of text (Büyüköztürk, Kılıç-Çakmak, Akgün, Karadeniz & Demirel, 2008). According to Yıldırım and Şimşek (2006) who implies the fundamental purpose of content analysis as to reach the concepts and connection which explain the collected data, it is necessary to conceptualize the collected data, after then data should be organized validly and themes explaining the data should be determined (Sert, Kurtuluş, Akıncı & Seferoğlu, 2012).

In this study, pictures drawn by adolescents (150 pictures) was first prescreened and then evaluated considering whether they draw according to instructions. Afterwards, in order to ensure coding reliability the pictures were semantically examined by each researcher and evaluated anger expression styles of adolescents availing the code list based upon the related literature. Aforementioned code list is as below. After this phase data were arranged, grouped by code and digitized when applicable. The data obtained from this study were analyzed using the SPSS (Statistical Package for Social Sciences) 15.0 for Windows. Descriptive statistical methods (frequency, percentage) were used while evaluating the research data. Finally, the data obtained were interpreted.

Code List:

State-Trait Anger and Anger Scale (STAS) was used to determine the categories required for the analysis. State-Trait Anger and Anger Scale (STAS) was developed by Spielberger et. al (1983) in order to determine anger expression styles of students. State-Trait Anger and Anger Scale yielded three factors: anger-in, anger-out and anger-control (Öner, 1997). These three sub-group forms the code list, in other words main categories of the study.

FINDINGS

In this chapter, the findings related to the research questions are presented.

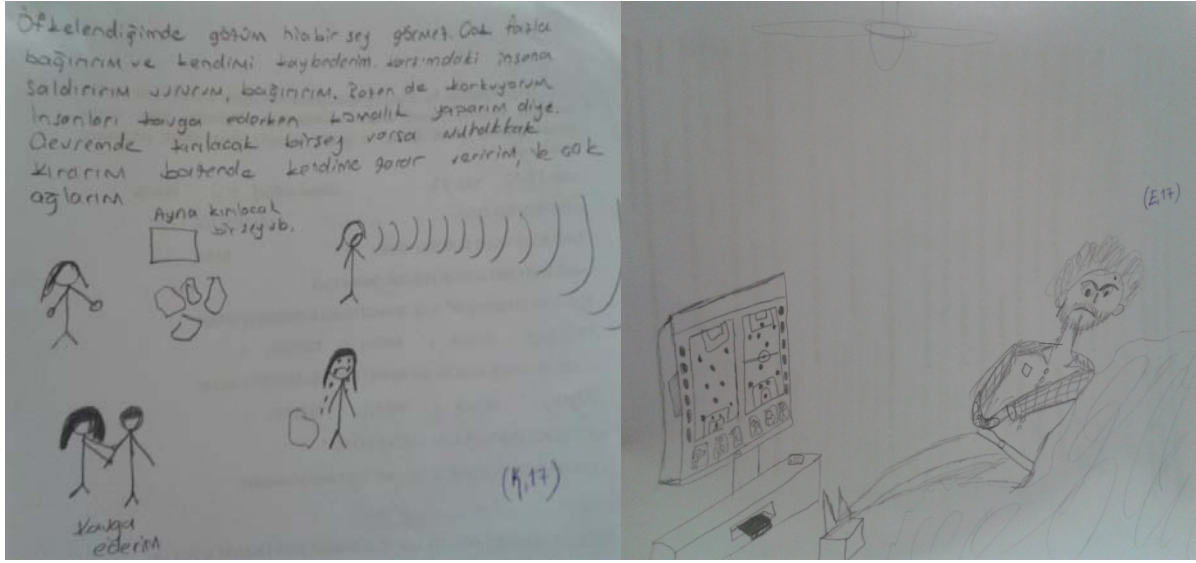
The first research question is “*How did secondary school students express their feelings of anger in their drawings regarding the moments when they get angry?*”. The findings for this question are given in Table 1.

Table 1. Anger expression styles of students in their drawings regarding the moments when they get angry		
	f	%
Shouting	73	48,7
Physical Damage (hit, beat, punch, stab, breaking nose, give a black eye, kick, push, spank)	69	46
Swearing (swear unreservedly, slang, cursing)	55	36,7
Damaging to goods (destroy, punch a pillow, shatter the dining table , throw the phone)	34	22,7
Walking (strolling, walking)	32	21,3
Listening to music	30	20
Threatening (warn sternly, “I will see you at the school sout”, “you will see” , “this is not here”)	26	17,3
Walk away (leaving there, keeping away from that person, change of venue)	19	12,7
Social support (call the friends, tell the family, share with a friend)	19	12,7
Playing a game (jumping a rope, playing ball, playing computer games)	17	11,3
Taking a deep breath	15	10

Crying	13	8,7
Smoking cigarette	12	8
Trying to forget	12	8
Self destruction (seaming, punch the wall, punch yourself in the mirror, hit yourself)	11	7,3
Sleeping	9	6
Writing (scribbling a paper, writing on a paper)	8	5,3
Talking (trying to understand by talking, putting some sweet lines, warning politely)	6	4
Reflecting (wreaking the anger on others, teasing someone else)	5	3,3
Sport	4	2,7
Drinking alcohol	4	2,7
Stay silent (not to speak)	4	2,7
Eating dessert (eating chocolate, eating dessert)	3	2
Ignoring (ignoring, paying no attention)	3	2
Exercising with a sandbag	2	1,3
Self-talking	2	1,3
Riding motorbike	1	,7

When Table 1 is examined, 27 different expressions are observed in the drawings of the students to explain their anger expression styles. Among these statements the drawings are respectively at most “shouting” (73, %48,7), “physical damage” (69% and 46), “swearing” (55, %36,7); the drawings respectively at least “ride motorbike” (1, 0.7%), “self-talk” (2, %1,3), “exercising with a sandbag” (2, 1.3% increase) are observed.

The drawings of the students about their anger expression styles have been divided into categories; anger in, anger out and anger control. Some of the pictures that could be example for the anger expression styles of the students. On the pictures there are M/F letters for gender and the numbers beside which show the ages.

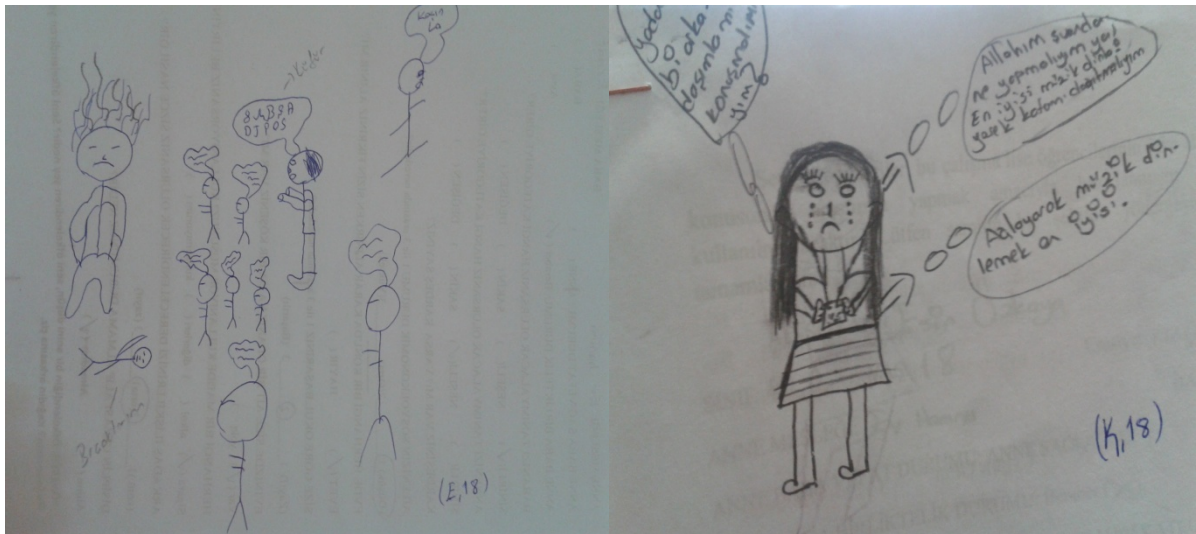


1. The drawing of the student F-17

Drawing 2. The drawing of the student M-17

The student F-17 expressed her anger by shouting at the angry time, and physical damage to the other person, breaking things up and crying on her drawings and written works.

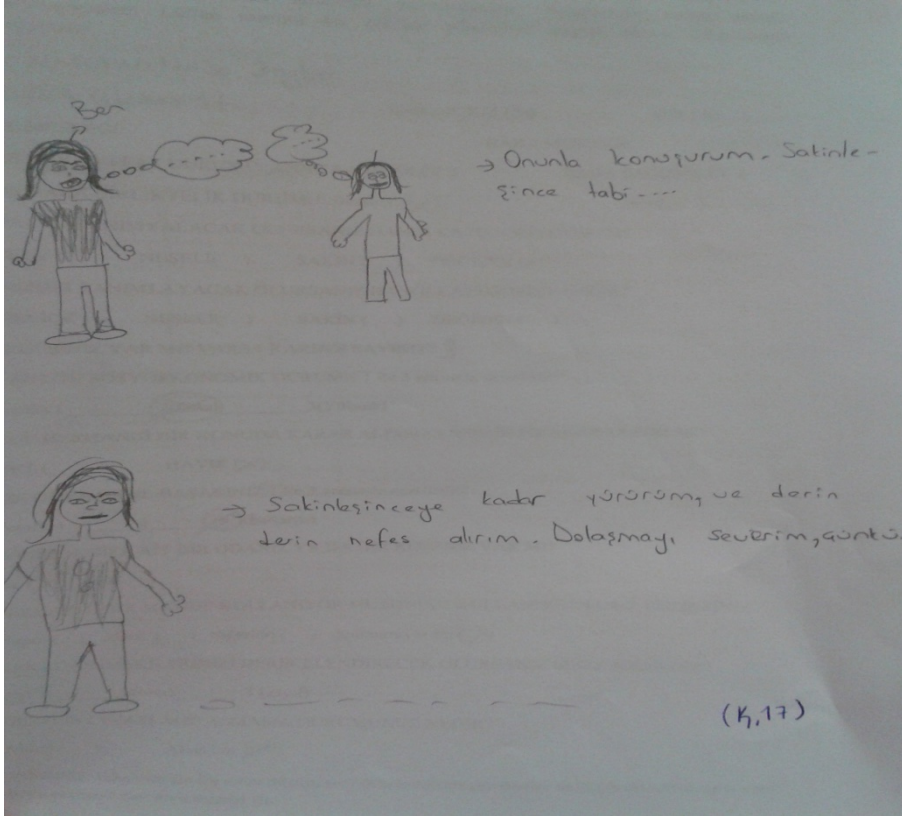
The student M-17 has drawn himself as playing computer games when he was asked to draw his behavior regarding the moments he gets angry. This drawing shows that the behavior of M-17 is in the category of anger control.



Drawing 3. The drawing of the student M-18

Drawing 4. The drawing of the student F-18

When student M-18 was asked what he meant after he drew the picture, he answered “When the people around swear at me, I get angry and I stab one of them”. This drawing shows that, anger is reflected outward as physical damage. The student F-18 stated that when she gets angry first she hesitates about what to do, then she shows the behaviors of crying and listening to music by drawing out the figure on her picture.



Drawing 5. The drawing of the student K-17.

When another 17 year-old female student is asked to draw her behaviors of the moment she gets angry, she stated that first she takes a deep breath and walks to control her anger so as to calm down, after she calms down she tries to talk with the person she is angry with.

The second research question is “Do anger expression styles of secondary school students vary in terms of gender?”

The findings for this question are given in Table 2.

Table 2. Investigating the anger expression styles of secondary school students in terms of gender					
		Female (50)		Male(100)	
		f	%	f	%
Anger In	Self destruction	3	6.0	8	8.0
	Crying	11	22.0	2	2.0
	Smoking cigarette	0	0	12	12.0
	Drinking alcohol	0	0	4	4.0
	Self-Talking	1	2.0	1	1.0
Anger Out	Shouting	28	56.0	45	45.0
	Damaging to Goods	8	16.0	26	26.0
	Physical Damage	15	30.0	54	54.0
	Swearing	9	18.0	46	46.0

	Threatening	1	2.0	25	25.0
	Reflecting	0	0	5	5.0
Anger Control	Walking	10	20.0	22	22.0
	Listening to music	17	34.0	13	13.0
	Moving Away	7	14.0	12	12.0
	Playing a game	1	2.0	16	16.0
	Social Support	8	16.0	11	11.0
	Writing	4	8.0	4	4.0
	Sport	1	2.0	3	3.0
	Riding a motor-bike	0	0	1	1.0
	Eating Dessert	2	4.0	1	1.0
	Ignoring	2	4.0	1	1.0
	Taking a deep breathe	9	18.0	6	6.0
	Trying to deal by talking	5	10.0	1	1.0
	Sleeping	2	4.0	7	7.0
	Trying to Forget	6	12.0	6	6.0
	Staying Silent	4	8.0	0	0
	Exercising with a sandbag	0	0	2	2.0

In table 2, the statements under the category of Anger – In such as “crying” (11, %22) is mostly used by female students and “smoking cigarette” (12, %12), “self – destruction” (8, %8), “drinking alcohol” (4, %4) is mostly used by male students. It is observed that the statements which fall into the Anger-Out category such as “shouting” (28, %56) is mostly used by the females; “physical damage” (54, %54), “swearing” (46, %46), “damaging to goods” (26, %26) and “threatening” (25, %25) are mostly used by the males. It is found that, the statements under the category of Anger Control such as “listening to music” (17, %34), “taking a deep breath” (9, %18) and “social support” (8, %16) are mostly used by the females; “playing a game” (26, %16) statement is mostly used by the males. Additionally, the statements of “walking” (females %20, males %22) and “moving away” (females %14, males %12) are found in the similar rates for both gender.

The third research question is “Do anger expression styles of secondary school students vary in terms of whether they get disciplinary penalty or not ?”

The findings for this question are given in Table 3.

Table 3. investigating anger expression styles of secondary school students in terms of whether they get disciplinary penalty or not					
		Taking Disciplinary Punishment(46)		Not Taking Disciplinary Punishment(104)	
		f	%	f	%
Anger – in	Self destruction	4	8,7	7	6,7
	Crying	2	4,3	11	10,6
	Smoking cigarette	7	15,2	5	4,8
	Drinking alcohol	2	4,3	2	1,9
	Self-Talking	2	4,3	0	0
Anger – out	Shouting	31	67,4	42	40,4
	Damaging to Goods	12	26,1	22	21,2
	Physical Damage	41	89,1	28	26,9
	Swearing	28	60,9	27	26,0
	Threatening	15	32,6	11	10,6
	Reflecting	0	0	5	4,8
Anger Control	Walking	9	19,6	23	22,1
	Listening to music	5	10,9	26	25,0
	Moving Away	2	4,3	16	15,4
	Playing a game	3	6,5	14	13,5
	Social Support	2	4,3	17	16,3
	Writing	2	4,3	6	5,8
	Sport	1	2,2	3	2,9
	Riding a motor-bike	0	0	1	1,0
	Eating Dessert	1	2,2	2	1,9
	Ignoring	1	2,2	2	1,9
	Taking a deep breathe	3	6,5	12	11,5
	Trying to deal by talking	1	2,2	5	4,8
	Sleeping	3	6,5	6	5,8
	Trying to Forget	3	6,5	9	8,7
	Staying Silent	0	0	4	3,8
	Exercising with a sandbag	0	0	2	1,9

In the Table 3, it is seen that expression of “smoking” is mostly used by penalized students (7, %15,2) and “crying” by others (11, %10,6). Expressions under the category of anger - out such as “physical damage” (41, %89,1) “shouting” (31, %67,4) and “swearing” (28, %60,9) is prominently observed in penalized students. Among the students who haven’t got disciplinary penalty the “Shouting” expression (42, %40,4) has the highest proportion, the other expressions are scattered proportionally and have a low proportion. Expressions fall into the category of anger control such as “walking”, “social support” and “moving away” are found to be observed in the students who didn’t get any disciplinary penalty. Expressions fall into the category of anger control such as “listening to music” (26, %25), “walking” (23, %22,1), “social support” (17, %16,3) and “moving away” (16, %15,4) mostly observed among the students who didn’t get any disciplinary penalty. Among the penalized students “walking” (8, %19,6) has the highest proportion, the other expressions scattered proportionally and have a low proportion.

DISCUSSION AND RESULTS

In the study which aims to investigate anger expression styles of the secondary school students through picture drawing method, the students’ drawings were collected under 27 titles and the results were discussed in accordance with these titles. One of the expected results of the study is drawing process enables abreacting besides suppressing the difficulty in expressing for participants who can comprehend the discrete operations.

Considering the pictures related to the students’ behaviors when they get angry, it is detected that most frequently used drawings are respectively “shouting”, “physical damage”, “swearing” and less often “riding a motorcycle”, “talking to oneself”, “exercising with sandbag”. It’s seen that many of the students prefer acting out

their anger while minority of them attempt to control it. According to Spielberger (1991) anger out means that turning anger onto objects or other people around. People who show anger out are usually sensitive and intolerant against environmental obstacles and control attempts (Özer, 1994).

Considering the findings related to anger expression styles of students in terms of gender, expressions such as “crying” is mostly used by female students under the category of anger – in and “smoking cigarette”, “self – destruction”, “drinking alcohol” is mostly used by male students. Under the category of anger – out, expressions such as “shouting” is mostly used by female students and “physical damage”, “swearing” by male students. Expressions such as “listening to music”, “taking a deep breath” and “social support” is mostly used by female students and “playing a game” by male students fall into anger – control category.

As the findings suggest, anger expression style of female students is “crying” which they are more likely to do so in terms of their gender roles whereas male students prefer to show a more aggressive behavior like “self – destruction” due to their gender roles. Among other researches on the subject there have been found some findings parallel to findings of the present study. According to the results of the study made by Demirci Danişık (2005) show that female students suppress their anger more than males do, male students express their anger more aggressively and there is a correlation between gender and anger. So, those who have masculine roles are more prone to anger, other people can easily observe their anger and stated that they are less inclined to suppress their anger. On the other hand those of the feminine role are less prone to express their anger apparently, they stated that they are generally inclined to suppress and control their anger. In the literature, there are some studies contrary to the existing findings that suggest there is no significant difference in terms of gender (Sweeting & Hunt, 2014; Kopper, 1993).

Considering the findings of whether they get disciplinary penalty or not, researchers found that the expression of “smoking” is mostly used by penalized students and “crying” by others. Expressions under the category of anger - out such as “physical damage”, “shouting” and “swearing” is prominently observed in penalized students. Expressions fall into the category of anger control such as “walking”, “social support” and “moving away” are found to be observed in the students who didn’t get any disciplinary penalty.

Findings related to the disciplinary penalty reveals that penalized students are more prone to act their anger out and aggressive, while the others have more attempts to control their anger. As the other studies in the literature suggest; Karataş (2008) found a significant difference between students’ guilt and shame scores on behalf of penalized students in which she investigated the high school students’ guilt and shame scores in terms of gender and whether they get disciplinary penalty or not. Appearing in the discipline committee of high school and feeling wretched in that process may lead to psychological tension and make the students feel guilty and humiliated. Özmen (1995) stated that antisocial tendency scores of penalized students are higher than non – penalized students in his study which aims to find out relationship between disciplinary penalty and adjustment situations of high school students. Also Mercan (2001) asserts that penalized students feel regretful, sad and angry in his study examining the views on the results of imposing disciplinary penalty. Considering the aforementioned studies, it is possible to say getting disciplinary penalty may cause psychological tension, guilty and embarrassment for students. All these studies and findings are similar to the findings of this research.

Based on the results of the study, the following recommendations are put forward. In order to support protective and supportive consolidation activities; considering the developmental characteristic of the adolescents some groups (such as anger control groups, coping with anxiety groups, interaction groups) can be created where the students can express themselves. Giving importance to social activities at school activities, students improve their sporting activities in order to better evaluate the time, departure time to be useful for day trips and school parties. Attaching more importance to social activities at school, increasing sports activities for making use of the time well, sparing time for one – day tours and school parties may be beneficial. In this way, students have the chance of being discharged and expressing themselves more easily. This study revealed that the students express themselves and discharge through drawing method. From this point of view when particularly studying with the adolescents, doing expressive and art therapy supported activities, psychological counseling activities are considered to be useful for students to express themselves in different ways, especially for the ones who have difficulty in controlling anger.

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Investigation Of Mobile Assesment Environment Design Studies

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ABSTRACT

One of the essential components of education is evaluation and assessment. Evaluation and assessment is significant for e-learning activities as well as traditional face to face activities. Development in mobile technologies and internet have facilitated using mobile devices for e-learning activities. Mobile learning is to deliver or to receive content and learn via mobile devices. It is possible to find various m-learning researches in the literature. Using mobile devices for assessment is infrequent in comparison with using for instruction.

Document analysis was performed in this study. This research was focused on researches which was intended designing mobile assessment environment. For his purpose, studies between 2008 and 2016 years were investigated via electronic databases. Fourteen studies were reached within the scope of literature review. Studies were examined in point of methodologies, participants, technological frameworks, designed environments and findings. In this study, researchers showed the circumstance of using mobile devices for evaluation and assessment goals. It is assumed that this study will guide and provide information for researchers who are interested in researching about mobile assessment.

INTRODUCTION

Mobile learning (m-learning) is to deliver or to receive content and to learn via mobile devices. M-learning is also defined as an e-learning approach that uses mobile devices (Riad & El-Ghareeb, 2008). Kukulska-Hulme and Traxler (2005) describes mobile learning as a learning approach that is implemented with mobile devices like smartphone or PDA which make learning portable, spontaneous and individual. M-learning and ubiquitous learning implementations have been increased in the last decade according as development of mobile technologies. Furthermore, personalized and adaptive functions of m-learning systems have become key features (Harchay, Cheniti-Belcadhi & Braham, 2012a).

Evaluation and assessment is significant for e-learning activities as well as traditional face to face learning activities. Harchay, Cheniti-Belcadhi and Braham (2012b) underline that assessment is fundamental component of learning process and inseparable from learning activities. Assessment is a formal process that is planned to get information about students' educational variables like knowledge, attitude, ability and purposes to get valid, reliable and useful information about students' achievements and effectiveness of instruction (Riad & El-Ghareeb, 2008). All instructional processes can be applied more useful and more powerful using mobile technologies (Nikou & Economides, 2014). Assessment process is also one of the learning activities which can be performed via mobile devices. In addition, Nikou and Economides (2014) highlight mobile assessment is an up and coming assessment approach. However, The success of assessment process depend on user acceptance. They also state that mobile assessment can be performed in both indoor and outdoor (park, museum, etc.) learning areas whereby students use their own mobile devices to reach materials and answer questions.

It is possible to find various m-learning researches in the literature. M-learning activities only for instructional purposes are more common beside mobile assessment activities. As mentioned above, mobile assessment is significant and rising approach for e-learning/m-learning activities. The aim of this study is to investigate and analyze researches which was intended designing and/or using mobile assessment environment.

THE STUDY

In this study we analyze researches about mobile assessment environments. Document analysis is employed in the scope of the study goal. Document analysis is a form of qualitative research (Patton, 2005). In this study, fourteen documents are interpreted to summarize and find out tendencies about mobile assessment topic for researchers and developers. Within the document analysis, relevant keywords are searched in common scientific search engines and databases, i.e. EBSCO, Web Of Science, ERIC, Scopus, Springer and Google Scholar, to reach studies in the literature. Used keywords in queries are *mobile learning*, *mobile assessment*, *m-learning*, and

mobile-based assessment. Study search is applied with year limitation between 2008 and 2016. Titles of the investigated articles are shown in Table 1.

Table 1. List of the article titles

Study No	Title	Researchers	Year
1	A Service Oriented Architecture to Integrate Mobile Assessment in Learning Management Systems	Riad & El-Ghareeb	2008
2	Mobile Formative Assessment Tool Based on Data Mining Techniques for Supporting Web-Based Learning	Chen & Chen	2009
3	The Implementation and Evaluation of a Mobile Self- and Peer-Assessment System	Chen	2010
4	Towards a Formal Description of Mobile Personalized Assessment	Harchay, Cheniti-Belcadhi & Braham	2012a
5	A Model Driven Infrastructure For Context-awareness Mobile Assessment Personalization	Harchay, Cheniti-Belcadhi & Braham	2012b
6	Apps for Assessment: A Starting Point	Besara	2012
7	Mobile Assessment Guide for Research in Schizophrenia and Severe Mental Disorders	Kimhy, Myin-Germeys, Palmier-Claus & Swendsen	2012
8	TELEMA: A Low-cost and User-friendly Telephone Assessment Platform	Fernandez, Johnson & Rodebaugh	2013
9	Integrating Mobile-phone Based Assessment for Psychosis Into People's Everyday Lives and Clinical Care: a qualitative study	Palmier-Claus et al.	2013
10	Use of Mobile Assessment Technologies in Inpatient Psychiatric Settings	Kimhy, Vakhrusheva, Liu & Wang	2014
11	Evaluation of Mobile Assessment in a Learning Management System	Bogdanovic, Barac, Jovanic, Popovic & Radenkovic	2014
12	Mindtool-Assisted In-Field Learning (MAIL): An Advanced Ubiquitous Learning Project in Taiwan	Hwang, Hung, Chen & Liu	2014
13	Acceptance of Mobile-Based Assessment from the perspective of Self-Determination Theory of Motivation	Nikou & Economides	2014
14	M-AssIST Interaction and Scaffolding Matters in Authentic Assessment	Santos, Cook & Hernández-Leo	2015

In the next section, studies have been reported in point of their methodology, participants, findings (related to mobile assessment), technological frameworks and designed environments as ordered chronologically.

FINDINGS

According to results of the analysis, we classified studies according to type of mobile device (ToMD), type of the service (ToS), generated the assessment tool (GAT), the use of LMS (e.g. moodle) (UoLMS), the use of semantic elements (UoSE) and research methodology (RM). The classification of these studies are shown in Table 2.

Table 2. Properties of the studies.

Study No	ToMD	ToS	GAT	UoLMS	UoSE	RM
1	All Platform	Web-service, SMS	Yes	LMS was designed in study	No	Practical
2	PDA	Web-based	Yes	Personalized e-learning System	No	Practical
3	PDA	Web-based	Yes	None	No	Practical
4	PDA	Web-based	Yes	Personal Learning Environment	Yes	Practical
5	None	None	No	None	Yes	Practical
6	None	None	No	None	No	Theoretical
7	None	None	No	None	No	Theoretical
8	Mobile phone	Web-service, SMS, Call-service	No	None	No	Practical
9	Smartphone	Android-base, SMS	Yes	None	No	Practical
10	PDA	Web-based	Yes	None	No	Practical
11	All Platform	Web-service	Yes	Moodle	No	Practical
12	PDA	Web-based	Yes	None	No	Practical
13	Smartphone	Web-based, Multi OS	Yes	None	No	Practical
14	None	None	No	None	No	Theoretical

Riad and El-Ghareeb (2008) was designed a Service Oriented Architecture (SOA) for the purpose of integrating mobile assessment in Learning Management System (LMS). They defined SOA as “design pattern that helped enterprises overcome integration obstacles, and gain agile and interoperable advantages within architectures”. Proposed LMS consists of web services to acquire advantages of different external services. The LMS has two main layers; (i) *Interface Layer*, (ii) *Service Layer*. Interface layer prepares dynamic outputs for users based on user inputs and calls web page to show data. Service layer handles web services which produce core of the LMS. Service layer have sub-layers which are *Orchestration Layer*, *Application Services Layer* and *Agents Layer*. Orchestration layer manages required interaction details for executed service operations. Application services layer holds stateless services (e.g. Send Mail, Manage Courses, Manage Assessment, Manage SMS, Send SMS, Retrieve SMS). Agents layer records and analyzes system logs in order to detect failures, so, provides feedback to instructors about their courses.

Chen and Chen (2009) aimed investigating participants’ promotion of learning performance. The research design was the pretest–post-test nonequivalent group design of quasi-experimental method. Participants whose ages were between 9 and 11 years old were chosen from three grade classes of *Taipei County Jee-May Elementary School*. There were 35 students in experimental group and 34 students in control group. The experimental group used Personalized E-Learning System (PELS) with learning feedback of formative assessment during two-week mathematical courseware in a computer classroom. PELS has two main functions for teachers. By means of the first function that ensures monitoring students’ statuses, teachers can (i) view detailed degrees of learners, (ii) view variances of students’ learning abilities during learning process and (iii) view students’ test scores. Second function allows teachers to (i) assess students learning statuses (e.g. attendance statuses, concentration degree, question and answer responses, and learning comments), (ii) record students’ question and answer responses, (iii) evaluate students’ concentration degrees and (iv) create own comments for students. Personal Digital Assistants (PDAs) are used to encourage teachers for using formative assessment tool in a computer classroom. In order to compare the difference of students’ learning performances, pre-test and post-test were performed before and after learning process. In addition, a questionnaire was performed to evaluate students’ satisfaction degree. The questionnaire consists of 24 questions and measures if PELS satisfy requirements of students. According to the experimental results students’ mathematics abilities were promoted after learning process which is proposed with formative assessment. Questionnaire results showed that students were agreed that their mathematics abilities were promoted and they were attracted to learn mathematics with proposed learning mode.

Chen (2010) developed a web-based Mobile Assessment Participation System (MAPS) that facilitates self and peer assessment using PDAs. MAPS is created using PHP programming language and MySQL for database management. MAPS allows users assess self or peer, individual or group performance and synchronously or asynchronously via PDAs. All students have a PDA with MAPS in the proposed implementation model of MAPS. Thirty seven students who take teacher-education courses with the researcher attended the study. Fourteen participants were undergraduate students and twenty three participants were graduate students. Each student performed the MAPS during two round assessment activities that student assess own and one another’s final projects. Findings showed that; (i) most students reported that they would fairly assess peers, (ii) there was no significant correlation between the instructor grading and self-grading and (iii) there was no significant

correlation between the instructor grading and peer grading.

Harchay, Cheniti-Belcadhi & Braham (2012a) aimed to assess students' knowledge in a mobile environment and to propose a solution that can be integrated in a Personal Learning Environment (PLE). An approach was described to assess students' knowledge in a mobile environment through bringing personal tests. Researchers proposed to use the social web ontologies (e.g. FOAF and SIOC). Research goal was to place mobile assessment framework in a PLE. An assessment object is created as the output of framework by using set of web 2.0 tools. An *assessment object* consists of a question and its possible answers according to *user* (teacher, learner etc.), *course* and *assessment situation*. Assessment object is solved by *mobile device* and *social tools*.

Harchay, Cheniti-Belcadhi & Braham (2012b) purposed to build a flexible framework for personalized assessment content in mobile learning environments. Researchers designed a model that performs semantic of a framework to personalize mobile assessment environments according as learning context. The framework bases on using an assessment context for personalization. A scenario is used by the researchers to recognize *Mobile Assessment Situation*. *Mobile Assessment Object* that comprise an "identifiable and reusable object" is proposed for mobile assessment. Considered mobile environment requires the coordination of various tools and devices to deliver a personalized assessment item. Researchers proposed a *domain model*, a *context model*, a *user model*, a *scenario model* and a *metadata model* to execute semantics of the framework. Steps of this approach are defined as (i) gathering information about the *learner*, the *assessment context* and the *assessment content*, (ii) filtering the context data and deriving the most relevant information for assessment activities, (iii) inferring the new context information base on the *environment*, the *current assessment activities*, the *current device* and *learner's profiles*, (iv) logging the learner progress according to different context variables.

Besara (2012) examined existing mobile applications (app) in app stores (e.g. Apple App Store, Google Play Store) instead of designing a new app or model. Researcher emphasized that assessment projects are divided into two categories; (i) qualitative assessment and (ii) quantitative assessment. She pointed to importance of the division and highlighted that it should be considered while choosing the mobile app. In point of data collection tools, she proposes media recording or drawing tools for qualitative data collection and counters, environmental meters or surveys for quantitative data collection. She expressed that both qualitative and quantitative type of data can be gathered with a ell-chosen mobile device. It is important to check out whether the app exists on app store and is compatible with device while deciding the mobile device.

Kimhy, Myin-Germeys, Palmier-Claus & Swendsen (2012) proposes mobile assessment strategies for data collection from individuals who have *Schizophrenia* or *Severe Mental Disorders*. Researchers underlined that both mobile assessment and traditional paper-and-pencil assessment strategies have strengths and weaknesses. Paper-and-pencil approaches are explained as *inexpensive*, *easily available*, and *user-friendly* for the most participants. For all that, mobile assessment approaches allow *easy data input*, *precise information on response times*, *possibility of diverging (data)* and *increased speed of assessment process*. They stated some technical problems (e.g. battery life, damaged devices and software problems), ease of use (for computer-unfamiliar individuals) and the difficulty of gathering data with open-ended questions. They expressed that mostly PDAs and smartphones are used in studies. It is highlighted that mobile device battery life and length of planned assessment should be considered. Additionally, researchers emphasized that video or audio recording capabilities needed to be considered or locked for protecting other patients' secrecy. Participants' potential concerns about using assessment devices due to lack of knowledge defined as a potential challenge.

Fernandez, Johnson & Rodebaugh (2013) aimed to test of the functionality of TeLEMA. TeLEMA is defined in the study as "telephone based assessment platform that uses a web service to send and receive calls and text messages" which is accessed on a web site and removes requirement for special hardware. Researchers explained features according to components of TeLEMA. There are two components in the TeLEMA; (i) survey engine that sends/receives calls and sms, (ii) web interface that is used to create surveys, manage participants and view/download survey data as detailed (e.g. sheets for overall compliance, per-day compliance, per participant survey responses, and overall survey responses) Excel workbook. In case responses cannot be presented numerically, TeLEMA supports voice recording to collect qualitative data. Researchers conducted a pilot study using TeLEMA to perform validity analyses whether psychological constructs being assessed. The pilot study comprised of an introductory laboratory session, 1 week of Ecological momentary assessment (EMA) surveys, and a second laboratory session 1 week after surveys ended. Twenty-three undergraduate students, at the mean age 19, attended the pilot study at a Midwestern university. *The Social Interaction Anxiety Scale*, 5 point Likert-type with 20-items, was performed via paper and pencil in the first session. Participants used TeLEMA to response four randomly timed surveys each day during a week. The performed surveys assessed state affect and social anxiety. Researchers described the process as "participants were asked to think back to the period of time

since the last survey and to indicate their agreement with each statement by entering a number from 1 to 5". Study results pointed out that participants found TeleMA easy to use and secure. Acquiescence rates of participants were equal level with other EMA methods using mobile devices.

Palmier-Claus et al. (2013) have studied on a research which as regard mobile assessment in daily life. In the study, researchers tried to discover individuals' understanding and perceptions of mobile-phone based psychotic symptoms monitoring to confirm how it might be presented into participants' daily lives and clinical care. Study design was randomized repeated measures. Twenty-four community based individuals with non-affective psychosis participated six days of assessment via sms or smartphone app with a 7-day rest period in between. Participants filled in self-report questions about their symptoms via text-messages or via the mobile app. The smartphone app was developed for Android devices. The application was not wirelessly enabled. Participant's answers stored on smartphone and downloaded at the end of six days. At the same time, openCDMS system which expedites sending question as sms and storing responses was used. Researchers had qualitative interviews for the purpose of finding out participants' perceptions and experiences. Data gathered from interviews were analyzed with thematic analysis. Data analysis results brought out three themes about mobile phone technology. The themes are (i) *usability and familiarity*, (ii) *acceptability, validity and integration into domestic routines* and (iii) *perceived impact on clinical care*. Participants found the app *fast and easy to use*. However, use of the touch screen was perceived as a limitation of the app by participants who were unfamiliar with smartphones. The text-based system was also found usefulness. Participants reported they felt more comfortable and secure with a device which is familiar instead of a new and unknown technology.

Kimhy, Vakhrusheva, Liu & Wang (2014) studied feasibility of mobile devices for inpatients with schizophrenia. Thirty-three patients with schizophrenia and related disorders who hospitalized at the New York State Psychiatric Institute were enlisted. Researchers provided PDAs to participants (Palm Tungsten T3) as mobile device. Basic operations of the PDA were presented to participants by researchers. Afterwards, participants attended two practice sets of questions which sessions continued for 20 minutes. Within study process, participants were a given mobile device that was programmed to make notification randomly 10 times between 10:00am and 10:00pm. Participants carried the PDA during all day. When the PDA voiced notification sound, individuals answered the questionnaire on the screen (e.g. "I feel depressed", "I hear voices that other people can't hear") to bring out information about their *symptoms, mood, location, and social context*. Responses reported as a value between 1 ("not at all") and 100 ("very much"). At the same time, participants answered questions about their location on the unit and their social context. In the data analysis, multilevel linear mixed effects model analyses were performed to analyze patients' self-reported rating of mood and symptom controlling correlation among repeated measurements. Researchers reported that using mobile devices in inpatient psychiatric settings is feasible and useful. In addition, they highlighted that potential locations on inpatients settings where may trigger negative mood or symptoms may be determined by using mobile devices.

Bogdanovic, Barac, Jovanic, Popovic & Radenkovic (2014) discussed about problem of using and transmitting learning content from Moodle to mobile devices. Researchers aimed to inspect students' habits, motivations and technical possibilities to engage m-learning activities to e-learning process. Forty students participated the study who attended *Mobile Business* course at the Faculty of Organizational Sciences, the University of Belgrade during the winter semester in the 2010/11 school year. A mobile quiz application is developed in PHP programming language using Moodle API. The application bases on server side customization of pages for mobile delivery by using XHTML Mobile Profile. Interface of the application was designed as compatible with various mobile devices. It is planned to perform (i) a questionnaire for collecting information on infrastructure and habits of participants in using mobile technologies, (ii) a test to assess knowledge of students and (iii) a questionnaire for collecting data about mobile test effects on students. Findings of the study indicated that developed quiz application improves students' success, and increases satisfaction and motivation for using mobile devices in learning process.

Hwang, Hung, Chen & Liu (2014) executed the study as part of a four-year national Mindtool-Assisted In-Field Learning (MAIL) project was began in Taiwan in 2008. Developing mindtool assisted ubiquitous learning (u-learning) environments was the goal of the project. Mindtools are defined as "cognition tools that are able to assist students to think and learn in a meaningful and constructive way through stimulating them to expand their cognitive ability in interpreting, analyzing, synthesizing and organizing their knowledge" by the researchers. During four years (2008 to 2012) seventy-three u-learning activity-based studies were conducted to examine *the learning system, mindtools, learning models and strategies, evaluation scales and design of the learning content and activities*. In-field activities in various learning contents and academic disciplines were carried out (i.e. 38 natural science studies, 19 social science studies, 5 computer science studies, 2 nursing training studies, 7 language learning studies, 1 mathematics study and 1 Art learning study) as a part of the MAIL Project. Total numbers of participants increased from about 500 in 2008 to 3000 in 2012. Researcher reported that total number

of participants reached 6000 in 2014. In this study, researchers developed a repertory grid-oriented mindtool. By the agency of developed tool and knowledge-sharing system, students were allowed (i) to browse and to upload their own repertory grids, (ii) to receive feedback from teachers, (iii) to browse others' repertory grids and (iv) discuss with their peers. The experimental results pointed out the students who participated mindtool-based u-learning activities; (i) significantly changed their attitudes toward learning science, (ii) significantly improved their learning achievements compared to students who learned with traditional concept maps, (iii) improved their high-order critical thinking capabilities and (iv) significantly improved their knowledge structure after u-learning activities.

Nikou & Economides (2014) combined two theoretical frameworks to examine the factors that affect the acceptance of mobile assessment (m-assessment). The theoretical frameworks were *Technology Acceptance Model* (TAM) and *Self-Determination Theory* (SDT) of Motivation. In the proposed structural model, researchers tried to find out *Perceived Autonomy*, *Perceived Relatedness* and *Perceived Competency* constructs with *Perceived Usefulness* and *Perceived Ease of Use* constructs whether affect *Attitudes Towards Use* and *Behavior Intention to Use* m-assessment. A measurement instrument, consisted of seven point Likert-type 21 items, was used to investigate seven latent constructs of the model. In order to predict factors affecting m-assessment adoption, Partial Least-Squares (PLS) with Smart PLS 2.0 was employed. Using the m-assessment was voluntary. Totally 167 undergraduate students who enrolled in *Introductory Informatics* course, in the Department of Economic Sciences of a European University participated the study with their own smartphones. Operating systems of the smartphones were differentiated (i.e. 79% Android, 15% iOS, 5% Windows Phone and 1% other). Participants responded 30 multiple choice questions in 30 minutes using m-assessment. Researchers reported that "TAM and SDT can be useful predicting students' acceptance in the context of m-assessment". Results of the analyses showed (i) *Perceived Autonomy*, *Perceived Relatedness* and *Perceived Competency* constructs have a positive effect on *Perceived Usefulness*, *Perceived Ease of Use* and *attitudes towards m-assessment*, (ii) *Attitudes Towards Use* is attributed to *Perceived Autonomy*, *Perceived Relatedness* and *Perceived Usefulness*, (iii) *Perceived Usefulness* is attributed to *Perceived Autonomy*, *Perceived Relatedness*, *Perceived Competency* and *Perceived Ease of Use*, (iv) *Perceived Ease of Use* is attributed to *Perceived Autonomy*, and *Perceived Relatedness*, (v) *Behavior Intention to Use* is attributed to *Attitudes Towards Use* and *Perceived Ease of Use*.

Santos, Cook & Hernández-Leo (2015) presented *mobile-Assessment Interaction Scaffolding Temporal* (m-AssIST) model which is used to analyze the profits and restrictions of current m-assessment systems. Researchers expressed the model as:

M-Assist considers the different interaction possibilities during the temporal axis of an assessment activity (i.e., before, during and after the activity): (a) interactions with other learners, (b) interactions with the environment (i.e., indoors/outdoors spaces), (c) interactions with physical objects encountered in an environment, (d) interactions with the assessment activity, and finally (e) interactions with augmented digital information shown to support the activity.

They emphasized that the model can be used in both analyzing and designing processes of a formative or authentic assessment activity. Authentic assessment is defined as demonstrating and practicing student skills like in real life tasks. It is stated that the model catches required emergent properties to analyze and design m-assessment activities.

CONCLUSIONS

In this study, researchers tried to find out the circumstance of using mobile devices for evaluation and assessment goals. It is assumed that this study will guide and provide information for researchers who are interested in researching about mobile assessment. Fourteen studies investigated in the scope of the study goal. Findings pointed out there are variety of mobile assessment implementations with regard to participants, study fields, type of mobile devices and type of the services. On the basis of this finding, it is possible to state that mobile assessment applications can be used with different student degrees and disciplines in education. Even some studies found that m-assessment was applied for clinical care.

Findings also showed common tendency of mobile assessment design studies is employing web-based technologies like PHP or JAVA. Applications on these platforms adequate for different type of mobile devices and operating systems. Used mobile devices in investigated studies are mostly PDAs. PDAs may be the main reason employing web-based technologies. To date, percentage of PDAs is low among the mobile devices. For this reason, following new technologies and designing mobile apps for smartphones or tablet PCs could be more applicable.

There was just one study that a smartphone app is developed in among the investigated studies. At the same time no study found that performed about designing m-assessment app in Turkish literature. This situation indicates a gap in the research field of designing mobile assessment application. Studies performed in this field would be significant.

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K-12 Teachers' Perceptions Of Barriers And Benefits In Technology Usage

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ABSTRACT

This study explores K-12 teachers' perceptions of the benefits and barriers to technology integration by either teachers or students in K-12 instruction. The sample was composed of 68 students enrolled in online classes in the graduate studies in education department of a small private liberal arts institution in the southeast. Data was collected using an anonymous, online survey. Open and axial coding was used to identify themes in barriers and benefits in both student and teacher technology use. Even with the emphasis on providing 1:1 technology, availability of technology was most frequently identified barrier, while increased engagement was the most frequently identified benefit. Content instructional issues or teacher knowledge were not as strongly identified barriers or benefits.

INTRODUCTION

Since computers began to be used in schools in the mid 1970's, educators have extensively discussed their potential for helping to increase academic growth (Hew & Brush, 2007). Computers presented endless possibilities, but the limited number available did not allow for their frequent classroom usage. The ratio of students to computers in 1983 was estimated at 168 to 1 (Anderson & Ronnkqvist, 1999). As schools attempt to meet the needs of 21st century learners, they have significantly increased the number of digital devices available.

In 2010, it was reported that 97% of teachers in the United States had access to at least one classroom computer every day with 93% of those computers having Internet access (National Center for Educational Statistics, IES, 2010). The Center found that the ratio of students to computers was 5.3 to 1. The increased availability of computers seems like it should have increased daily use of technology in K-12 instruction; however, only 40% of the teachers interviewed reported using computers often during their instruction. But digital resources include more than just computers. The various types of information and communication technologies available have increased. Most U.S. K-12 schools currently have access to high speed Internet as well as other digital resources such as printers, video projectors, digital white boards, iPads, iPods, and smart phones. The educational technology landscape has been transformed through these additional resources (Robinson, McKenna & Conradi, 2012).

The anticipated increase in academic performance resulting from the expanded technology usage, has not materialized. The National Assessment of Educational Progress (2013) is reporting reading and mathematics test scores that are at about the same level as they were 40 years ago. This seems to support Kozma's (2003) observation that a positive impact of technology on achievement does not happen automatically. Instead, the impact of technology is determined by how teachers use the digital resources in their classroom instruction, not just the acquisition of educational technology.

THE STUDY

This study examines K-12 teachers' perceptions of the benefits and barriers of educational technology in classroom instruction when used by teachers or students. The research data was collected using an open ended qualitative survey format. The sample was composed of teachers enrolled in online classes in the graduate studies in education department at a small private liberal arts institution in the southeastern United States. Through an email invitation, the teachers were invited to complete an online, anonymous survey about their perceptions of the benefits and barriers they or their students experienced while using educational technology.

REVIEW OF LITERATURE

Today's students regularly use technology outside of the classroom. Research has indicated that technology can be used to increase student motivation, attitude, engagement, and self-confidence. In addition, it can be used to help improve students' organization and study skills. Increasing motivation, engagement, self-confidence, organization, and study skills significantly improved school attendance and academic performance (Warschauer, 2006). Spektor-Levy and Gronot-Gilat (2012) determined that when students were given a complex, computer-based learning task, students who were taught in a 1:1 digital environment academically outperformed students who were taught in a more traditional classroom. Using a researcher designed computer based instrument, data indicated that students from the 1:1 digital classrooms significantly outperformed their peers in 9 of the 15 literacy skills assessed. This improved academic and technology performance is particularly important because many of the high stakes standardized assessments are currently technology based (WGBH Educational Foundation, 2014). However, Dawson (2012) found that the technology benefits were not just academic. His research findings indicated that computer usage also resulted in better teacher-student and home-school relationships.

In the United States, many states have developed technology goals. Florida is one of these states, and has identified five educational goals. The third goal, *Florida's Digital Educators*, is to "empower educators with the skills necessary to integrate technology to improve students' rates of learning" (Florida Department of Education, 2006, para. 4). Although Florida references the goal of "technology integration," this has been defined in a variety of ways. Hew and Brush (2007) defined technology integration as the use of computing devices for instructional purposes. They included such devices as desktop computers, laptops, iPad, iPods, smart phones, handheld computers, software programs, and Internet resources. These digital devices are becoming more readily available in the school setting. However, teachers through their lesson planning impact the actual technology practices in any school (Spektor-Levy & Garanon-Gilat, 2012). Consequently it is important to determine the factors that enhance or restrict teachers' technology implementation rather than just technology availability.

Hutchison and Reinking (2011) in their survey of 1,441 United States educators found a significant gap between teachers' perceptions of the importance of integrating technology and their classroom use of these skills. The mean teacher perception of the importance for evaluating information online was 2.08 on a Likert scale ranging from 0 to 3, but the mean frequency of classroom use was only 1.03 on that same scale (Hutchison & Reinking, 2011, p. 322). The difference of -1.21 indicated that teachers thought students should be able to evaluate online information, but they did not teach those skills in their instruction. The United States is not the only place this phenomenon occurred. This concern is evident world-wide. Internationally teachers are struggling to find the most effective ways to integrate technology into their instruction (Nyagowa et al., 2013; Orlando, 2013; Peeraer & Van Petegem, 2012). Jordanian teachers reported rarely using technology for educational purposes (Al-Zaidiyenn, Mei, & Fook, 2010), while in Tanzania, the integration of technology into classroom learning rarely occurred despite several national initiatives aimed at improving technology integration (Mwalongo, 2011).

A variety of different factors impact technology integration. Ertmer et al. (1999) classified barriers into first and second order barriers. First-order barriers are those that are outside of the teacher, such as a lack of resources. While their classification is dated, the concepts are still applicable. Multiple research studies have identified potential obstacles to technology integration (Hew & Brush, 2007; Spektor-Levy & Gronot-Gilat, 2012), one of the most common obstacles is a lack of technological tools. This would be an example of a first order barrier. Second-order barriers would be those factors that occur because of characteristics within the teachers, such as their attitudes or skills.

Hew and Brush (2007) conducted a meta-analysis of 48 studies on technology integration. They grouped the identified barriers to integration into five main categories: resources, knowledge and skills, institutional attitudes and beliefs, assessments, and culture. They determined that the first two categories, resources and knowledge and skills were most often identified. The resources category would be a first-order barrier and would include such factors as access to the technology, time, and technical support. Hew and Brush (2007) found that factors such as the amount of technology, where the technology was housed, ease of access to technology, and the number of technical support personnel all impacted teachers' decisions about technology integration in their instruction.

Ertmer (2005) indicated second-order barriers such as the teachers' knowledge, skills, and confidence were important because these factors impacted whether the teachers chose to use the technology that was available. He stressed the importance of overcoming these barriers by providing professional development. He argued that

teachers need effective technology integration professional development that focused on content appropriate technology and skills, provided hands on opportunities, and addressed teachers' needs.

Another identified barrier to digital integration was teachers' technology skill levels. Moradi-Rekabdarkolaei (2011) compared teachers' and students' technology proficiency by administering the ICT Literacy Assessment to 384 secondary students and 367 secondary teachers in Iran. The ICT Literacy Assessment was chosen because it measured "cognitive problem solving and critical thinking skills associated with using technology to handle information" (Moradi-Rekabdarkolaei, 2011, p. 45). Moradi-Rekabdarkolaei, (2011) found a "meaningful difference between the ICT literacy of teachers and students" (p. 43) with the students scoring higher than the teachers on all areas of accessing, managing, integrating, evaluating, and creating information. The teachers in the study indicated that they were reluctant to use technology in their classrooms because they felt deficient in their technology skills. Teachers' perceived lack of proficiency could explain why educators are not yet integrating technology into their instruction. This lack would be a second order barrier.

However, Waycott, Bennett, Kennedy, Dalgarno, and Gray (2010) questioned the existence of a digital divide between students and teachers. Although students are often referred to as "digital natives" (Waycott et. al., 2010, p. 1202), their research revealed that "digital immigrant" teachers were just as likely to embrace technology as their students (Waycott et. al., 2010). The authors determined that assuming teachers were reluctant to integrate technology due to a resistance to technology itself was a misconception. Perrotta's (2013) findings supported Waycott et al (2010). Perrotta (2013) further warned of the dangers of "bashing" teachers and portraying them as "outmoded, obstructive, or ignorant" (p. 325) simply because they continued to utilize traditional instructional methods. When Perotta (2013) surveyed 683 teachers in 24 secondary schools in the United Kingdom, he discovered that conflicting expectations and school-level circumstances were more significant determinants to technology integration than individual teacher characteristics.

DESIGN

Technology integration could be examined in various ways; through first person perception expressed in surveys, teacher observation studies comparing teacher technological practices, or action research. In this study a qualitative survey was used to analyze teachers' perceptions.

Three hundred and ten graduate students enrolled in online classes in the graduate education programs at a small private liberal arts institution in the southeastern United States were invited to complete an anonymous online survey regarding their technology usage, and the barriers and benefits they and their K-12 students experienced when using educational technology. The graduate students were sent an email containing the link to the online Qualtrics survey. The email explained the purpose of the voluntary, anonymous study.

The study attempted to answer the following questions.

1. What factors impact technology use in K-12 instruction by teachers enrolled in online graduate studies in education programs?
2. What factors impact how teachers enrolled in online graduate studies in education program incorporate technology in their K-12 instruction?
3. What K-12 digital instructional benefits and/or barriers were identified by K-12 teachers enrolled in online graduate studies in education programs?

Email invitations were sent to the 310 students enrolled in the three online graduate education programs: Exceptional Student Education, Reading, and Educational Leadership. Using a mixed method survey design, the study explored teachers' perceptions of the benefits and barriers of educational technology in K-12 instruction when used by teachers or students. The convenience sample was composed of responses from 68 students enrolled in graduate education programs at a small private liberal arts institution in the United States. The graduate students were invited to complete the anonymous survey regarding their perceptions of the benefits and barriers of educational technology and the types of and frequency of technology used in their K-12 classroom.

The online survey was comprised of both quantitative and qualitative questions. Nominal measurement scale demographic information was collected for each respondent to ascertain the grade and subject level at which the respondent taught. Demographic data provided the researchers with a rich description of the sample participants. Next, using an interval Likert scale, the researchers gathered data about the frequency and types of technology utilized in the classroom instruction by both teachers and students. Frequency counts and percentage were used to

analyze the frequency of teachers' and students' technology utilization and type of technology integrated in the classroom. The final four questions in the survey were open-ended qualitative questions assessing teachers' perceptions of barriers and supports for integrating technology in the K-12 classroom instruction. Axial and open coding methodologies were used to analyze and identify themes based on factors impacting teachers' and students' technology use, and teachers' perceived benefits and barriers. All qualitative data was coded by each researcher to determine inter-rater reliability. All quantitative and qualitative data was corroborated and triangulated to ensure the validity of the results.

RESULTS

Analysis of demographic information revealed most respondents (74%) taught reading and/or language arts. In addition, nearly two-thirds of the responding teachers taught in STEM classes (math and science) while fewer than 10% taught elective classes. Most of the respondents were elementary teachers. The majority of respondents indicated they taught primary (K-2) elementary school (41%) and one – third (33%) reported teaching intermediate (3 – 5) elementary and middle school. Less than one-fifth of the respondents indicated they taught high school (19%). Consequently, the majority of the respondents appeared to be elementary teachers on the kindergarten through fifth grade level who taught in multiple content areas.

With regard to classroom technology utilized and with what frequency, most respondents indicated they used a computer (100%) and digital projector (89%) at least weekly with most indicating they used a computer (93%) and a digital projector (85%) daily. Approximately half of the respondents indicated they used an interactive white board (56%), digital camera (48%) or iPad (47%) at least once a month. However, smart phones with their internet and texting capabilities were not used as extensively by the respondents. Nearly three fourth of the respondents (77%) indicated they never used text messaging in their classrooms and half (50%) indicated they never used smart phones in their instructional delivery.

Respondents were asked four open-ended survey questions:

1. What are some of the barriers you face in implementing technology into your daily classroom instruction?
2. What are some of the benefits you experience when implementing technology into your daily classroom instruction?
3. What factors impact the frequency with which you as the teacher use various types of educational technology?
4. Which factors impacted the frequency and purposes for which your students use educational technology?

Each researcher coded the qualitative data and reviewed it for inter-rater reliability. During this process, the researchers debriefed to identify any variations in coding and coexistent themes. Following the inter-rater reliability check, the researchers finalized the data results into overarching themes leading to recommendations. Data interpretation allowed the researchers to “make sense” of the data by theorize toward developing patterns and meanings. Using an analytic inductive reasoning process, data coding and concomitant interpretation, the researchers were able to:

1. Ascertain the common themes or recurring regularities that emerged from the data (Patton, 2002). This entailed internal homogeneity or the extent to which data belonged to a certain category or theme or dovetailed with a category of theme. This also entailed external heterogeneity or the extent to which the data did not belong in a category. It allowed the researchers to clearly identify that the differences between categories (Patton, 2002).
2. Test the data for convergence, or identify how the data did not make connections with themes or categories or align with the research questions and broader environmental scan purpose.
3. Identify deviations from the common themes and, when possible, to provide explanations of the deviations. Deviant cases or data that diverged from the categories or themes was given careful consideration and examination as to why it did not “fit” into the categories or themes.
4. Bring forth the stories or a narrative enquiry that emerged from the data analysis from which to draw recommendations.
5. Bring forth patterns or themes that may suggest additional data that needs to be collected.
6. Align the themes and narrative stories that emerged with the review of literature.

Data analysis and interpretation provided the structure for the ensuing results, analysis, and recommendations. Inter-rater reliability was evident in the identified themes. Overwhelmingly, based on the work or classification system developed by Etmer et al., respondents indicated first order barriers to technology use. The availability of the technology impacted teachers' decisions as to when and whether they utilized technology in their classroom instruction. Approximately three-fourths of the respondents identified first order barriers while one fourth identified

second order barriers. Four different types of first order barriers were identified. The preponderance of the respondents (80%) were concerned about the amount and availability of technology. Though not as significant, the location of the technology, the amount of student instructional time, and the availability of technical support personnel were also identified as barriers (See Table 1).

Table 1
Teacher Perceived Barriers to Technology Use

Total of 54 Barriers Identified	Number*	Percentage
Total First Order Barriers Identified	41	76%
Amount of Technology	33	61%
Location of Technology	3	6%
Amount of Instructional Time	3	6%
Availability of Support Personnel	2	3%
Total Second Order Barriers Identified	13	24%
Teacher Knowledge and Skills	13	24%

*Note. Number of responses based on 54 barriers identified.

The most frequently perceived benefit of incorporating technology was increased student engagement. About half of the respondents (59%) indicated that the use of technology increased student engagement. A quarter of the respondents indicated the benefit of increased student understanding. The remaining quarter of the responses were split between technology providing a method for differentiation, an opportunity to work on researching skills, and providing more current content information (See Table 2).

Table 2
Teacher Perceived Benefits of Technology Use

Benefit	Number*	Percentage
Increased Student Engagement	38	59%
Increased Student Understanding	15	23%
Increased Instructional Differentiation	6	9%
Increased Exposure to More Current Content Material	3	5%
Increased Opportunities to Use Research and Evaluation Skills	2	3%

*Note. Number of responses based on 64 benefits identified.

The next two survey questions attempted to compare the reasons for the frequency with which teachers used technology and the reasons for the frequency with which students used technology. Slightly more than half of the time, teachers' decisions about the use of technology were determined by its availability or lack of availability rather than its connection or applicability to the content being taught. A quarter of the time the decision was influenced by instructional factors such as an opportunity for differentiation, student interest, or content objectives. The final quarter of the responses were divided between teacher issues such as available time, ease of use, and district policies.

Respondents were also asked to identify factors that impacted the frequency and purposes of students' technology use. Responses were divided between both positive and negative factors, with three-fourths (75%) of the respondents identifying negative factors impacting decisions about students' technology usage. Half of the respondent identified concerns about the availability of the equipment. One quarter of the responses were divided between concerns about bandwidth and the available time. The final quarter of the responses focused on instructional concerns such as the learning objectives, conducting research, and constructing and presenting information (See Tables 3 and 4). Some barriers only affected either teacher or student use, but not both. District concerns only impacted teacher usage and bandwidth was only a concern that impacted student usage.

Table 3

Factors Impacting Teacher Technology Usage

Teacher Factors	Number*	Percentage
First Order Concerns		
Total School Constraints	39	67%
Availability of Equipment	36	62%
Instructional Time Schedule	3	5%
Total District Constraint	1	2%
Amount of Instructional Time	1	2%
Second Order Concerns		
Total Instructional Constraints	15	26%
Curricular Content Issues	6	10%
Student Engagement	7	12%
Differentiation of Instruction	2	3%
Total Teacher Knowledge and Skill Constraints	3	3%
Ease of Use	3	3%

*Note. Number of factors based on 58 factors identified.

Table 4

Factors Impacting Student Technology Usage

Student Factors	Number*	Percentage
First Order Concerns		
Total School Constraints	36	75%
Availability of Equipment	27	56%
Instructional Time Schedule	5	10%
Bandwidth	4	8%
Second Order Concerns		
Total Instructional Constraints	12	25%
Curricular Content Issues	6	12%
Student Content Generation	3	6%
Student Research	3	6%

*Note. Number of factors based on 48 factors identified.

CONCLUSION

The results of this study indicated that first order barriers, such as technology availability, are still major concerns that impact both student and teacher technology use. Equipment availability, more than any other factor, seemed to have the greatest impact on whether technology was integrated into classroom instruction. Teacher knowledge and skill, although a concern, were not the teachers' first considerations. The major reason teachers chose to use technology was because they felt it resulted in increased student engagement. Some of the same factors that impacted whether students used the computer were evident in the decision about whether teachers used technology. Equipment availability, instructional time schedules, and curricular concerns were all concerns that impacted both teacher and student technology usage. Bandwidth, on the other hand, was not an inhibiting factor in teacher use, but it was in student use.

In 2006 Florida established the goal of empowering educators to improve student learning through technology integration (Florida Department of Education, 2006), consequently it was hoped that teachers would identify second order barriers rather than first order barriers. However, seven years after the law was passed, teachers' most frequently identified concern was the availability of technology. This supports Hew and Brush's (2007) findings of the most significant barrier to technology integration is a lack of technology resources. However, the results of this study did not indicate that teacher knowledge was a perceived barrier for this sample of teachers. These results may have been impacted by the sample chosen for this study rather than being characteristics of all teachers.

Teachers in this study more frequently viewed technology as a tool for increasing student engagement and understanding, rather than for the higher order skills of researching and evaluating thus supporting Hutchinson and Reinking's (2011) findings that teachers are not using technology as frequently for evaluating information. Expanding educators' technology knowledge base might expand technology usage to include evaluating curricular

content, increasing student engagement, and differentiating instruction. As these issues are addressed, teachers might develop more extensive ways to use technology for research and evaluation.

Instructional concerns, which seem like they should be the driving force in technology usage in education, were not the primary concerns. Instructional concerns were determining factors only about a quarter of the time. After teachers determined that the technology was available, then they considered the instructional content and how technology could be used to enhance instruction.

The open ended format of this research allowed the participants to identify as many areas or factors as they felt were relevant for each question. Some respondents identified only one issue while others identified multiple factors. As long as a factor was identified in the response, it was included in the open and axial coding of the responses. A future study would be necessary to consider the weight or impact each of these factors had on educational planning. Researchers might also want to further examine and prioritize the identified first and second order barriers. Teachers reported the perceived benefits of increased student engagement and understanding, further research would be needed to determine whether these perceived benefits can be quantified.

There are some limitations inherent in this study. The majority of the respondents were elementary (K-5) teachers who taught multiple content areas, even though middle and high school teachers were included in the sample. Consequently the data might more accurately represent the concerns of elementary teachers rather than those of middle and high school teachers. In addition, the sample was composed of students who had chosen to enroll in an online graduate program. The study sample might represent a subset of teachers who feel more comfortable in the digital environment than those in the general population do. Therefore, the results might not be able to be generalized to the larger teaching population. The respondents predominately taught in Florida public and private schools, so these results might represent the concerns of Florida's teachers rather than national concerns. These are all questions that would need to be addressed in other studies. Technology and access to technology are ever changing variables. Future research may want to explore teachers' access to, not only the technology, but also to opportunities for professional development focused on integrating technology into instruction.

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Mobile Learning Adoption by Language Instructors in Taibah University

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Abstract

This study aimed to determine Mobile Learning adoption among language instructors at English language center (ELC) in Taibah University, Saudi Arabia. It also examined the effect of gender, age, qualification and experience variables on adoption. A questionnaire, developed by the researcher, was administered to a sample of (69) language instructors. The results of statistical analysis indicated that although language instructors found Mobile Learning useful and easy to use, they rarely adopted it in teaching language skills. They mainly used mobile devices to keep in contact with their students. They used applications like What'sapp, email, web browsers and text messaging feature to inform students about course alerts and share course files and documents. Adoption challenges like classroom inaccessibility, high cost of mobile fees and lack of technical support were more serious obstacles for female instructors than males. The results also indicated that there were no statistically significant differences in all domains of the questionnaire between male and female instructors in the adoption of Mobile Learning at ELC regarding to gender, age, qualification and experience variables. The study recommended language instructors to make use of the many advantages, features, and applications of mobile devices to facilitate language learning.

1.1. Introduction

The Learning process can be considered the most important impetus for global evolution starting from the early existence of human beings. This learning process has been gradually transformed from the traditional systems to incorporate more modern aspects of learning. The implementation of technology is expected to facilitate the learning process further for teachers and students. The vital role of technology in designing, adopting, improving and evaluating educational applications is a great and effective feature of the learning process. It has changed our life in ways we could never have imagined. Technology has improved learning by providing more resources, greater knowledge, more interaction, more collaboration, more fun and better assessment. In the field of education, the wireless portable devices are by far the most popular technological innovations as mobile devices have been great tools, not only for communication, but also as technological tools that could be vitally facilitated in learning. Consequently, it has improved the students' achievement As Chiang, Yang and Hwang (2014) said that the experimental results show that the mobile approach is able to improve students' learning performance and achievement. In addition, it helps teachers to provide an attractive environment regardless of both, time and location.

The world has witnessed three main Revolutions: the Industrial Revolution, the Electronics Revolution and the Wireless Revolution. The Wireless Revolution has generated what is known as Mobile Learning. El-Hussein and Cronje (2010) stated that the evolution of handheld portable devices and wireless technology has resulted in radical changes in the social and economic lifestyles of modern people. Mobile phones have a great potential in language teaching and learning because mobility and portability are the attributes of modern life. Today, many technological devices are produced in portable form. These devices are reshaping users' daily lives in different ways.

1.2. The Statement of the Problem

The popularity and the ownership of mobile devices among college students are high. According to Goundar (2011) such flexibility in the provision of education, there is a possibility in getting everyone educated once the constraints of attending classes at confined time slots and locations are removed. It means that connectivity, flexibility, portability, and interactivity are all features that make mobile technology more useful and attractive to students. Mobile technology has also proved very effective and helpful in learning English and enhancing language instruction which is considered quite challenging in Saudi Arabia. The level of mobile technology adoption among English language instructors might differ in Taibah University. Therefore, the current study focused on instructors' usage of mobile technology, their teaching practices, their use of different applications, and their demographic characteristics to provide a baseline of mobile technology adoption on which to build future usage across the university.

1.3. Research Purposes

The purposes of this study are to:

1. Determine the adoption of Mobile Learning technology by male and female instructors at the English Language Centre (ELC) in Taibah University.
2. Examine the effects of gender, age, qualification and experience variables of instructors at ELC in Taibah University on adoption.

1.4. Research Questions and Hypothesis

In harmony with the above stated purposes, the following research questions are posed:

1. Do male and female instructors at the ELC in Taibah University adopt Mobile Learning technology in TEFL? from this question, the following sub-questions are derived

- 1.1. To what extent do male and female language instructors find Mobile Learning useful for teaching EFL?
- 1.2. To what extent do EFL male and instructors find that Mobile Learning easy to use?
- 1.3. To what extent do EFL male and female instructors adopt Mobile Learning in teaching language skills?
- 1.4. What are the types of teaching practices do EFL male and female instructors use?
- 1.5. What are the mobile features and apps do EFL male and female instructors use?
- 1.6. What are the adoptions challenges do EFL male and female instructors face?
2. What are differences according to gender variable in terms of adopting Mobile Learning at the ELC in Taibah University?
3. What are differences according to age variable in terms of adopting Mobile Learning at the ELC in Taibah University?
4. What are differences according to qualification variable in terms of adopting Mobile Learning at the ELC in Taibah University?
5. What are differences according to experience variable in terms of adopting Mobile Learning at the ELC in Taibah University?

Based on the above research questions and the purposes of the study, the following null hypothesis was formulated:

1. There will be no statistically significant differences in the average score of Mobile Learning adoption between male and female instructors toward using Mobile Learning technology at ELC in Taibah University according to gender variable.
2. There will be no statistically significant differences in the average score of Mobile Learning adoption between male and female instructors toward using Mobile Learning technology at ELC in Taibah University according to age variable.
3. There will be no statistically significant differences in the average score of Mobile Learning adoption between male and female instructors toward using Mobile Learning technology at ELC in Taibah University according to qualification variable.
4. There will be no statistically significant differences in the average score of Mobile Learning adoption between male and female instructors toward using Mobile Learning technology at ELC in Taibah University according to experience variable.

Review of Literature

2.1. Definition of Mobile Learning

Mobile Learning is a type of learning that takes place via a portable or hand-held device. It takes place anywhere and anytime by giving the learner freedom of studying time and place and increasing the flexibility to teachers and instructors. Thus Mobile Learning can be defined as the ability to obtain educational content on personal pocket devices such as smart phones and mobile phones and PDs. Baran (2014, p.18) pointed that “Mobile Learning emphasize mobility, access, immediacy, situativity, ubiquity, convenience and contextually. Mobile Learning includes the characteristics of mobility in physical, conceptual, and social spaces.” Mobile Learning provides flexible, informal, contextual learning with a little device. It basically means learning that can take place anywhere and anytime, learning on the go, learning on the move, using digital devices to access information at non-traditional work locations.

2.2. Advantages of Mobile Learning

Research has indicated some advantages for Mobile Learning like mobility, portability, simplicity and flexibility. Mobility increases a learner’s capability to physically move their own learning environment as they move. The mobile’s portability, simplicity, and affordability were argued to make it a natural fit for education where internet connectivity may be rare. Mobile Learning includes additional benefits such as the ability to exchange information and interact with other learners almost instantly. This increases social learning advantages in this world of technology and electronics as learners communicate and collaborate with one another. A major advantage of using wireless mobile technology is to reach people who live in remote locations where there are no schools, teachers, or libraries.

Miangah and Nezarat (2012) pointed out to two main characteristics of mobile devices which are portability and connectivity. As for connectivity, designing the mobile system must have capability of being connected and communicated with the learning website using the wireless network of the device to access learning material including short message service (SMS) and mobile e-mail. Portability enables learners to move mobile devices and bring learning materials.

Klopfer (2002, as cited in Miangah and Nezarat, 2012) stated the following advantages of mobile devices; 1) social interactivity: exchanging data and collaboration with other learners is possible through mobile devices; 2) context sensitivity: the data on the mobile devices can be gathered and responded uniquely to the current location and time; 3) connectivity: mobile devices can be connected to other devices, data collection devices, or a common network by creating a shared network; 4) individuality: activities platform can be customized for individual learner.

2.3. The Benefits for Teachers

The widespread influence of the market increased the popularity of mobile phones, and this fulfills the need of teachers to provide applications and software for learners in teaching. Moreover, comparing with other wireless devices such as laptop computers, mobile phones are rather inexpensive having functions as Internet browsers available in most

devices. With such inexpensive devices accessible to even the poorest areas and having the functionalities of e-mail or SMS, it is now possible to transfer information to and from mobile phones between instructors and learners without any difficulties.

Fritschi and Wolf (2012) explored that mobile technology can support teachers and improve their practices because it represents an exciting opportunity for educators in North America to expand their professional learning through increased access to instructors, mentors, supervisors and peers, as well as online content and resources. Professional Development (PD), focused on using mobile technology for instruction to help teachers increase student achievement and better meet their students' needs. Through careful planning and implementation, schools can develop Mobile Learning, PD programmers that support teachers, improve teaching practices that enhance the learning process.

(Retta, 2009) stated that "when learners are interested in the technology, it captures their attention and makes them more interested in learning, and the right sort of learning content is introduced to them on mobile devices" (p.19) that would increase their language learning and acquisition.

2.4. Mobile Learning and teaching English

Mobile Learning technology is more useful for both inside and outside classroom activities. Such activities enable learning to be more directly connected with the real world experiments. Moreover, learning through mobile phones outside the classroom has the advantage of better exploiting the learner's free time; even the students on the move can improve their learning skills

A number of studies have shown that EFL teachers have positive attitudes toward the adoption of mobile technology in the classroom. In fact, technology-aided learning is more effective than traditional learning which is realized in a campus-wide wireless computing environment. Many studies like Levy and Kennedy, 2005; Norbrook and Scott, 2003 have concentrated on using mobile phones as a way to distribute content from teachers to students, rather than focusing on the interaction among students or communication between students and teachers which is more useful and very productive.

Gorichanaz (2011) conducted a study to find out whether there were any differences in vocabulary retention when ESL students read text with and without access to computer-mediated dictionaries. It examined the differences in short- and long-term vocabulary retention when readers using computer-mediated dictionaries versus paper dictionaries and handheld dictionaries. The study found that computer-mediated dictionaries were more effective for vocabulary retention than print-based dictionaries. One interesting finding was that for beginning learners, there was an apparent retention loss with the computer-mediated vocabulary learning. This may be due to the superficiality of looking up words on the computer; without a computer, the process requires more diligence that may have resulted in fewer words being learned, but with a higher quality of learning for each of those words. The study also showed that computer-aided language learning programs that focus on providing users with comprehensible input have considerable promise in promoting extensive reading and vocabulary learning. Even considering all this, it is important to note that there are some benefits to mobile technology integration that cannot be measured by test scores alone. For example, using such devices in the classroom help to prepare students to learn and use new technology in the workplace.

Abbasi and Hashmi (2013) in their study proved that using mobile phones had a significant effect on not only vocabulary learning but also vocabulary retention of EFL learners although there was not a significant difference between male and female learners in the vocabulary learning and retention while using mobile phones.

Amry (2014, p.133) stated that "face-to-face learning in the classroom is a formal academic learning process and used mostly to disseminate information to individuals rather than improve social interaction between students. The social dimension is very important to constructing knowledge and to orientating students towards new educational technology that use social networks." So, mobile devices are used at universities and higher educational institutions to enhance online interactions through discussions and to share knowledge.

2.5. Disadvantages of Mobile Learning

There are some disadvantages for Mobile Learning. As mentioned below, these disadvantages are mainly related to the technical specifications of the used devices which would affect the dependability of mobile devices for learning.

Behera (2013) mentioned some disadvantages of Mobile Learning which are: 1) the limited storage capacities; 2) device may become outdated quickly and students have to keep combating obsolescence; 3) the buttons on the keypad or styles pens are small and can be tricky for some people to manipulate; 4) too small display makes it hard to read; 5) usable with some models only; 6) network connectivity limitations and expenses / costs.

Gholami and Azarmi (2012) and Chinnery (2006) agreed that there are some limitations and barriers with mobile devices to be used as educational devices. For example, reduced screen size, limited audiovisual quality, virtual keyboarding, and one-finger data entry are some of these limitations. However, the advances in technology are trying to solve these problems as they have introduced mobiles with bigger screen size and keypads that enable to have faster typing, therefore these limitations can be solved with the developing of all technical devices they can also be limited and controlled.

Kukulska-Hulme and Traxler (2005) argued that although learning service through mobile devices has some advantages, it has its own constraints as small screen, reading difficulty on such a screen, data storage and multimedia limitations, and the like. Many of the mobile phones are not designed for educational purposes. Thus, it is difficult for learners to use them for the task given by the teachers to be carried out.

Methodology and Procedures

3.1. Research Design

The current study is both descriptive and analytical. A quantitative research design is utilized to investigate language instructors' adoption of mobile and the effect of gender, age, and qualification and experience variables on adoption. The instrument of this study is a questionnaire developed by the researcher and it and administered to EFL instructors at ELC in Taibah University in Al-Madinah Al-Munawwara.

3.2. Population and Sample

The population of the study was represented by the English Language Center instructors in the male and female campuses of Taibah University, Al-Madinah Al-Munawwara. The total number of language instructors is (102), (67) are male and 35 female instructors during the implementation of the study. The researcher addressed all instructors in order to measure their adoption of Mobile Learning in teaching EFL and to examine if there are significant differences between the male and female instructors according to gender, age, and qualification and experience variables.

3.3. Research Instrument

The instrument used for the study was a questionnaire which was developed to elicit reliable and valid data regarding Mobile Learning adoption by language instructors at ELC. The questionnaire was constructed by the researcher after reviewing the literature of some studies like Fozdar and Kumar. (2007), Oz (2014), Kalloo and Mohan (2012) and Dashtestani (2013). It was divided into two sections: the first section was used to collect background information like name, gender, age, nationality, qualification, years of experience and number of sessions attended in technology field. The second section covered the following domains:

- Usefulness of Mobile Learning adoption for EFL instructors: this area deals with language instructors perceptions towards the usefulness of Mobile Learning as perceptions usually affect adoption.
- Ease of using Mobile Learning for EFL instructors: this area deals with whether language instructors find Mobile Learning an easy method to deliver instruction.
- Mobile Learning adoption in teaching language skills: this area deals with which language skills and aspects taught through Mobile Learning.
- Types of teaching practices for EFL instructors: this area investigates the types of teaching practices adopted by Mobile Learning.
- Features and apps adoption of Mobile Learning for EFL instructors: this area deals with which features and apps they find useful to use
- Adoption challenges of Mobile Learning for EFL instructors: this area deals with the challenges or difficulties that might face instructors in utilizing Mobile Learning.

The participants' responses were scored on a five-point Likert scale, 1=never, 2=rarely, 3=sometimes, 4=frequently and 5=always.

3.4. Questionnaire Validity and Reliability

Questionnaire validity is concerned with the "meaningfulness of research components" (Drost, N.D p106) and reliability means "the extent to which measurements are repeatable –when different persons perform the measurements, on different occasions, under different conditions, with supposedly alternative instruments which measure the same thing"(Drost, N.D p114), To check content validity of the questionnaire, it was judged by some specialists in the field of language teaching and necessary modifications were made. The researcher also calculated the Pearson correlation coefficient between each statement and the total score of the axis to which its belong, in order to check validity of the internal consistency of the questionnaire (See Table 1)

Table (1)
Pearson correlation coefficients between each statement
and the total score of each axis

Axis	Question	Pearson correlation coefficient	P-Value (Sig)	Pearson correlation coefficient	P-Value (Sig)
First	1.	.741**	.000	.555**	.000
	2.	.779**	.000		
	3.	.717**	.000		
	4.	.825**	.000		
	5.	.823**	.000		
	6.	.734**	.000		
	7.	.569**	.000		
Second	8.	.305**	.007	.333**	.000
	9.	.290**	.010		
	10.	.267*	.031		
	11.	.747**	.000		
	12.	.682**	.000		
	13.	.743**	.000		
Third	14.	.586**	.000	.619**	.000
	15.	.707**	.000		
	16.	.768**	.000		
	17.	.713**	.000		
	18.	.654**	.000		
	19.	.703**	.000		
	20.	.694**	.000		
Fourth	21.	.699**	.000	.825**	.000
	22.	.804**	.000		
	23.	.821**	.000		
	24.	.749**	.000		
	25.	.795**	.000		
	26.	.787**	.000		
	27.	.520**	.000		
	28.	.801**	.000		
	29.	.731**	.000		
	30.	.669**	.000		
	31.	.685**	.000		
Fifth	32.	.570**	.000	.788**	.000
	33.	.614**	.000		
	34.	.705**	.000		
	35.	.683**	.000		
	36.	.513**	.000		
	37.	.685**	.000		
	38.	.748**	.000		
	39.	.688**	.000		
	40.	.586**	.000		
	41.	.749**	.000		
Sixth	42.	.612**	.000	.624**	.000
	43.	.813**	.000		
	44.	.726**	.000		
	45.	.901**	.000		
	46.	.715**	.000		
	47.				

Note: (**) means significant at the (0.01) level of significance or less

Note: (*) means significant at the (0.05) level of significance or less

The questionnaire reliability was calculated by using Alpha Cronbach Method. The results illustrated in table (2) showed that the reliability coefficients were between (0.8016 - 0.9124), which indicates that the tool is characterized by high stability.

Table (2)
Reliability coefficient Ratios of Cronbach's Alpha

Axis	Coefficients Cronbach's alpha
First	0.8629
Second	0.8016
Third	0.8115
Fourth	0.9124
Fifth	0.8552
Sixth	0.8157
Complete questionnaire	0.8884

3.5. Research Procedures

In order to collect the required data of the current study, Two official letters were obtained from college of education (See Appendix A). The first was an official letter to Deanship of Higher Studies and Scientific Research to get permission to conduct the research instrument. The second official letter was sent to Deanship of Educational Affairs to get permission to collect the required data. After getting permission, the researcher distributed the questionnaire copies to all language instructors in both male and female campuses at ELC in Taibah University.

The questionnaire was administrated during one week from 15th of April, 2015 to 22th of April, 2015. All language instructors were informed that filling out the questionnaire was optional and they had the right to complete it or not. Instructors were also told that the information obtained would be confidential and would be used for scientific research purposes. A brief explanation of the purposes of the questionnaire was provided and instructions were given to ensure the clarity and accuracy of the statements and also to stimulate participants to responding to it items honestly.

Later, the researcher collected the questionnaire forms during two weeks. Regarding the (35) distributed copies of the female instructors, only (31) copies were returned. As for male instructors, (67) copies of the questionnaire were distributed, but only (38) copies were returned.

1.5. Data Analysis

After administration of the questionnaire, the collected data were statistically analyzed by using SPSS (version, 19). The following statistical methods were used:

- Descriptive Statistics (frequencies, percentages, means and standard deviation) were used to describe and summarize the properties of the mass of data collected from the respondents.
- Inferential Statistics using the Independent Samples t-test were applied to test the null hypotheses formulated for this study and to see whether the scores of male and female subjects differed in their adoption of Mobile Learning.
- Pearson correlation coefficient to validity the validity of internal consistency.
- Cronbach's alpha coefficient for reliability.

Results and Discussion

4.1. Data Analysis and Results

This chapter presents research results, discussion, recommendations and suggestions for further research.

4.1.1. The results concerning demographic information

Table (3)

Frequencies and Percentages of Demographic Information

Section	Variable	Answers	Frequencies	Percentages
Personal	Gender	Male	38	55.1%
		Female	31	44.9%
		Total	69	100.0%
	Age	20-30	7	10.1%
		31-40	39	56.5%
		41-50	16	23.2%
		up to 50	6	8.7%
		Non respond	1	1.4%
		Total	69	100.0%
	Nationality	Saudi	3	4.3%
		non saudi	48	69.6%
		Non respond	18	26.1%
		Total	69	100.0%
Professionally	Specialist	TEFL	38	55.1%
		Other	9	13.0%
		Non respond	22	31.9%
		Total	69	100.0%
	Last degree of the Qualification	Bachelor	13	18.8%
		Master	50	72.5%
		Ph.D	5	7.2%
		Others	1	1.4%
		Total	69	100.0%
	Years of experience	Less than 5 years	12	17.4%
		From 5-10 years	20	29.0%
		From 11-15years	18	26.1%
		More than 15 years	14	20.3%
		Non respond	5	7.2%
		Total	69	100.0%
General Questions	Do you attend sessions or courses in applying technology into teaching	Not attend session	9	13.0%
		From 1-5 session	40	58.0%
		From 6-10 session	2	2.9%
		More than 10 session	3	4.3%
		Non respond	15	21.7%
		Total	69	100.0%
	My cell phone is:	Regular	2	2.9%
		smart phone	66	95.7%
		Non respond	1	1.4%
		Total	69	100.0%
	Type your mobile phone	Iphone	18	26.1%
		Galaxy	38	55.1%
		Sony	1	1.4%
		Nokia	2	2.9%
		Non respond	10	14.5%
		Total	69	100.0%
	Do you have any kind of tablet?	Yes	34	49.3%
		No	34	49.3%
		Non respond	1	1.4%
		Total	69	100.0%

The results as presented in table (3) are the following

1. They are (55.1%) male instructors whereas there are (44.9%) female instructors.
2. The ages of most of instructors range from (31-40) which was estimated (56.5 %).
3. Most of them are non Saudi (69.6%) and (26.1%) did not respond whereas only (4.3%) are Saudi instructors.
4. Most of them have master degree (72.5%).
5. (17.4%) of the participants have less than 5 years of experience, (29 %) from 5-10, (26.1%) from 11-15, and (20.3%) more than 15, whereas (7.2%) did not respond.
6. Of the total participants (95.7%) use smart phones,(59.4%) use android, (26.1%) use Apple, whereas (14.5%) did not respond.
7. Half of the instructors have tablet (49.3%) and only (1.4%) did not respond.

4.1.2. The Results of Research Questions

4.1.2.1. The results of the first question

To answer the first question "Do male and female instructors at the ELC in Taibah University adopt Mobile Learning technology in TEFL? The data collected from the six sub-questions were statistically examined, analyzed and discussed.

The result of the first sub-question:

To answer the first sub-question which stated that " To what extent do male and female language instructors find Mobile Learning useful for teaching EFL?", frequencies, percentages, mean and standard deviation, independent samples T- test for each statement of the first domain were calculated and illustrated in tables (4) and (5).

Table (4)
Frequencies and percentages for each statement in first domain

No	Statement	Male (38)					Female (31)				
		Always	Frequently	Sometimes	Rarely	Never	Always	Frequently	Sometimes	Rarely	Never
1	Mobile learning provides instructors with new opportunities to teach English.	8 21.1%	14 36.8%	15 39.5%	1 2.6%	-	5 16.1%	10 21.4%	15 48.4%	1 3.2%	-
2	Mobile learning allows language instructors to prepare more interesting activities.	8 21.1%	11 28.9%	14 36.8%	4 10.5%	1 2.6%	2 6.5%	7 22.6%	17 54.8%	5 16.1%	-
3	Mobile learning provides more flexibility; can be used anytime, anywhere.	19 50%	12 31.6%	6 15.8%	1 2.6%	-	8 25.8%	10 32.3%	12 38.7%	1 3.2%	-
4	Mobile learning can enhance the productivity of language instructors in class.	7 18.4%	16 42.1%	10 26.3%	4 10.5%	-	2 6.5%	8 25.8%	17 54.8%	4 12.9%	-
5	Using mobile learning helps language instructors to accomplish teaching activities more quickly.	6 15.8%	10 26.3%	18 47.4%	3 7.9%	1 2.6%	2 6.5%	7 22.6%	18 58.1%	4 12.9%	-
6	Mobile learning can enhance language instructors to develop themselves professionally.	5 13.2%	9 23.7%	19 50%	3 7.9%	1 2.6%	1 3.2%	10 32.3%	15 48.4%	5 16.1%	-
7	Using mobile learning helps language instructors to contact easily with students and colleagues in the field.	18 47.4%	12 31.6%	7 18.4%	-	1 2.6%	14 45.2%	11 35.5%	5 16.1%	1 3.2%	-

Table (5)

Means and standard deviation , independent samples T- test
for each statement in first domain

No	Statement	Male			Female			Comparison	
		Mean	Standard deviation	Interpretation	mean	Standard deviation	Interpretation	T-test	P-value
1	Mobile learning provides instructors with new opportunities to teach English.	3.76	.820	Frequently	3.58	.886	Frequently	.887	.378
2	Mobile learning allows language instructors to prepare more interesting activities.	3.55	1.032	Frequently	3.19	.792	Sometimes	1.591	.116
3	Mobile learning provides more flexibility; can be used anytime, anywhere.	4.29	.835	Always	3.81	.873	Frequently	2.342*	.022
4	Mobile learning can enhance the productivity of language instructors in class.	3.70	.909	Frequently	3.26	.773	Sometimes	2.149*	.035
5	Using mobile learning helps language instructors to accomplish teaching activities more quickly.	3.45	.950	Frequently	3.23	.762	Sometimes	1.051	.297
6	Mobile learning can enhance language instructors to develop themselves professionally.	3.38	.924	Sometimes	3.23	.762	Sometimes	.734	.466
7	Using mobile learning helps language instructors to contact easily with students and colleagues in the field.	4.21	.935	Always	4.23	.845	Always	-.070	.944
The General mean		3.76	.715	Frequently	3.50	.527	Frequently	1.687	.096

Note (*) means significant at level of significance (0.05) between **male and female**.

The obtained results from table (4, 5) are interpreted as follows:

- Reached the General mean of all statement (3.76) with a standard deviation (0.715), and this means that the usefulness of using Mobile Learning by EFL **male** instructors "**Frequently**".
- Reached the General mean of all statement (3.50) with a standard deviation (0.527), and this means that the usefulness of using Mobile Learning by EFL **female** instructors "**Frequently**".
- The highest mean score in both male and female groups was obtained by the seventh statement (*Mean* for male=4.21, *Mean* for female=4.23). Both agree totally that the most useful advantage in using Mobile Learning was that it helps them to contact easily with their students and colleagues in the field.
- The least useful advantage for male in this domain was obtained by statement number (5), which stated that Mobile Learning helps them to accomplish teaching activities, where the least useful advantage for female was

obtained by statement number (2), which stated that Mobile Learning allowed them to prepare more interesting activities.

- There were no statistically significant differences at level of significance (0.05) in the usefulness of using Mobile Learning by EFL **male and female** instructors.

The second sub-question:

To answer the second sub-question which stated that "To what extent do EFL male and instructors find that Mobile Learning easy to use?", frequencies, percentages, means, standard deviations, and independent samples T- test for each statement of the second domain were calculated and illustrated in tables (6) and (7).

Table (6)
Frequencies and percentages for each statement in second domain

No	Statement	Male					Female				
		Always	Frequently	Sometimes	Rarely	Never	Always	Frequently	Sometimes	Rarely	Never
8	It is easy for me to use various features and apps in mobile devices.	19 50%	13 34.2%	5 13.2%	1 2.6%	-	8 25.8%	12 38.7%	8 25.8%	3 9.7%	-
9	I need the assistance of an experienced person before using mobile feature or apps in class.	2 5.3%	1 2.6%	15 39.5%	8 21.1%	12 31.6%	-	7 22.6%	7 22.6%	11 35.5%	6 19.4%
10	I face difficulties in using mobile devices in teaching.	1 2.6%	2 5.3%	8 21.1%	17 44.7%	9 23.7%	1 3.2%	4 12.9%	14 45.2%	6 19.4%	5 16.1%
11	I can deal with hardware components of mobile devices.	5 13.2%	10 26.3%	8 21.1%	10 26.3%	5 13.2%	2 6.4%	10 32.2%	7 22.6%	5 16.1%	7 22.6%
12	I can deal with software components of mobile devices.	9 23.7%	16 42.1%	8 21.1%	3 7.9%	2 5.3%	3 9.7%	11 35.5%	9 29%	5 16.1%	3 9.7%
13	I can fix common mobile technical problems if I face any.	5 13.2%	12 31.6%	11 28.9%	7 18.4%	3 7.9%	3 9.7%	5 16.1%	9 29%	8 25.8%	6 19.4%

Table (7)
Means, standard deviations and independent samples T- test
for each of the statement in second domain

No	Statement	Male			Female			Comparison	
		mean	Standard deviation	Interpretation	mean	Standard deviation	Interpretation	T-test	P-value
8	It is easy for me to use various features and apps in mobile devices.	4.30	.812	Always	3.81	.946	Frequently	2.303*	.024
9	I need the assistance of an experienced person before using mobile feature or apps in class.	2.29	1.113	Rarely	2.48	1.061	Rarely	-.737	.464
10	I face difficulties in using mobile devices in teaching.	2.16	.958	Rarely	2.67	1.028	Sometimes	2.074*	.042
11	I can deal with hardware components of mobile devices.	3.00	1.273	Sometimes	2.77	1.251	Sometimes	.756	.452
12	I can deal with software components of mobile devices.	3.71	1.088	Frequently	3.13	1.106	Sometimes	2.156*	.035
13	I can fix common mobile technical problems if I face any.	3.24	1.149	Sometimes	2.55	1.121	Sometimes	2.444*	.017
	The General mean	3.12	.496	Sometimes	2.91	.626	Sometimes	1.520	.133

Note (*) means significant at level of significance (0.05) between **male and female**.

The obtained results from table (6, 7) are interpreted as follows:

- Reached the General mean of all statement (3.12) with a standard deviation (0.496) , and this means that the extent do the EFL male instructors will see that Mobile Learning easy to use " **Sometimes** ".
- Reached the General mean of all statement (2.91) with a standard deviation (0.626) , and this means that the extent do the EFL female instructors will see that Mobile Learning easy to use " **Sometimes**".
- The highest mean score in both male and female groups was obtained by the eighth statement (*Mean* for male=4.30, *Mean* for female=3.81). Both agree totally that it is easy for them to use various features and apps in mobile devices. There were statistically significant differences at level of significance (0.05) between male and female in favor of male group. Using various features was easier for male than female.
- There were statistically significant differences at level of significance (0.05) between male and female in favor of male group regarding the statement number (7), Males rarely face difficulties with hardware components of devices, while females sometimes face difficulties.
- There were statistically significant differences at level of significance (0.05) between male and female in favor of male group regarding the statement number (13), It was easier for male to fix technical problems if they face than females.
- There were no statistically significant differences at level of significance (0.05) between **male and female** instructors in the easy to use domain.

The third sub-question:

To answer the third sub-question which stated that " To what extent do EFL male and female instructors adopt Mobile Learning in teaching language skills?", frequencies, percentages, means, standard deviations and independent samples T- test for each statement of the third domain were calculated and illustrated in tables (8) and (9).

Table (8)
Frequencies and percentages for each statement in third domain

No	Statement	Male					Female				
		Always	Frequently	Sometimes	Rarely	Never	Always	Frequently	Sometimes	Rarely	Never
14	I use mobile learning in teaching the listening skill.	2 5.3%	7 18.4%	11 28.9%	7 18.4%	11 28.9%	2 6.5%	4 12.9%	11 35.5%	3 9.7%	11 35.5%
15	I use mobile learning in teaching the speaking skill.	-	8 21.1%	10 26.3%	11 28.9%	9 23.7%	2 6.5%	4 12.9%	8 25.8%	8 25.8%	9 29%
16	I use mobile learning in teaching the reading skill.	-	8 21.1%	10 26.3%	10 26.3%	10 26.3%	-	2 6.5%	11 35.5%	6 19.4%	12 38.7%
17	I use mobile learning in teaching the writing skill.	-	7 18.4%	6 15.8%	11 28.9%	14 36.8%	-	3 9.7%	11 35.5%	8 25.8%	9 29%
18	I use mobile learning in teaching grammar.	-	6 15.8%	7 18.4%	14 36.8%	11 28.9%	-	2 6.5%	9 29%	9 29%	10 32.3%
19	I use mobile learning in teaching vocabulary.	2 5.3%	13 34.2%	11 28.9%	7 18.4%	5 13.2%	3 9.7%	8 25.8%	9 29%	6 19.4%	5 16.1%
20	I use mobile learning in teaching pronunciation.	1 2.6%	12 31.6%	10 26.3%	8 21.1%	6 15.8%	2 6.5%	7 22.6%	8 25.8%	9 29%	5 16.1%

Table (9)
Means, standard deviations , and independent samples T- test
for each statement in third domain

No	Statement	Male			Female			Comparison	
		Mean	Standard deviation	Interpretation	mean	Standard deviation	Interpretation	T-test	P-value
14	I use mobile learning in teaching the listening skill.	2.53	1.246	Rarely	2.45	1.287	Rarely	.244	.808
15	I use mobile learning in teaching the speaking skill.	2.45	1.083	Rarely	2.42	1.232	Rarely	.100	.920
16	I use mobile learning in teaching the reading skill.	2.42	1.106	Rarely	2.10	1.012	Rarely	1.258	.213
17	I use mobile learning in teaching the writing skill.	2.16	1.128	Rarely	2.26	.999	Rarely	-.386	.701
18	I use mobile learning in teaching grammar.	2.11	.979	Rarely	2.10	.960	Rarely	.046	.963
19	I use mobile learning in teaching vocabulary.	3.00	1.139	Sometimes	2.94	1.237	Sometimes	.225	.823
20	I use mobile learning in teaching pronunciation.	2.84	1.143	Sometimes	2.74	1.182	Sometimes	.339	.735
The General mean		2.50	.784	Rarely	2.43	.731	Rarely	.354	.724

The obtained results from table (8, 9) are interpreted as follows:

- Reached the General mean of all statement (2.50) with a standard deviation (0.784) , and this means that the extent do the EFL **male** instructors adopt Mobile Learning in teaching language skills "**Rarely**".
- Reached the General mean of all statement (3.43) with a standard deviation (0.731) , and this means that the extent do the EFL **female** instructors adopt Mobile Learning in teaching language skills "**Rarely**".
- Both male and female instructors sometimes adopted Mobile Learning in the teaching of vocabulary and pronunciation, and they rarely adopted it in the teaching of listening, speaking, reading, writing or grammar.
- There were no statistically significant differences at level of significance (0.05) between EFL **male and female** instructors regarding Mobile Learning adoption in teaching language skills and aspects.

The fourth sub-question:

To answer the fourth sub-question which stated that " What are the types of teaching practices do EFL male and female instructors use?, frequencies, percentages, means, standard deviations and independent samples T- test for each statement of the fourth domain were calculated and illustrated in tables (10) and (11).

Table (10)
Frequencies and percentages for each statement in fourth domain

No	Statement	Male					Female				
		Always	Frequently	Sometimes	Rarely	Never	Always	Frequently	Sometimes	Rarely	Never
21	I use mobile devices to send course assignments to my students.	9 23.7%	14 36.8%	10 26.3%	3 7.9%	2 5.3%	11 35.5%	5 16.1%	6 19.4%	5 16.1%	4 12.9%
22	I use mobile learning to share educational content with my students.	12 31.6%	5 13.2%	13 34.2%	6 15.8%	2 5.3%	9 29%	9 29%	5 16.1%	5 16.1%	3 9.7%
23	I use mobile devices to discuss some ideas and concepts with my students.	7 18.4%	5 13.2%	17 44.7%	5 13.2%	4 10.5%	4 12.9%	5 16.1%	9 29%	6 19.4%	7 22.6%
24	I use mobile devices to inform them about course alerts.	14 36.8%	14 36.8%	9 23.7%	-	1 2.6%	17 54.8%	4 12.9%	5 16.1%	2 6.5%	3 9.7%
25	I use mobile devices to send or receive emails from my students.	17 44.7%	12 31.6%	3 7.9%	3 7.9%	3 7.9%	11 35.5%	9 29%	4 12.9%	3 9.7%	4 12.9%
26	I use mobile devices to send course files or documents.	17 44.7%	7 18.4%	8 21.1%	4 10.5%	2 5.3%	10 32.3%	8 25.8%	7 22.6%	4 12.9%	2 6.5%
27	I use mobile devices to save course files in cloud storage like dropbox.	9 23.7%	6 15.8%	8 21.1%	6 15.8%	9 23.7%	5 16.1%	7 22.6%	6 19.4%	7 22.6%	6 19.4%
28	I use mobile devices to ask questions and receive students' answers.	7 18.4%	8 21.1%	13 34.2%	5 13.2%	5 13.2%	7 22.6%	7 22.6%	7 22.6%	4 12.9%	6 19.4%
29	I use mobile devices to provide my students with feedback on their assignments.	4 10.5%	3 7.9%	13 34.2%	9 23.7%	9 23.7%	4 12.9%	5 16.1%	10 32.3%	5 16.1%	7 22.6%
30	I use mobile devices to encourage	6 15.8%	6 15.8%	12 31.8%	8 21.1%	6 15.8%	3 9.7%	3 9.7%	9 29%	9 29%	7 22.6%

No	Statement	Male					Female				
		Always	Frequently	Sometimes	Rarely	Never	Always	Frequently	Sometimes	Rarely	Never
	students work collaboratively through using some applications.										
31	I use mobile devices to fulfill some administrative class work.	8 21.1%	6 15.8%	16 42.1%	6 15.8%	2 5.3%	4 12.9%	6 19.4%	9 29%	8 25.8%	4 12.9%

Table (11)
means, standard deviation, and independent samples T- test
for each of the statement in fourth domain

No	Statement	Male			Female			Comparison	
		mean	Standard deviation	Interpretation	mean	Standard deviation	Interpretation	T- test	P- value
21	I use mobile devices to send course assignments to my students.	3.66	1.097	Frequently	3.45	1.457	Frequently	.671	.505
22	I use mobile learning to share educational content with my students.	3.50	1.247	Frequently	3.52	1.338	Frequently	-.052	.959
23	I use mobile devices to discuss some ideas and concepts with my students.	3.16	1.197	Sometimes	2.77	1.334	Sometimes	1.258	.213
24	I use mobile devices to inform them about course alerts.	4.05	.928	Frequently	3.97	1.378	Frequently	.305	.762
25	I use mobile devices to send or receive emails from my students.	4.03	1.236	Frequently	3.65	1.404	Frequently	1.193	.237
26	I use mobile devices to send course files or documents.	3.87	1.256	Frequently	3.65	1.253	Frequently	.735	.465
27	I use mobile devices to save course files in cloud storage like dropbox.	2.95	1.490	Sometimes	2.94	1.389	Sometimes	.030	.976
28	I use mobile devices to ask questions and receive students' answers.	3.18	1.270	Sometimes	3.16	1.440	Sometimes	.070	.944
29	I use mobile devices to provide my students with feedback on their assignments.	2.58	1.244	Sometimes	2.81	1.327	Sometimes	-.733	.466
30	I use mobile devices to encourage students work collaboratively through using some applications.	2.95	1.293	Sometimes	2.55	1.234	Sometimes	1.301	.198
31	I use mobile devices to fulfill some administrative class work.	3.32	1.141	Sometimes	2.94	1.237	Sometimes	1.326	.189
	The General mean	3.38	.918	Sometimes	3.23	.936	Sometimes	.748	.457

The obtained results from table (10, 11) are interpreted as follows:

- Reached the General mean of all statement (3.38) with a standard deviation (0.918) , and this means that the EFL **male** instructors used types teaching practices of Mobile Learning " **Sometimes** ".in this domain.
- Reached the General mean of all statement (3.23) with a standard deviation (0.936) , and this means that the EFL **female** used types teaching practices of Mobile Learning " **Sometimes** ".in this domain.

- The types of practices that obtained the highest means among male instructors were: 1) using mobile devices to inform students about course alerts, 2) sending and receiving emails, and 3) sending and receiving course files and documents, whereas the least used type of practices was using mobile devices to provide students with feedback on course assignments.
- The types of practices that obtained the highest means among female instructors were: 1) using mobile devices to inform students about course alerts, 2) sending and receiving course files and documents, and 3) sharing educational content with their students, whereas the least used type of practices was using devices to encourage collaboration among students.
- There were no statistically significant differences at level of significance (0.05) between EFL **male and female** instructors in types of teaching practices domain.

The fifth sub-question:

To answer the fourth sub-question which stated that "What are the mobile features and apps do EFL male and female instructors use?", frequencies, percentages, means, standard deviations and independent samples T- test for each statement of the fifth domain were calculated and illustrated in tables (12) and (13).

Table (12)
Frequencies and percentages for each statement in fifth domain

No	Statement	Male					Female				
		Alwa ys	Frequentl y	Sometim es	Rarely	Never	Alwa ys	Frequentl y	Sometim es	Rarel y	Neve r
32	I encourage my students to use the "Notes" feature to take notes.	1 2.6%	3 7.9%	10 26.3%	13 34.2%	11 28.9%	3 9.7%	2 6.5%	4 12.9%	8 25.8%	14 45.2%
33	I encourage my students to use the "camera" feature to take picture or videos related to the course.	5 13.2%	7 18.4%	12 31.6%	7 18.4%	7 18.4%	3 9.7%	9 29%	6 19.4%	6 19.4%	7 22.6%
34	I encourage my students to use the "text messaging" feature to contact with others in English.	8 21.1%	10 26.3%	11 28.9%	7 18.4%	2 5.3%	8 25.8%	4 12.9%	7 22.6%	4 12.9%	8 25.8%
35	I encourage my students to use the "Bluetooth" feature for sending and receiving documents in case of low internet access.	3 7.9%	3 7.9%	10 26.3%	8 21.1%	14 36.8%	1 3.2%	1 3.2%	4 12.9%	5 16.1%	20 64.5%
36	I encourage my students to use the " whatsapp" to keep in contact with me.	19 50%	11 28.9%	4 10.5%	-	4 10.5%	15 48.4%	5 16.1%	4 12.9%	3 9.7%	4 12.9%
37	I encourage my students to download some apps that facilitate learning English.	10 26.3%	11 28.9%	12 31.6%	2 5.3%	3 7.9%	5 16.1%	7 22.6%	12 38.7%	5 16.1%	2 6.5%
38	I encourage my students to download some educational apps to view course content.	10 26.3%	6 15.8%	13 34.2%	5 13.2%	4 10.5%	4 12.9%	8 25.8%	9 29%	5 16.1%	5 16.1%
39	I encourage my students to post status updates to social apps (like Facebook and Twitter) to contact with native speakers.	5 13.2%	4 10.5%	7 18.4%	9 23.7%	13 34.2%	2 6.5%	3 9.7%	8 25.8%	4 12.9%	14 45.2%
40	I encourage my students to search course information through using some browser apps like google and chrome.	10 26.3%	6 15.8%	14 36.8%	3 7.9%	5 13.2%	9 29%	4 12.9%	14 45.2%	3 9.7%	1 3.2%
41	I encourage my students to upload or download course videos from "YouTube" app.	4 10.5%	10 26.3%	8 21.1%	8 21.1%	7 18.4%	4 12.9%	4 12.9%	9 29%	6 19.4%	8 25.8%

Table (13)
Means, standard deviation , and independent samples T- test
for each of the statement in fifth domain

No	Statement	Male			Female			Comparison	
		mean	Standard deviation	Interpretation	mean	Standard deviation	Interpretation	T-test	P-value
32	I encourage my students to use the "Notes" feature to take notes.	2.21	1.044	Rarely	2.10	1.326	Rarely	.399	.691
33	I encourage my students to use the "camera" feature to take picture or videos related to the course.	2.89	1.290	Sometimes	2.84	1.344	Sometimes	.176	.861
34	I encourage my students to use the "text messaging" feature to contact with others in English.	3.39	1.175	Sometimes	3.00	1.549	Sometimes	1.203	.233
35	I encourage my students to use the "Bluetooth" feature for sending and receiving documents in case of low internet access.	2.29	1.271	Rarely	1.65	1.050	Never	2.261*	.027
36	I encourage my students to use the " whatsapp" to keep in contact with me.	4.08	1.260	Frequently	3.90	1.448	Frequently	.550	.584
37	I encourage my students to download some apps that facilitate learning English.	3.61	1.175	Frequently	3.26	1.125	Sometimes	1.245	.218
38	I encourage my students to download some educational apps to view course content.	3.30	1.288	Sometimes	3.10	1.291	Sometimes	.606	.547
39	I encourage my students to post status updates to social apps (like Facebook and Twitter) to contact with native speakers.	2.45	1.408	Rarely	2.19	1.302	Rarely	.770	.444
40	I encourage my students to search course information through using some browser apps like google and chrome.	3.34	1.321	Sometimes	3.55	1.121	Frequently	-.690	.493
41	I encourage my students to upload or download course videos from "YouTube" app.	2.89	1.308	Sometimes	2.68	1.351	Sometimes	.663	.509
	The General mean	3.05	.919	Sometimes	2.81	.734	Sometimes	1.165	.248

Note (*) means significant at level of significance (0.05) between **male and female**.

The obtained results from table (10, 11) are interpreted as follows:

- Reached the General mean of all statement (3.05) with a standard deviation (0.919) , and this indicated that the all features and apps of Mobile Learning in this domain were used by EFL **male** instructors "**Sometimes**".
- Reached the General mean of all statement (2.81) with a standard deviation (0.734) , and this indicated that the all features and apps of Mobile Learning in this domain were used by EFL **female** instructors "**Sometimes**".
- The most common features and apps used by male instructors were: 1) Whatsapp, 2) apps facilitating learning English, and 3) text messaging. They rarely encouraged their students to use the "Note" feature and never used Bluetooth feature.
- The most common features and apps used by female instructors were: 1) What's app, 2), web browser apps, and 3) apps facilitating learning English. They rarely encouraged their students to post to the social media apps and never used Bluetooth feature.
- There are no statistically significant differences at level of significance (0.05) between EFL **male and female** instructors in the use of features and apps of Mobile Learning in this domain.

The sixth sub-question:

To answer the fourth sub-question which stated that "What are the adoption challenges do EFL male and female instructors face?", frequencies, percentages, means, standard deviations and independent samples T- test for each statement of the sixth domain were calculated and illustrated in tables (14) and (14).

Table (14)
Frequencies and percentages for each statement in sixth domain

No	Statement	Male					Female				
		Alwa ys	Frequentl y	Sometim es	Rarel y	Never	Alwa ys	Frequentl y	Sometim es	Rarely	Never
42	Using different mobile features and apps requires time and effort.	4 10.5 %	6 15.8%	21 55.3%	2 5.3%	5 13.2 %	3 9.7%	6 19.4%	14 45.2%	6 19.4%	2 6.5%
43	It is difficult for me to use mobile learning because my classrooms are inaccessible.	4 10.5 %	5 13.2%	12 31.6%	10 26.3 %	7 18.4 %	7 22.6 %	6 19.4%	13 41.9%	1 3.2%	4 12.9 %
44	It is difficult for me to use mobile learning due to high cost mobile fees.	1 2.6%	3 7.9%	6 15.8%	14 36.8 %	14 36.8 %	4 12.9 %	4 12.9%	11 35.5%	6 19.4%	6 19.4 %
45	It is difficult for me to use mobile learning because of lack of technical support.	4 10.5 %	6 15.8%	10 26.3%	7 18.4 %	11 28.9 %	7 22.6 %	6 19.4%	9 29%	5 16.1%	4 12.9 %
46	I avoid using mobile learning because it is difficult to get what I want.	2 5.3%	1 2.6%	14 36.8%	8 21.1 %	13 34.2 %	2 6.5%	6 19.4%	8 25.8%	7 22.6%	8 25.8 %

Table (15)
Means standard deviations, and independent samples T- test
for each statement in sixth domain

No	Statement	Male			Female			Comparison	
		mean	Standard deviation	Interpretation	Mean	Standard deviation	Interpretation	T-test	P-value
42	Using different mobile features and apps requires time and effort.	3.05	1.089	Sometimes	3.06	1.031	Sometimes	-.046	.963
43	It is difficult for me to use mobile learning because my classrooms are inaccessible.	2.65	1.184	Sometimes	3.35	1.253	Sometimes	-2.386*	.020
44	It is difficult for me to use mobile learning because of lack of technical support.	2.54	1.304	Rarely	3.23	1.334	Sometimes	-2.136*	.036
45	I avoid using mobile learning because it is difficult to get what I want.	2.24	1.125	Rarely	2.58	1.259	Rarely	-1.197	.236
46	It is difficult for me to use mobile learning due to high cost mobile fees.	2.03	1.052	Rarely	2.81	1.276	Sometimes	-2.784*	.007
	The General mean	2.50	.852	Rarely	3.01	.930	Sometimes	-2.351*	.022

Note (*) means significant at level of significance (0.05) between **male and female**.

The obtained results from tables (14, 15) are interpreted as follows:

- Reached the General mean of all statement (2.50) with a standard deviation (0.852) , and this means EFL **male** instructors "**Rarely**" face challenges in Mobile Learning adoption.
- Reached the General mean of all statement (3.01) with a standard deviation (0.930) , and this means EFL **female** instructors "**sometimes**" face challenges in Mobile Learning adoption.
- There were statistically significant differences at level of significance (0.05) between EFL **male and female** instructors in favor of female instructors regarding classroom inaccessibility, lack of technical support and high costs of mobile fees. Female instructors might not adopt Mobile Learning if they face such challenges.
- There were statistically significant differences at level of significance (0.05) between EFL **male and female** instructors in favor of female regarding the challenges of Mobile Learning adoption. Adoption challenges were more serious obstacles that might hinder adoption for female instructors.

4.1.2.2. The results of the second question

To answer the second main question which stated that "What are differences according to gender in terms of adopting Mobile Learning at the ELC in Taibah University?", and to examine the first null hypothesis which postulated that there would be no statistically significant differences in the average score of Mobile Learning adoption between male and female instructors toward using Mobile Learning technology at ELC in Taibah University according to gender variable, Independent sample t. test was run and the obtained results are illustrated in table (16).

Table (16)
Means, standard deviation , and independent
samples T- test for each domain

No	Domain	Male			Female			Comparison	
		mean	Standard deviation	Interpretation	Mean	Standard deviation	Interpretation	T-test	P-value
1	Usefulness	3.76	.715	Frequently	3.50	.527	Frequently	1.687	.096
2	Ease of use	3.12	.496	Sometimes	2.91	.626	Sometimes	1.520	.133
3	Adoption in teaching language skills	2.50	.784	Rarely	2.43	.731	Rarely	.354	.724
4	Types of teaching practices	3.38	.918	Sometimes	3.22	.936	Sometimes	.748	.457
5	Features and apps adoption	3.05	.919	Sometimes	2.81	.734	Sometimes	1.165	.248
6	Adoption challenges	2.50	.852	Rarely	3.01	.930	Sometimes	2.351*	.022
	All axes (Complete questionnaire)	3.11	.528	Sometimes	2.99	.378	Sometimes	1.031	.306

Note (*) means significant at level of significance (0.05) between **male and female**

The obtained results from table (16) are interpreted as follows:

- Reached the general mean of all **domains** (3.11) with a standard deviation (0.528), and this means that the adoption of Mobile Learning by **male** instructors at ELC in Taibah University **"Sometimes"**.
- Reached the General mean of all **domains** (2.99) with a standard deviation (0.378) , and this means that the adoption of Mobile Learning by **female** instructors at ELC in Taibah University **"Sometimes"**.
- There were no statistically significant differences at level of significance (0.05) between EFL **male and female** instructors in the adoption of Mobile Learning technology at ELC in Taibah University. As a result, the first null hypothesis was accepted.
- There were statistically significant differences at level of significance (0.05) between EFL **male and female** instructors in favor of female instructors which indicated that challenges might affect the adoption level of female instructors.

4.1.2.3. The results of the third question

To answer the third main question which stated that " What are differences according to age variable in terms of adopting Mobile Learning at the ELC in Taibah University?, and to examine the second null hypothesis which postulated that there would be no statistically significant differences in the average score of Mobile Learning adoption between male and female instructors toward using Mobile Learning technology at ELC in Taibah University according to age variable", One-Way ANOVA was run and the obtained results are illustrated in table (17). The obtained results are interpreted as follows: There were no statistically significant differences at level of significance (0.05) in all domains of the questionnaire between **male and female** instructors in the adoption of Mobile Learning technology at ELC in Taibah University regarding to the age variable. As a result, the second null hypothesis was accepted.

Table (17)
The results of One-Way ANOVA regarding to the age variable

Variable	Axis	Sum of Squares	df	Mean Square	F	P-Value (Sig.)
Age	First	2.439	3	.813	2.006	.122
		25.932	64	.405		
		28.370	67			
	Second	.229	3	.076	.233	.873
		20.957	64	.327		
		21.185	67			
	Third	.629	3	.210	.370	.775
		36.242	64	.566		
		36.871	67			
	Fourth	1.149	3	.383	.433	.730
		56.634	64	.885		
		57.783	67			
	Fifth	2.209	3	.736	1.020	.390
		46.204	64	.722		
		48.413	67			
	Sixth	3.491	3	1.164	1.402	.250
		53.118	64	.830		
		56.609	67			
	Complete questionnaire	.337	3	.112	.496	.686
		14.476	64	.226		
		14.813	67			

4.1.2.4. The results of the fourth question

To answer the fourth main question which stated that "What are differences according to qualification variable in terms of adopting Mobile Learning at the ELC in Taibah University?, and to examine the third null hypothesis which postulated that there would be no statistically significant differences in the average score of Mobile Learning adoption between male and female instructors toward using Mobile Learning technology at ELC in Taibah University according to qualification variable", One-Way ANOVA was run and the obtained results are illustrated in table (18). The obtained results are interpreted as follows: There were no statistically significant differences at level of significance (0.05) in all domains of the questionnaire between **male and female** instructors in the adoption of Mobile Learning technology at ELC in Taibah University regarding to the qualification variable. As a result, the third null hypothesis was accepted.

Table (18)
The results of One-Way ANOVA regarding to the qualification variable

Variable	Axis	Sum of Squares	df	Mean Square	F	P-Value (Sig.)
Last degree of the Qualification	First	2.507	3	.836	2.100	.109
		25.869	65	.398		
		28.376	68			
	Second	.327	3	.109	.333	.802
		21.274	65	.327		
		21.601	68			
	Third	2.973	3	.991	1.796	.157
		35.857	65	.552		
		38.830	68			
	Fourth	1.788	3	.596	.690	.561
		56.157	65	.864		
		57.945	68			
	Fifth	4.016	3	1.339	1.960	.129
		44.399	65	.683		
		48.415	68			
	Sixth	4.041	3	1.347	1.649	.187
		53.106	65	.817		
		57.147	68			
	Complete questionnaire	1.044	3	.348	1.642	.188
		13.779	65	.212		
		14.823	68			

4.1.2.5. The results of the fifth question

To answer the fourth main question which stated that " What are differences according to experience variable in terms of adopting Mobile Learning at the ELC in Taibah University?, and to examine the fourth null hypothesis which postulated that there would be no statistically significant differences in the average score of Mobile Learning adoption between male and female instructors toward using Mobile Learning technology at ELC in Taibah University according to qualification variable", One-Way ANOVA was run and the obtained results are illustrated in table (19). The obtained results are interpreted as follows: There were no statistically significant differences at level of significance (0.05) in all domains of the questionnaire between **male and female** instructors in the adoption of Mobile Learning technology at ELC in Taibah University regarding to the qualification variable. As a result, the fourth null hypothesis was accepted.

Table (19)
The results of One-Way ANOVA regarding to the experience variable

Variable	Axis	Sum of Squares	df	Mean Square	F	P-Value (Sig.)
Years of experience	First	7.461	19	.393	.913	.571
		18.928	44	.430		
		26.389	63			
	Second	6.449	19	.339	1.037	.443
		14.407	44	.327		
		20.856	63			
	Third	8.288	19	.436	.770	.727
		24.938	44	.567		
		33.226	63			
	Fourth	17.913	19	.943	1.202	.299
		34.510	44	.784		
		52.423	63			
	Fifth	15.002	19	.790	1.453	.152
		23.912	44	.543		
		38.914	63			
	Sixth	15.568	19	.819	.994	.486
		36.288	44	.825		
		51.856	63			
	Complete questionnaire	4.995	19	.263	1.330	.214
		8.695	44	.198		
		13.690	63			

4.1.3. Discussion of the Research Results

This study aimed to investigate Mobile Learning adoption by language instructors at ELC in Taibah University, and to examine the effects of gender, age, qualification and experience variables on the adoption process. The results obtained from the questionnaire analysis were as follow:

- Reached the general mean of all statement (male=3.76, female=3.50), indicated that the **usefulness** of Mobile Learning adoption by EFL male and female instructors was "**Frequently**".
- Reached the general mean of all statement (male=3.12, female=2.91) indicated that the ease of Mobile Learning use between male and female instructors was "Sometimes ". There were statistically significant differences at level of significance (0.05) between male and female in favor of male group. Using various features was easier for male than female. Males rarely face difficulties with hardware components of devices.
- Reached the general mean of all statement (male=2, 50, female=3.43) indicated that male and female "rarely" adopted Mobile Learning in the teaching of language skills, but they "**sometimes**" used it to teach vocabulary and pronunciation.
- Reached the general mean of all statement (male=3.38, female=3.23) indicated that male and female instructors used types of teaching practices "**Sometimes**" in this domain. The most common types of teaching practices were: using mobile devices to inform students about course alerts, sending and receiving emails, and sending and receiving course files and documents, and sharing educational content with their students. This result explains that language instructors use mobile devices to contact with students more to teach language.
- Reached the General mean of all statement (male=3.05, female=2.81) and this indicated that the all features and apps of Mobile Learning in this domain were used "**Sometimes**" by EFL male and female instructors. The most common features and apps used by language instructors were: What's app, text messaging, web browser apps, and apps facilitating learning English. This result supports the finding that language instructors used mobile devices mainly to keep in touch with their students.
- There were statistically significant differences at level of significance (0.05) between EFL **male and female** instructors in favor of female regarding the challenges of Mobile Learning adoption. Adoption challenges were more serious obstacles that might hinder adoption in case of female instructors.
- There were no statistically significant differences at level of significance (0.05) in all domains of the questionnaire between **male and female** instructors in the adoption of Mobile Learning at ELC in Taibah University regarding to gender, age, qualification and experience variables.

4.1.4. Conclusion

The study results are in consistent with some previous studies such as Behera (2012) and Gorichanaz (2011) discussed the usefulness of using mobile devices in educational fields and how it could be used to contact with students. Goundar(2011), Miangah and Nezarat(2012),and Behera (2012) examined the mobile devices features and applications such as massaging service, e-mail, portability, touch screen ...etc which allowed learning activities and a high degree of user interactivity in addition Behera (2012) researched the easiness of mobile learning for instructors both male and female, whereas in this current study it favored the male group and the female group faced difficulties "sometimes" when using mobile devices as supported by Kukulska-Hulme and Traxler (2005) they argued that it had its own constraints as small screen, reading difficulty on such a screen, data storage and multimedia limitations. Gholami and Azarmi (2012) and Chinnery (2006) agreed that there are some limitations and barriers with mobile devices to be used as educational devices which are considered challenging in this field. In contrast, Kaur and Bhullar(2013) proved that Mobile learning improved language skills" it helped learners to improve their literacy and numeracy skills and to recognize their existing abilities", but Gorichanaz (2011) and Abbasi and Hashmi (2013) results were in consistent with the current study that proved that Mobile learning can be used to teach vocabulary. Concerning the types of teaching practices, Fritschi and Wolf (2012), Levy and Kennedy(2005), Norbrook and Scott(2003) and shunye(2014) emphasized that mobile technology improved teaching practices that enhance the learning process and it is used as a way to distribute contents\materials from teachers to students.

4.2. Recommendations

Based on the findings of this study, the following recommendations are made:

1. English language instructors should participate in mobile applications workshops that cover the latest trends of teaching ESL/EFL .Well-qualified instructors have strong impact on language courses.
2. It is also important to train students to become good digital literates by helping them to develop self-independence in learning. Students should be provided with strategies for using these digital applications, and to know how they can monitor their progress and evaluate their achievements
3. Language instructors need the support of ELC to implement this type of learning in delivering instruction and to make use of different applications available for language learning.

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Model Mediated Higher Education Course

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ABSTRACT

New approach and methodology are introduced to achieve consistent integration of university courses with science and engineering processes in a comprehensive online multiuser and cloud organized modeling system. Work for organic integration of systemic, engineering, mathematical, physical, social, ergonomic, and economic aspects is organized around virtual engineering system for education and research at the Laboratory of Intelligent Engineering Systems. Recent trend of four levels abstraction at world leading active engineering modeling systems is considered. New style university program is aimed to harmonize theory, methodology, expertise, and experience in a knowledge, problem, and behavior driven experimental higher education system. When it applied at education, engineering model (EM) is considered to be in the centre of teaching and learning processes. In this article, objectives of higher education course in this environment are outlined and relevant course features are discussed using own and related publications. As main contribution concept, methodology, contexts, and structure of higher education course in engineering modeling environment are introduced. Finally, model based teaching experience at the Laboratory of Intelligent Engineering Systems in BSc, MSc and PhD courses is analyzed in close connection with course practice and engineering modeling.

INTRODUCTION

Education of engineers prepares students for a work style which is anticipated for the time when they will practice after graduation. In these years, workplace of engineers is moved from conventional drawing and simple computer modeling environment to smart modeling environment. This change is a big challenge for educators and at the same time is great opportunity to upgrade education programs. Introduction of recent leading engineering methodology and technology offers means to solve traditional problems at education of engineers such as configuration of teaching content for academic and industry, coordination of theory with practice, survey of complex engineering structures, integrating different disciplines, etc.

Development of engineering model into self-adaptive, generic, multidisciplinary, product system based, and knowledge reusing smart one for lifecycle information management (PLM) of product and other, for example experimental *engineering configurations (EC)* at industrial companies strongly changed the requirements against education of engineers. At the same time, the new environment produced new possibilities for higher education courses especially in survey of requirements, functional and logical structure of EC under development and analysis, contextual structure of engineering objects, and knowledge background of engineering activities. Perhaps the main benefit of the new virtual engineering technology is bringing theory, methodology, and systemic closer to real industrial practice in a 21st century level well organized information environment. In the centre of model based engineering activities there is a single engineering model (EM) which represents all objects and connections of their parameters. Participants of a project communicate through model while model provides them all represented information including knowledge and concept related content. In this way, smart EM is excellent EC object, knowledge, and concept storing media which can be configured for higher education course. Considering developing concept of virtual space where complex model behaves as a real space including outside connections important future work is to analyze how model mediated course can be developed into complete virtual space.

The work which is introduced in this article was motivated by a seemingly serious contradiction of up-to-date industrial practice orientation and high level scientific content in *MSc and PhD in engineering courses at the Óbuda University (ÓU)*. The solution was provided by integration of theory, methodology, systemic, and industrial practice using recent leading industrial modeling at the *Laboratory of Intelligent Engineering Systems (ÓU)*. This article is based on twenty two years research and experience in higher education courses on the way from classical to model mediated teaching and learning methodology in that laboratory. Leading engineering methods and integrated engineering systems are applied at BSc, MSc and PhD level courses of higher education bridging education programs, theory, and industrial practice. Representation of course conform active knowledge in EM which equally serves lecture explanations and laboratory tasks provides for new means of teaching, learning, and checking knowledge of students. Active knowledge can be configured to a level which represents the awaited level of student knowledge. Activity can be controlled in accordance with the actual requirement and marking system.

This article starts with objectives of work for EM based higher education course and discusses important course

related aspects using published concepts and results. Following this, the main contribution in this article includes introduction of concept, contribution, preparation, evaluation, and teaching content representation in case of the proposed course configured engineering model (CCEM). Finally, configuration of model mediated course in PLM environment is explained and teaching experience at the Laboratory of Intelligent Engineering Systems in BSc, MSc and PhD courses is analyzed in close connection with course practice and engineering modeling.

OBJECTIVES AND COURSE RELATED ASPECTS

Idea of higher education course which is relied upon engineering modeling environment was suggested by development of model representation based engineering design and problem solving in a direction which is increasingly complies with communication, process, and content of engineering course. Engineering modeling environment provides for definition of concept related engineering objects (EO), their parameters, relationships between parameters of same and different EOs, and procedures to define, relate and processing of EO parameters in a consistent system in which arbitrary model can be configured for any EC. In current models, informatics, mathematics, physics, and various engineering discipline related representations can be integrated in a single structure.

Objective of work in this article is to conceptualize model mediated course (MMC) which is defined as a new unit for education program. The institutional level objectives at ÖÜ include learning outcomes for students who will be able to apply advanced theories at problem solving based industrial practice at their work. In MMC all communication is done with or through active EM. When MMC is thematically configured for teaching of a given content, education specific EM is capable of serving lecture, seminar, or laboratory. In this way, education specific EMs are organized in course program. As in case of industrial engineering processes, education specific EM is always active in teaching and learning processes. This means that any change of a parameter or content of a model entity changes all parameters in the same and other entities which are contextually connected to changed parameters. When any change along this parameter chain breaks already decided or constrained parameter values, model does not accommodate the change. Auxiliary methods are available for explanation by teacher, for individual learning using teacher prepared annotation, and for individual student work in assignments.

Industrial engineering system for lifecycle management of product information also provides environment for collaboration of participants including access to relevant EMs by groups of participants for survey, understand, correct, and develop model. Collaborative group of participants can be configured for model mediated lecture, laboratory, and individual student work. Model centered course methodology which is introduced in this article is available for gradual and well prepared conversion of traditional courses where it is possible and beneficial. Cloud based realization allows for participation from any place and any suitable computer platform. Consequently, traditional campus room, distance, and mixed type of group organization can be applied. Participants can use laboratory installed or even own mobile computers according to the system available and the task during course hour. This applies not only for non contact type individual work but also for group organized lectures and laboratories. The future style of engineering teaching and learning starts here.

Rest of this chapter of article gives an outline about important aspects to draw up relevant problems at higher education engineering courses in order to collect requirements against MMC. These aspects are participation at a virtual course, application of up-to-date information and communication technology, fulfill changed demand from industry by appropriate course content, development of student expertise in course practice, supporting theoretical and empirical engineering learning by learning sciences, case study based program for PLM education, learning during laboratories, student satisfaction, application of browsers, student outcomes in engineering design courses, scale for assessing contextual competences, virtual classroom extension to engineering modeling system, propagating modification through chains of contextual parameters, and methods from engineering modeling in modeling of higher education course.

Participation in on-line courses is often hard to check. Janssen, J. & Erkensa, G. et al. (2007) analyzed effects of *visualization of participation* during computer-supported collaborative learning (CSCL). Participation tool was applied to visualize how much group member contributed to the group's online communication. It was concluded that this method improved participation and activeness. Participation at collaborative teaching and learning in model centered course can be easily checked, followed and evaluated because of personal check in process, individual results in model base, and on-line personal activities.

Teaching and learning of always *up-to-date information and communication technology* (ICT) is a key requirement and at the same time its preparation is one of the recent challenges in education. Selwyn, N. (2007) concluded that despite efforts to bring ICT to central positioned course subject, university faculties and students provides only for limited formal academic use of computer technology. In case of model centered course it is

impossible to restrict teaching to formal level because knowledge driven immediate reaction for any interaction enforces substantial contribution. Recent leading industrial modeling technology is highly based on smart computing methods and its laboratory reproduction guarantees application of high level ICT at education.

Classical problems at engineering education are coordination of theoretic concepts, area independent engineering methodologies, and systemic as well as configuration of coordinated course content in accordance with *changed demand from industry*. Lucía, O. & Burdío, J.M., et al. (2010) proposed a method for better hands-on training. This method contributes to improved theoretical concepts learning while includes practical aspects of relevant techniques. Recent engineering modeling provides for inherent solving these problems because it offers and enforces integrated consideration of theory and practice. On the one hand, virtual procedures require strong theoretical background which is applied at model definition and generation methods from mathematics, physics, informatics, and systemic. On the other hand, results in engineering model must be relied on proven or experimental experience and expertise. For this purpose, engineering modeling applies knowledge ware to establish coordinated situation and event driven EC definition which is theory, methodology, and practice conform.

Key recent demand by industry is for *development of student expertise in course practice*. Litzinger, T. A. & Lattuca, L. R. et al. (2011) state that engineering education needs future changes which relies upon research on expertise and learning processes those develop it at students. The article introduces results of studies in development of expertise by instructional practices including alternative approaches to learning. New suitable engineering curriculum and teaching methodology are needed to achieve deep conceptual knowledge at students in order to develop ability for fluent application of technical and professional skills. In the method in this article, model centered course refers to industrial level of modeling which inherently handles expertise. Suitable modeling tasks must be configured which implement method for the demanded development of expertise.

Johri, A. & Olds, B. M. (2011) emphasize that recent substantial growing of engineering education research is not suitably *supported by learning sciences in theoretical and empirical work on engineering learning*. Situative learning is proposed where context has central role. Socially and culturally negotiated nature of thought and action of persons in interaction is also emphasized. Although they are not issue in this article, learning sciences have great importance in education of engineers. Conventionally, this was very difficult. However, one of main trends in modeling for virtual engineering is widening contexts among others to the above areas. Current engineering modeling relies upon contexts in order to make active connections with all aspects.

Trend of modeling and information technology integration supported all engineering activities and established the paradigm of product lifecycle management (PLM) at the beginning of this new century. PLM required new style of integrated teaching and learning of engineering in order to understand increasingly complex structure of related objects and contexts. Eigner, & M. Langlotz, & M. Reinhardt, P. (2009) introduced a new course design concept in *case study based program for PLM education*. The work was done jointly with industrial companies and resulted model of a product engineering project. Reference processes are created by analysis of published results and real processes in industrial context. In this way, students cooperated in process oriented case studies. Model centered PLM is recently process oriented and process can be included in the engineering model.

Laboratory experience has outstanding importance when theory and methodology are applied in experimental environment. Model centered engineering environment provides outstanding possibility for laboratory development when professional environment is configured. Student is in communication with real industrial virtual system which simulates behavior of engineering objects, engineering methods and processes, etc. Paper Wolf, T. (2010) introduces assessment about amount of learning observed in lectures and laboratories in case of a graduate computer networks course. The results show that *learning during laboratories* almost equally as much as in lectures. Similar experiences at the Laboratory of Intelligent Engineering Systems motivated moving lectures to modeling system where students follow even participate lecture specific modeling process.

Model centered course is an advanced active and organized form of e-learning. User satisfaction is of high importance at this form of teaching and learning. Using former research results in factors affecting user satisfaction with e-Learning, Sun, P.-C. & Tsai, R. J. et al. (2008) conducted a survey to analyze critical factors affecting *learner satisfaction* in integrated model having six dimensions. Dimensions were learners, instructors, courses, technology, design, and environment. This survey revealed learner computer anxiety, instructor attitude toward e-Learning, e-Learning course flexibility, e-Learning course quality, perceived usefulness, perceived ease of use, and diversity in assessments as the critical factors. This type of analysis will be important for configuration of model based courses in the future. Results can be utilized at model development directly. Model centered engineering is developed towards cyber physical system so that remote operation of physical

laboratory needs tele-operated equipment and devices. However, this operation is generally through engineering model. Anyway, direct tele-operation may occur. Braune, A. & Hennig, S. & Koycheva, E. (2010) analyses *application of browsers* and concludes that close connection of visualization system functionality and implementation of browser requires completely new implementation of the whole solution even functionality is unchanged. As improved solution, model driven software development (MDSD) is proposed.

Goncher, A. & Johri, A. (2015) conclude that *student outcomes in engineering design courses* still underexplored and it is important to understand how institutional and organizational contexts affect student outcomes. On the basis of case study, they concluded that the context of design practice affected outcomes by constraining approach to the project and by providing a framework for process of design. They provided recommendations for design educators. The model mediated course which is proposed in this article is implemented in industrial engineering system where design process is modeled together with its arbitrarily defined contexts.

Ro, H. K. & Dan Merson, D. et al. (2015) state that engineering education needs psychometrically sound, practice oriented, and practically applicable *scale for assessing contextual competence* for undergraduate engineering students. They introduce comprehensive evidence of content, structural, distinguishing, and criterion-related validity of the contextual competence scale on the basis of student, alumni, and faculty survey data. The contextual competence scale allows engineering programs to meet self-study requirements.

Horváth, L. & Rudas, I. J. (2006) concluded that higher education courses as student organized collections of interrelated modules are challenged by following change of subject matter and knowledge in background. They proposed *virtual classroom extension to engineering modeling system* because conventional computer assisted teaching methods were not suitable to organize, manage, and communicate new knowledge. Application of engineering modeling in course activities was proposed as solution. In this context, higher education course can be considered as one kind of product. Authors focused to integrate student, teacher, and institute demand driven characteristics of modeling.

Horváth, L. (2014) characterizes engineering model as having self-development capabilities for lifecycle of industrial products using circumstance and event controlled adaptive changing of feature based object representation structure. *Modification propagates through chains of contextual feature parameters*. Objects from mechanical, electrical, electronic, computer and other areas of engineering are integrated in a single model. This needs modeling on higher level of abstraction than the physical level of feature structures. Physical level represents objects which are visible in realized engineering structure. Higher abstraction is necessary for handling various discipline related engineering objects using the same mechanism on levels of requirements, functions, and logical connections.

Methods from engineering modeling were applied by Horváth, L. & Rudas, I. J. (2004) at modeling of course in virtual type of university environment. Implementation of the feature principle was proposed using classroom features for the modification of course modules together with sets of classroom features. Structural, contact, assessment, content and handout groups of features were defined.

COURSE IN ENGINEERING MODELING ENVIRONMENT

Education of engineers needs course program which explain the problem, the possible methods for its solving, the engineering objects (EO) which are results of engineering process for problem solving, the real world behaviors of EOs, and knowledge which is applied at problem solving. Moreover, higher education course must be inherently done on high level of abstraction providing strong theoretical, methodological, and systemic teaching content. At the same time, engineer must have skill to apply the above content at practice including conceptualization, design, production, marketing, application, maintenance, and recycling of ES. Recognition the above requirement comes from expectations which are results of new achievements in engineering modeling and its systems during past decades. By now, a leading engineering modeling system is very suitable environment for higher education course activities covering the above requirements. Modeling on the level of requirements against product in recent PLM systems supports elaboration of appropriate configuration for industrial professional engineering modeling system in order to achieve MMC which fulfill the above requirements.

In order to establish course specific EM, *course configured engineering model (CCEM)* was introduced for the work in this article. CCCEM serves engineering course processes as source of model content, accommodating media for new contribution, and experimental system for *virtual execution* based measurements, analyses, and tests. In education of engineers, CCCEM serves processes about lecture, laboratory, assignment, degree work, or dissertation. Conventional document level preparation of lecture, seminar, or laboratory hour can be replaced by CCCEM. Education configured engineering modeling system (EEMS) is course specific PLM system. Using PLM

system resources, model base can be organized for practically unlimited number of CCEMs. CCEM represents great development in comparison to passive or only hyperlinked conventional teaching materials. Nevertheless, passive hyperlinks still widely applied at not executable linked content and annotations.

Development of CCEM using purposeful contributions by participants is constructive and innovative activity in a course program. Contribution to CCEM is outlined in Figure 1. Access of student and teacher participants to modeling functionality and model base in EEMS is permitted on the basis of authorization, role, and responsibility. This may be completed by course specific prerequisites. For example, access for definition of a model requires accepted previous model. Purpose of *actual modeling activity* for a contribution on user surface is defined by its type such as explanation of a CCEM or its definition process, teacher guided individual definition of CCEM, consultation on a CCEM, individual work on CCEM for assignment or degree work, and examination in virtual. Participant contribution to CCEM is defined then represented using generation procedures for relevant engineering objects (EO). According to its definition EO is any object which needs representation in EM (Horváth, L. & Rudas, I. J. (2011), in this case in CCEM. Knowledge and previous decisions in EEMS and in active objects in CCEM cooperate at evaluation of attempted contribution in real time and react by acceptance or rejection. Preparation of CCEM and evaluation of attempted contribution are explained in Figure 2 and Figure 3, respectively. Model entity handling functions are available at the host professional PLM system which is configured for EEMS. In this way, model base is configured for engineering specific higher education courses. During the past decade Knowledge Ware and Intellectual Property (IP) were established for organized and model enabled collection of knowledge at a company. One of these collections can be configured for course program depending on capabilities of the host PLM system.

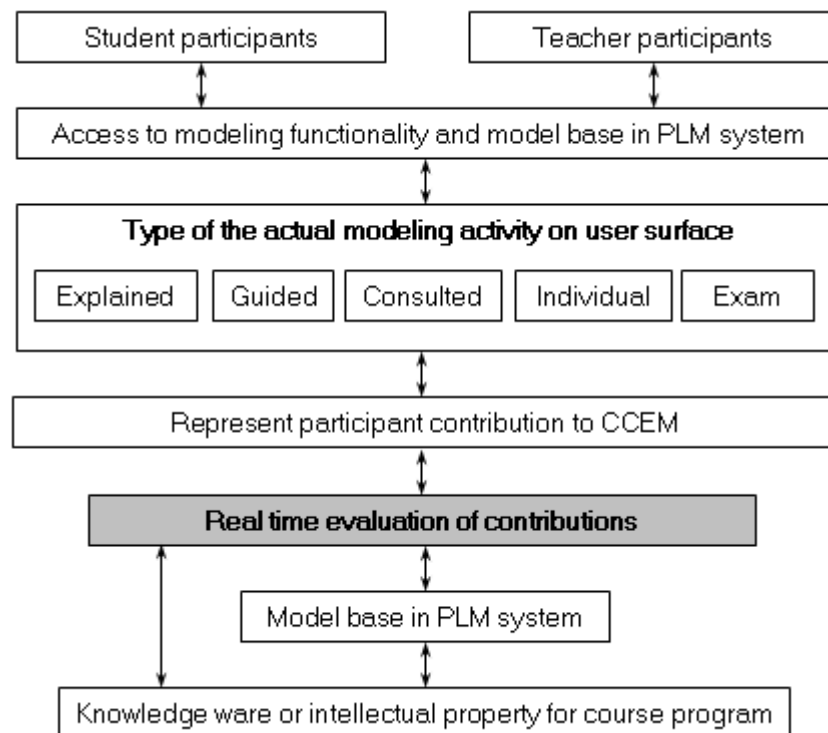


Figure 1: Contribution to course configured engineering model (CCEM)

CCEM is a special purposed model and is prepared considering its specific purpose in relevant course or courses. Purpose of CCEM is defined by the type of actual modeling activity. The next step in course definition is *revealing topics* for the actual course program (Figure 2). Term topic was defined in Horváth, L. & Rudas, I. J. (2006) as part of a proposed course model where course model modules were grouped in track. A module consisted of blocks while a block was built by topics. In the method proposed in this article, topics constitute educational structure of CCEM. Teaching content can be traced through CCEM model entities which carry knowledge intended to transfer for students. These entities represent content for topics including possible variants and alternatives. Professional object oriented modeling systems can be completed by user defined objects and related procedures in order to accommodate its course specific developments. This gives the perspective to include new course specific activities and representations for the system. Generic model can modify itself for various purposes.

The next stage of defining a CCEM is to find required model entities, contexts, and knowledge (Figure 2).

Following this, model construction plan is defined by teacher and/or student in accordance with purpose of CCEM. Multipurpose CCEM can be defined using purpose specific activity of certain entities. Active knowledge for entities and contexts is defined considering threshold knowledge. Threshold knowledge is mandatory to apply at model definition. This is one of the means to check knowledge of the students for assessment. Attempt for breaking threshold knowledge is automatically refused. Correction is allowed according to course measures. Reusable knowledge is also placed outside of CCEMs in knowledge ware or intelligent property for decided application in courses. Handling of CCEM utilizes resources for model base management in the host PLM system.

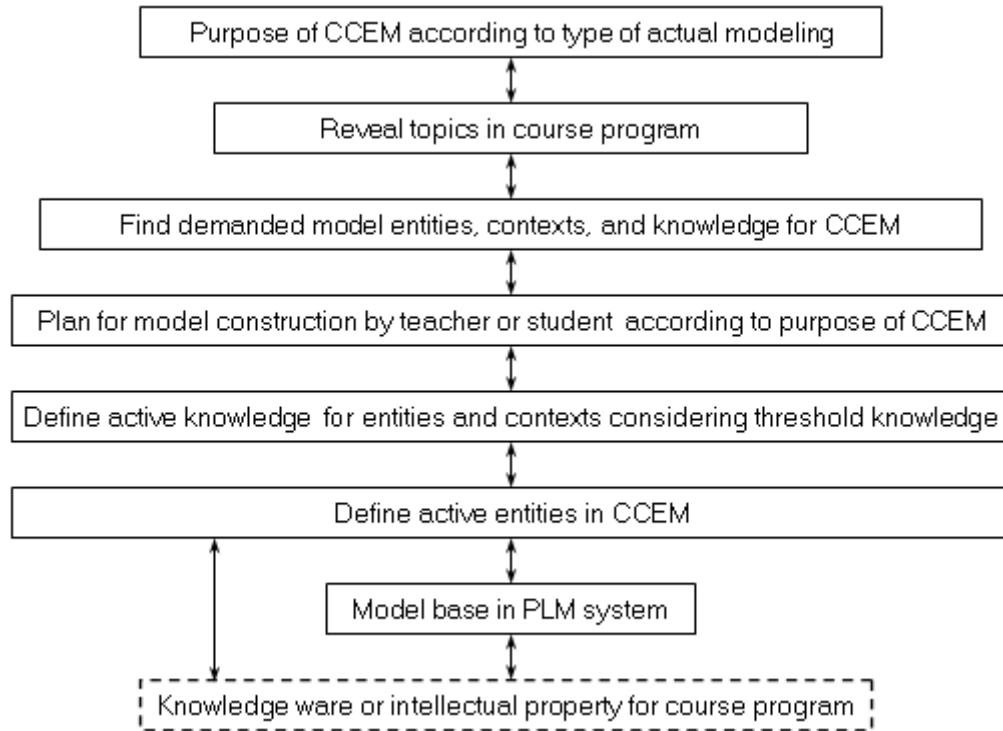


Figure 2: Preparing CCEM

Preparing a CCEM is based on topic related knowledge content. Conventionally, this knowledge was included in lectures, teaching materials which supported learning, task solution using conventional classroom means, and conventional laboratories where physical devices and equipment were configured. In case of model mediated course knowledge is in CCEM and its linked background. It is obvious that all conventional teaching content can not be represented in CCEM model entities. For this purpose, annotation is applied which is joined to relevant model entity. On-line help of modeling system gives explanation on concepts, entities, and methods and available as annotation. This may be completed by course specific annotations as required by course content. *Laboratory thematic includes EO definitions, simple or complex optimizations, analyses, and simulations.* Experiment plan can be defined for automatic execution of tests with different sets of parameters. Other important difference between conventional teaching media and CCEM is that CCEM does not allow erroneous result during course activities. Student must define model entities which do not break former decided results, constraints, rules, etc. in order to achieve valid result. Most of student work assessment can be relied upon CCEM. This places great responsibility on definition of CCEM especially in case of knowledge configuration.

Represented participant contribution is passed to CCEM (Figure 3). The *active CCEM evaluates attempt for contribution* by real time checking for breaking of active knowledge and already decided entities and parameters, and tracking consequences of contributed content along contextual chains of entity parameters. This is standard procedure in recent engineering modeling systems. In case of failed evaluation, CCEM rejects the attempt for contribution. Normally, rejection is explained only in not trivial cases in accordance with type of actual CCEM modeling activity and the content of reaction. Messages can be included using rule or check functions of knowledge definition as teaching process requires. In trivial cases, modeling system is waiting for proper contribution as in case of industrial design application of modeling. Reaction can be configured to communicate with course assessment functionality. Informatically speaking, validity of element or feature and its parameters and contextual connections which are placed in CCEM structure are checked.

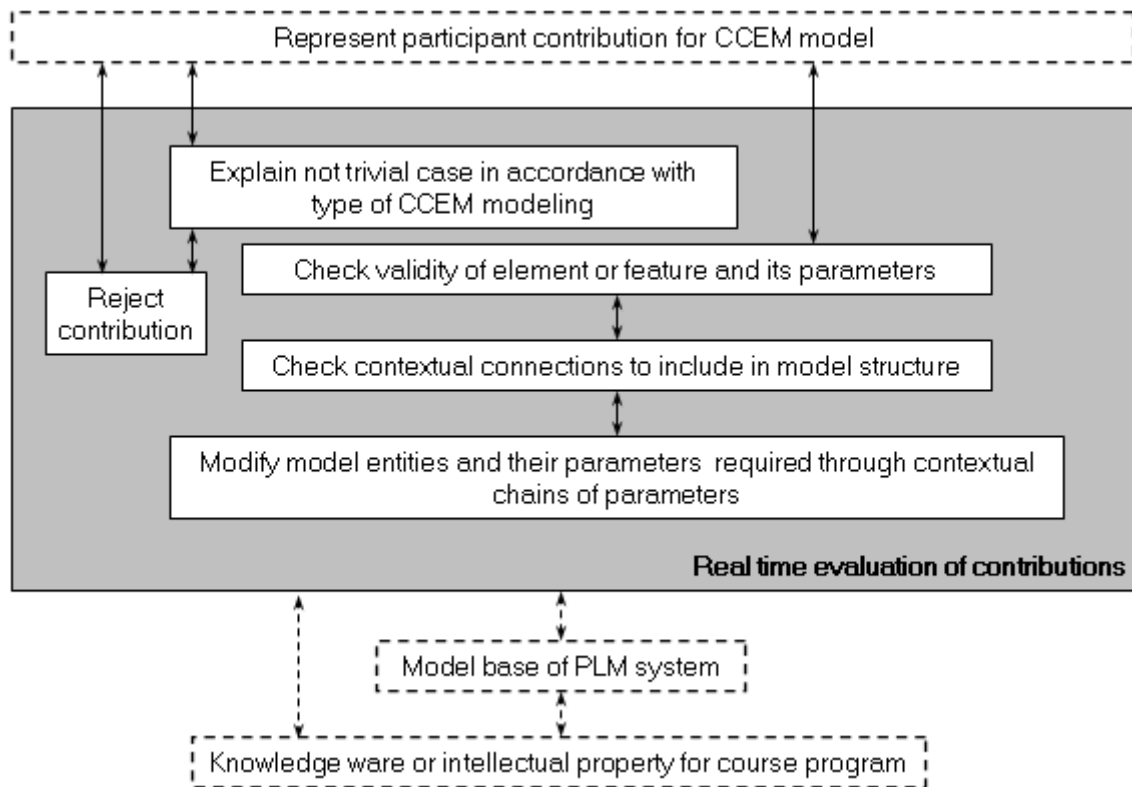


Figure 3: Evaluation of contribution

In case of approved contribution, model entities and their parameters are modified through contextual chains of entity parameters. Element and feature are main entity types in industrial EM. *Element is defined with its content and connections with other elements and is a building block of EC wide requirements, function, and logical structures. Feature is means for definition of physical level of EC and acts on related features by contextual connections.* According to experience with lectures and laboratories at model environment at Laboratory of Intelligent Engineering Systems, these entities are well configurable for application at course purposes.

Teaching and learning content in CCEM provides basis for application of EM at course activities. One of the issues raised is that how conventional teaching process could be moved into this virtual environment. *Model representation capabilities* of engineering modeling systems recently were completed by higher levels of abstraction, highly organized active knowledge, extended and integrated analyses and experiments, intelligent computing, and means for engineering research. This completion made professional engineering modeling systems more appropriate as carrier of content in higher education courses. When configuration of content for contextual topics is available, elements and features which carry content should be taught to topics are decided and contextual connections are defined for parameters in these entities (Figure 4). In an object oriented scheme, classes, taxonomy for classes, parameters of classes, and relationships between parameters within and between classes are defined. Relationships are defined as contextual connections.

As it can be concluded from the above mentioned, main carriers of knowledge content are contextual connections. This is made by wide capabilities for the definition of contexts in recent engineering modeling systems possible as it is shown in Figure 4. When one surveys the wide range of typical representations in Figure 4 possibly recognizes that any conventionally applied course content in books, handouts, and presentations can be included in CCEM as active entity. At the same time, these representations for contextual connections are also main means at cross-disciplinary modeling of multidisciplinary and cyber-physical ECs. Continuous development of engineering modeling systems as response for achievements in ES development, industrial requirements, problem solving methodology, new standards, etc. is great support for the development of course programs and it guarantees up to date education program. This is one of main benefits of the proposed CCEM model mediated higher education course. Functional and logical level representations in recent engineering modeling systems include behaviors of EC. Behavior based representation makes virtual execution of model possible raising the higher education potential of EEMS. Virtual execution of behavior based CCEM representations is one of future research issues at the Laboratory of Intelligent Engineering Systems. In this way, high level analyses can be included and utilized at education.

As it was stated above, representation of contextual connection is main means to include knowledge in EM. Parameter definitions in EM connect related parameters of different model entities by contextual connection. Wide range of context representations is available in industrial engineering modeling systems with the availability of so many settings and possibility for extension by user defined representations. Most of typical contextual connections in Figure 4 are well-known and do not need explanation in this article. Contextual connection “configuration” defines reusable structure of EOs together with their characteristics and properties. Active situations, events, and rule sets carry knowledge for decisions on element or feature parameters. Laws are often included in the form of mathematically represented curves. It is important to know that any advanced EM is highly relies upon boundary representation of shape. This is the representation of form features and consists of Eulerian topology and non uniform rational B-spline geometry. It can be concluded that rich choice of represented objects and representations allows wide range of competences at definition of CCEM.

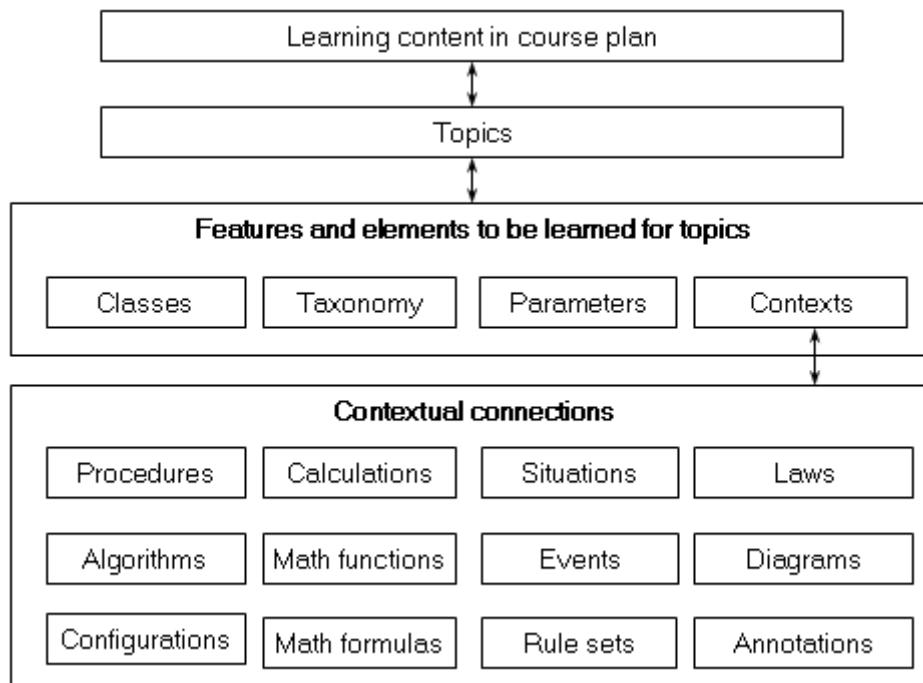


Figure 4: Teaching content in CCEM

COURSE PROGRAM AS PROJECT IN PLM SYSTEM

Author of this article think that more or less moving of engineering courses into PLM environments is the only solution for future problems of engineering education. Recent developments of PLM systems bring theory and practice closer and allow for realization real industrial environment at engineering laboratories. High number of contextual connections between entities for different disciplines at development of recent ECs increasingly requires disciplinarily integrated means of model representations. A concept was elaborated for configuration of PLM environment for model mediated course (Figure 5) considering demands awaited in the next future. Basically, this environment serves as virtual laboratory application of which inherently extends to other course activities. At the beginning, application of conventional course structure helped to understand conversion of conventional course activities into activities in this virtual environment. Future developments certainly will utilize full potential of this education technology at course organization. This inevitably means more integration of theory, methodology, systemic, and practice in teaching program modules.

Course programs are handled as projects in PLM environment utilizing PLM resources for collaboration. A set of CCEMs constitutes teaching program of a course. Participants of projects are from academic, research, and industrial areas and visitors also may be included. Research and industrial participants help work of academic participants. Everybody can join from own place improving accessibility of outside participants. Visitors participate similarly as in case of an open university program. Participant context includes role, course, course type, and authorizations. By now, cloud organized PLM environment is available at main developers. In course specific cloud environment everything is accessed as service. Main structural units of the course environment provide for modeling resources in order to definition elements, features and processes, and collaboration resources in order to management of projects, teams, and the related participant contexts. University intellectual property (IP) may serve as organized storage of reusable theory, procedure, methodology, experience, algorithm,

and context representations. CCEM is placed in the structure of course configured model system (CCMS). Connected physical objects provide connections with real world devices and equipment, for example in laboratory with physical objects.

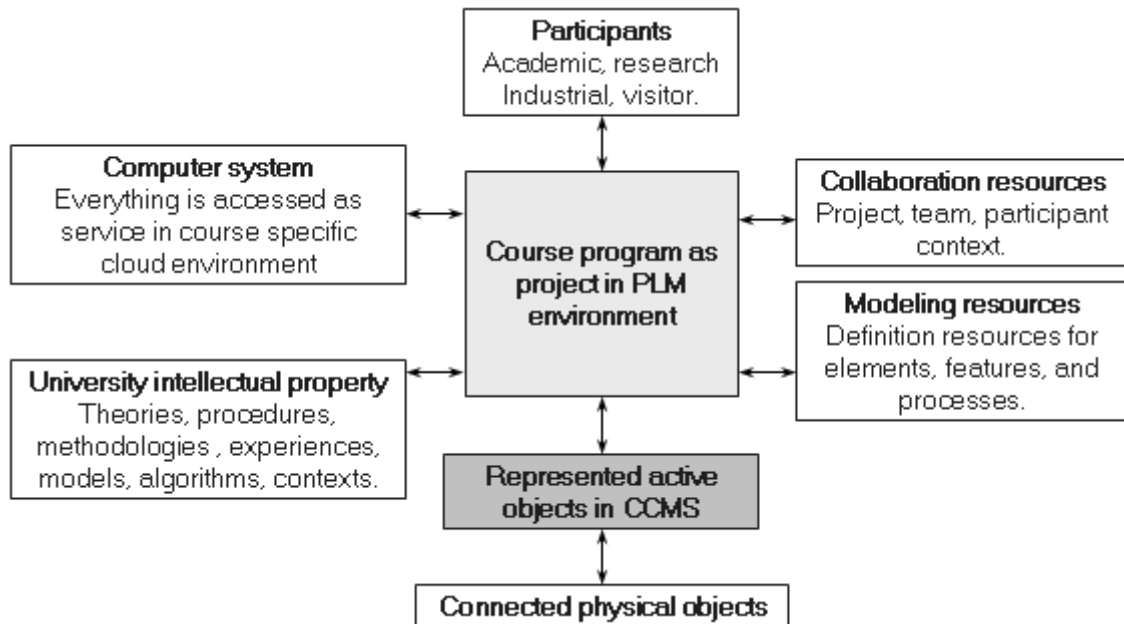


Figure 5: Model mediated course in PLM environment

EXPERIENCE AND FINDINGS IN COURSE PRACTICE

Laboratory of Intelligent Engineering Systems was founded for research in high abstraction centered intelligent product modeling at Obuda University in 2005. This laboratory applied leading PLM system with wide modeling capabilities. Following this it developed in accordance with development of engineering modeling and its systems. This laboratory is suitable for gaining experience at education in model mediated course environment with active student participation during scheduled lecture and laboratory hours. It is important to know that certain elements of course program require conventional teaching method mainly because some subject matter is not suitable for modeling environment.

All teacher and student participants open own virtual (model) space at the beginning of lectures and laboratories. This space may be empty or loaded with initial CCEM which is applied at analysis, simulation, thematic modification, or extension activities. Most of teaching content can be organized in CCEM. The rest of teaching content is made accessible for students as on line presentation at a dedicated site in close connection with CCEM content. Because PLM system can be accessed by students only in the laboratory, the above mentioned presentation includes thematic snapshots from the definition for actual CCEM together with annotated and hyperlinked explanations in order to prepare students for classroom hour in laboratory. BSc and MSc courses in different engineering disciplines provided for experience in this style of education during the past six years.

Organizing teaching content around one or more appropriately configured CCEM unit for a lecture brought important change in efficiency of our teaching programs. Teacher explained CCEM offers good possibility to emphasize essence of concepts, objects, and processes in subject matter at lecture. Because physics, mathematics, and informatics are embedded in modeling procedures, model creation processes, and active model entities, consideration of these disciplines can not be avoided during classroom work and student recognizes importance and role of these disciplines. Additional benefits come from “living” teaching content, integrated informatics and engineering thinking in a virtual space, and defining and following chains of contextual connections between parameters of engineering object representations. While active modeling process using contextual model acts as guide for student in group learning and individual work it does not accept erroneous contributions.

Latest concept of EC definition is starting with cooperating systems which operate advanced products. Learning by communication with representation of systems in industrial ECs helps in getting skill for human cooperation with cyber-physical systems where virtually operated behaviors are integrated. Cars, aircrafts, production equipment, etc. are developed with growing application of highly automated cooperating systems. Experience

with system level organized ECs shows similar problems at human communication as experienced at human interaction with engineering modeling systems.

In the next future, closely connected PhD subjects and research projects will be introduced in CCEM environment at the Doctoral School of Applied Informatics and Applied Mathematics (AIAMDI, Óbuda University). In case of doctoral program, research related subjects are best arranged in CCEM when research is done in the same system. In this context, future trend to support basic and applied research by specifically configured CCEM will be followed. Among other benefits, outside contexts of the research can be easily defined. In this way, different PhD works can be organically connected in a common project. Model centered communication can be developed among cooperating research centers. CCEM based program at the AIAMDI is anticipated to represent one of new engineering education concepts and methodologies which can fulfill changed demands in the new century.

CONCLUSIONS

This article introduces a possible way to moving conventional engineering course programs into education specific configuration of professional engineering modeling. Industrial modeling systems are developed towards more higher education conformity. In order to utilize this possibility, course configured engineering model (CCEM) was conceptualized as unit for model mediated course (MMC) program. Preparing CCEM structure, contribution to CCEM and evaluation of contribution, and configuring of teaching content are challenging and new style tasks for course planning and realization.

Concepts and methods in this article are highly based on teaching and learning experience gained during lecture and laboratory practice at the Laboratory of Intelligent Engineering Systems. It was recognized that industrial modeling systems were forced towards integrated multidisciplinary development and research environments by new industrial products and technologies. These environments assure development of active CCEM which is a new carrier of knowledge and provides for a set of new characteristics which enhance education in engineering. Students collaborate in an environment which is supposed to be at their future working place.

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On The Use Of Euklid Dynageo In Geometry Lectures At The High Schools Or Universities

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ABSTRACT

Interactive geometry software's (IGS, or dynamic geometry environments, DGEs) are computer programs which allow one to create and then manipulate geometric constructions, primarily in plane geometry. The effective use of such software as classroom materials becomes possible only when teachers and students have the necessary information and skills. By using EUKLID DynaGeo they could able to draw and recognize the graphs of functions more easily. With this aim in this paper Euler line of a triangle is demonstrated.

Key words: Dynamic geometry software, EUKLID DynaGeo, Geometry, Mathematic education

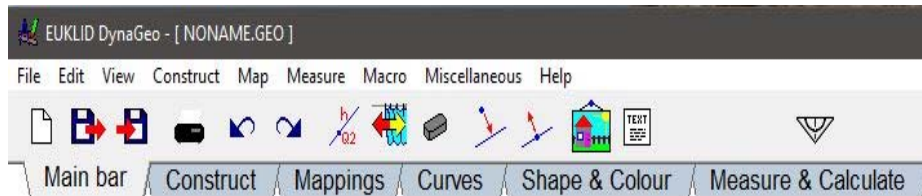
INTRODUCTION

Students often find geometrical concepts abstract and difficult to understand. This results in poor performance, which contributes in the declining interest in geometry. In today's world where almost all opportunities of technology have great impacts on education, using computers as supporting materials has become an indispensable element of education. Consequently, computer aided instruction has gradually gained importance and been improved in a variety of ways with the help of a great amount of research. Computer aided instruction (CAI) helps to the teaching and learning of scientific concepts independent of time [1]. The adoption of DGS in mathematics education demands that teachers have technical knowledge about how to use DGS and the conceptual understanding of mathematics. Teachers are faced with a series of new challenges [2] [3].

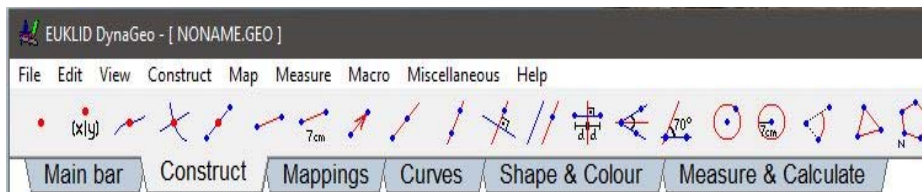
What is Euklid DynaGeo?

EUKLID DynaGeo is a computer program for "moving geometry". It enables the creation of dynamic drawings i.e. Drawings, in which (some) points subsequently can be moved (with the mouse), without loss of lost the set when creating the drawing relationships between geometric objects [4] with following menu configurations:

1. Main bar:



2. Construct:



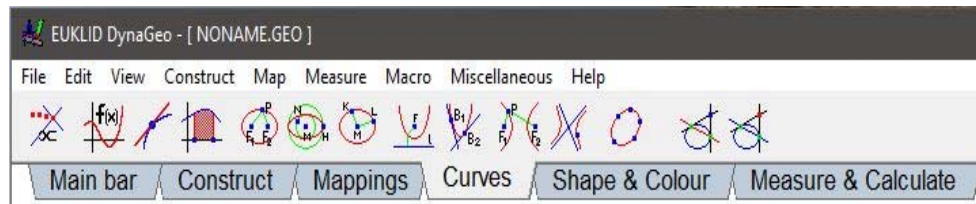
3. Mappings:



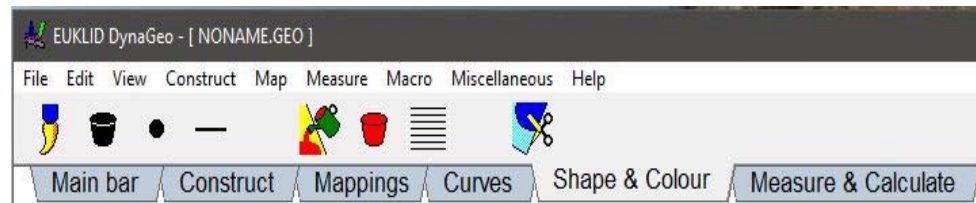
Corresponding author:

E-mail address: ecan@sakarya.edu.tr

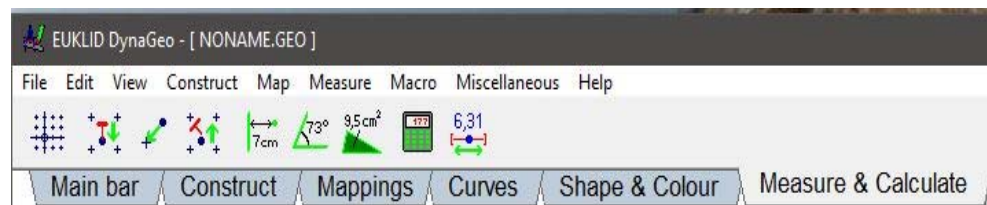
4. Curves:



5. Shape & Colour:



6. Measure & Calculate:



What is Euler line?

In the 18th century, the Swiss mathematician Leonhard Euler noticed that three of the many centers of a triangle are always collinear, that is, they always lie on a straight line. This line has come to be named after him “the Euler line”. The three centers that have this surprising property are the triangle's centroid, circumcenter and orthocenter.


Centroid: The centroid (S) is the point where the three medians converge. The medians are the lines joining a vertex to the midpoint of the opposite side.


Circumcenter: The circumcenter (U) is the point where the perpendicular bisectors of the triangle's sides converge. The three perpendicular bisectors are the lines that cross each side of the triangle at right angles exactly at their midpoint.


Orthocenter: The orthocenter (H) is the point where the three altitudes of the triangle converge. The three altitudes are the lines that pass through a vertex and are perpendicular to the opposite side.

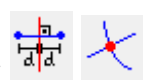
DEMONSTRATION OF A TRIANGLE'S EULER LINE WITH EUKLID DYNAGEO

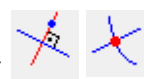
We can demonstrate “the Euler line” of a triangle with using following steps:


a) Choosing free basis points as vertices (corner points) arbitrarily: For this we need .

b) Drawing sides of the triangle with .

c) Finding centroid (S) in order of .

d) Determine circumcenter (U) in order of .

e) Determine altitudes and marking of the orthocenter (H) in order of .

Finally to show that these three points are collinear with .

Note that the form and the color of all points, lines etc. could be change with “Shape & Colour” menu.

Final display would be like in Figure 1.

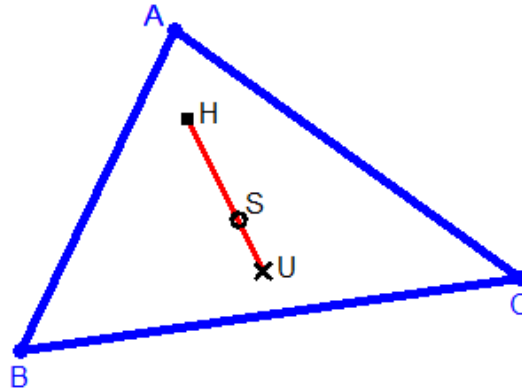
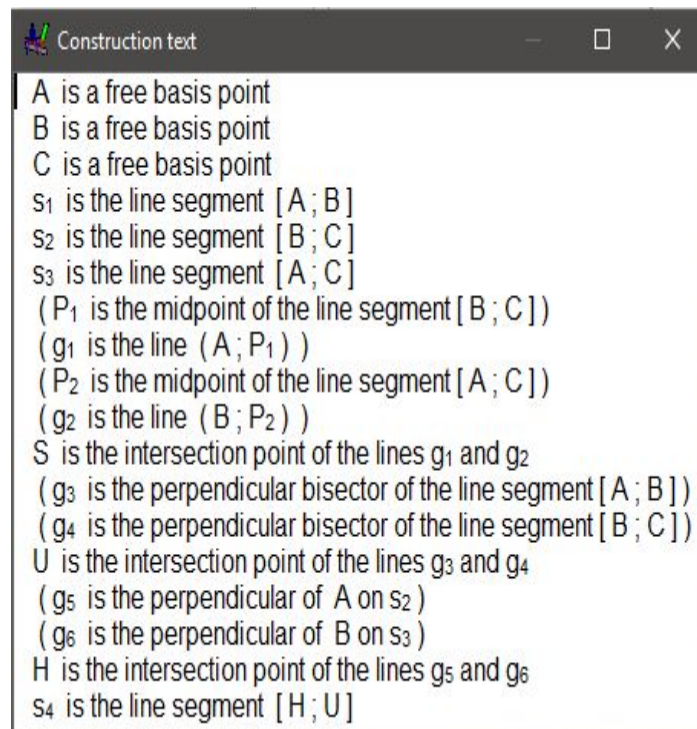




Figure 1. Euler line of a triangle

All constructions step by step could be find in menu “View -> Show construction text” as follows:



There are many user-friendly command in EUKLID DynaGeo. For example, if the question would be: “Show that for Euler line of a triangle is $d(HS) / d(SU) = 2$ ”, than should be use Measure & Calculate menu and

demonstrate with in order of  and  and displayed as in Figure 2.

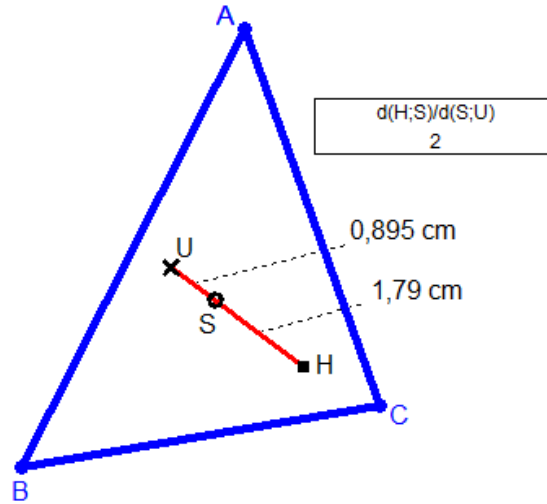


Figure 2. For Euler line of a triangle is $d(HS) / d(SU) = 2$

CONCLUSIONS

This Paper demonstrate how Euklid DynaGeo help the students for the understanding and give access for the constructional geometrical concepts.

Nowadays, computer use by youth is always increasing. That brings to use more computer programs in lectures. EUKLID DynaGeo is one of them. It gives us practice solution for the geometric drawings.

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Online Learning Is A Process, Not Finesse

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ABSTRACT

This research-based paper presents and discusses relevant online learning and media literature and highlights its impact on the success of online learning. It also discusses the utilization of the instructional system design (ISD) approach for online learning and presents some best practice recommendations based on the use of the author's 5D's model (define, design, develop, deliver, and determine) for planning and teaching online courses.

Keywords: Distance learning, online learning, multimedia, web-based technologies

INTRODUCTION

While traditional face-to-face classes require students to be in the same place at the same time with their instructors, online learning has eliminated such a requirement. Today with the aid of computers and web-based technologies, adult learners can study almost anything anywhere at any time. Also, the utilization of new media for online learning has turned what was once a learning fantasy into an instructional reality and made online classes closer than ever before to face-to-face classes. Therefore, the utilization of new media forms has been on the increase for the last few years. However, Richard Clark warns that: "Media are mere vehicles that deliver instruction but do not influence student achievement any more than the truck that delivers our groceries causes changes in our nutrition" (Clark, 1983, pp. 445-459).

Clearly, students' achievement cannot be measured by the finesse of the media used with the instruction but by the students' performance that happens as a result of the instruction. However, online learning is a comprehensive process that is planned systematically and managed dynamically in which the instructional design and planned media are integrated with the Internet and web-based technologies to drive students' success. In the 5D's model for planning and teaching online courses, Aisami states that: "Developing and managing online courses is a comprehensive process that integrates both the instructional system design (ISD) and the Web applications to achieve the intended learning outcomes of the online course" (Aisami, 2009, pp. 1628-1639).

This research-based paper presents and discusses relevant online learning and media literature and highlights its impact on the success of online learning. It also discusses the utilization of the instructional system design (ISD) approach for online learning and presents some best practice recommendations based on the use of the author's 5D's model (define, design, develop, deliver, and determine) for planning and teaching online courses.

DISTANCE LEARNING AND INSTRUCTIONAL DELIVERY MEDIUMS

Distance learning started first as a correspondence education in which the instruction was delivered to target learners via mail correspondence. Later, the educational radio, television, and film were all used in addition to the printed materials, followed by audiocassettes, videocassettes, and fax. Then computers came and computer-based technologies including computer-aided instruction (CAI) and computer-based training (CBT). Satellite, video teleconferencing, and the Internet are also used as more advanced instructional delivery mediums for distance learning. However, the Internet became a more common medium for learning in the late 1990s and its utilization increased by the year until online learning has become synonymous with distance learning.

Year after year, online learning has advanced steadily, and its impact is far-reaching in the global community beyond the borders of the United States. As learning phenomena, online learning is reinventing higher education and transmuting access to all levels of education. In fact, the online learning movement has been gradually changing the academic structure and landscape of the entire learning process (Beazley, Aisami, and Addison, 2009, p. 1384).

ONLINE LEARNING AND THE MEDIA DEBATE

Richard Clark's "media are mere vehicles" argument generated lots of controversy in the 1980s. It also led to a heated media debate in the 1990s. Robert Kozma (1994) argued that:

Do media influence learning? Perhaps it is time to rephrase the question: How, do media affect learning? Perhaps it is time to go beyond our concern with "proving" that media "cause" learning so that we can begin to explore the question in more complex ways. Perhaps we should ask, what are the actual and potential relationships between media and learning? Can we describe and understand those relationships? And can we create a strong and compelling influence of media on learning through improved theories, research, and instructional designs? (SLMQ Volume 22, Number 4, Summer 1994).

Despite the intensity of the 1990s media debate, the debate started to weaken with the turn of the century as the Internet became a viable instructional delivery medium. Also, as the distinction became more vivid between the media forms such as visuals, videos, and games that are used as part of the instructional contents and the Internet that is used as an instructional delivery medium to carry it, the debate has shifted from what effect the media has on learning to how effectively multimedia (a combination of two or more forms of media) can be used with online learning.

Today, the web-based technologies of the 21st century and social media have transformed the role of teachers and the way in which they can teach more proficiently. There are many web-based tools that online instructors can use to enhance the quality and effectiveness of their online courses. These tools may include but not limited to video and photo editing, iTunes and voice thread. These web-based technologies have also transformed the role of students and the way in which they can learn more efficiently. Online students can use the same web-based tools and social media like Blogs, Twitter and YouTube to learn about the instructional contents of their online courses and obtain assistance to complete the required assignments. Currently, web-based technologies and social media are widely accessible and commonly available to almost every student in the United States. Bock (2013) stated that "the Pew Internet & American Life survey recently released results that indicated that 84% of teachers believe that using technology and online content in the classroom leveled the playing field for their students across the economical social spectrum" (p.14).

In the last decade, about every study conducted in the field of multimedia and online learning has found multimedia to be a strong learning enhancer. However, instructional multimedia ought to be planned and used purposefully for online learning, and the way it should be used depends on the nature of the instructional contents and the characteristics of the target learners. For instance, if a learning module of an online social science course is about Social Inequality, a video clip of Martin Luther King's "I have a dream speech" can make the instructional contents come alive. Then, for instructional activity, the instructor may include a class discussion that requires students to discuss Social Inequality and analyze it in light of the social and historical factors that precipitated the speech. However if it is a rhetoric course, the same video clip can be used, but the pertaining instructional activity has to be different. And it should be assessed for effectiveness by asking students to provide a critical analysis of the speech's delivery and its impact on a particular target audience. Similarly, if it is a theater course, the instructor can ask the students to watch the video and require them to perform the speech; videotape themselves and post the videos on the discussion board for the class to critique it.

ONLINE LEARNING AND THE INSTRUCTIONAL SYSTEMS DESIGN (ISD)

Apparently, the fundamental question that resulted from the 1990s media debate is not if media affects learning, but how instructors can use it effectively to influence the learning outcomes. This learning notion goes back to the instructional system design (ISD) that found its roots in Robert M. Gagné's 1965 first edition of the "Conditions of Learning and Theory of Instruction." Gagné's 1965 principal assumption is that there are different types of learning outcomes, and different internal and external conditions are necessary to promote each type.

THE ADDIE INSTRUCTIONAL SYSTEM DESIGN

The ADDIE instructional system design model is a generic process of planning, designing and managing instruction. As shown in figure 1, ADDIE is an acronym for a comprehensive process of five phases: analysis, design, development, implementation, and evaluation. The ADDIE instruction system design model was first developed for the U.S. Army during the 1970s by Florida State University's Center for Educational Technology where Gagné was working at the time and wrote the subsequent editions of the "Conditions of Learning."

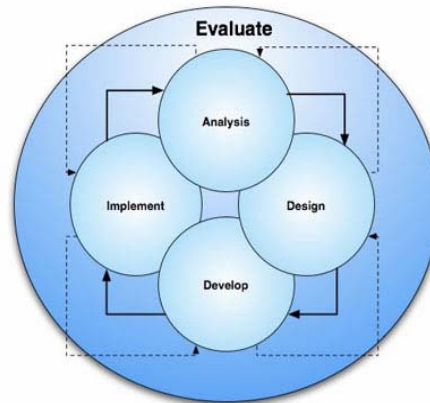


Figure 1: ADDIE Instructional Design Model

5D's MODEL FOR PLANNING AND TEACHING ONLINE COURSES

The 5D's model is a planning and teaching approach for online courses. It emulates the structure of the ADDIE's model. As shown in figure 2, the **5D's** model is comprised of five interrelated phases: “**Define**, **Design**, **Develop**, **Deliver**, and **Determine**. It is a systematic process of an instructional cycle in which all five components work together to achieve specific learning outcomes” (Aisami, 2009, pp. 1628-1638).

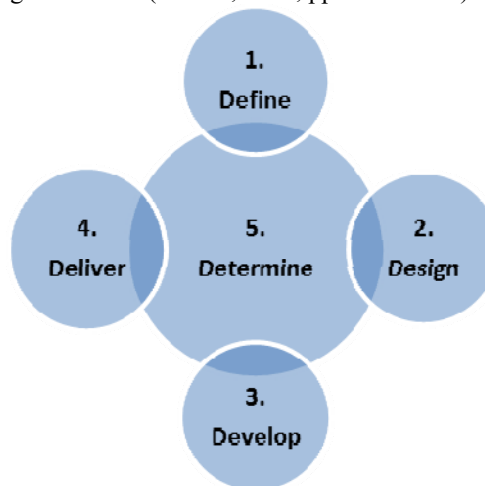


Figure 2: 5D's Model for Planning and Teaching Online Courses

Despite the flexibility of the ADDIE model, it is conceived to be broad and intense. In comparison, the 5D's model is intended to be specialized and simple, and yet serves the same purpose (designing and planning instruction to meet specific learning outcomes). My instructional design graduate students and the instructors whom I help with course design often complain about the ADDIE and ADDIE-based ISD models like the Dick and Carey's 9-component model as being complex and hard to implement in relatively small learning settings such as lessons and courses. Therefore, the main aim of the 5D's model is to provide instructors and instructional design students with a quick and reliable approach to a micro instructional design. The relationship between the 5D's and ADDIE model can be illustrated by the analogy of getting “to-go” food vs. sitting and waiting in the dining room of a formal restaurant to get the same food. The need for a quick and reliable systematic online teaching approach like the 5D's model was established by the growing phenomenon and demand of online learning. Such need can be compared to the one that led to the creation of the second generation of the instructional design models (ID2).

The ID2 models were developed based on the premise of if interactive instructional technologies are to provide a significant part of the increasing amount of education and training demanded by society, then there is a critical need for significantly improved methodology and tools to guide the design and

development of high-quality interactive technology-based instructional materials” (Merrill and Associates, Educational Technology, 1991, 30(1), pp. 7-11 and 30(2), pp.7-14).

Figure 3 outlines the instructional design events for each phase (D) of the 5D’s model. First, the overall goal of the online course is defined based on the students’ needs and current technological skill level; the course objectives are stated based on the course’s overall goal. Secondly, the course instruction is designed around the course objectives, and the instructional strategies are designed and developed based on the learning objectives of the course. Third, the instructional materials and course documents are all developed based on the instructional strategies.

<i>Define</i>	<i>Design</i>	<i>Develop</i>	<i>Deliver</i>	<i>Determine</i>
Define Course Pre- instructional Activities -define course overall goal and learning objectives -assess students technical skills and readiness for online learning -determine requirements, accessibility, connectivity and support system	Apply Instructional System Design (ISD) -write performance objectives -design instructional activities - develop objective-based assessment -design instructional strategies	Develop Course Activities & Documents syllabus, instruction, materials and media, activities, interaction, collaboration, assessment, and course management strategies	Build Course Web Site -create a course map -create course content areas and upload contents -create an online assessment - set the stage for course delivery -manage the online learning process -monitor students’ performance to ensure that students on the right path toward achieving the course objectives	Determine Course Effectiveness -conduct formative and summative evaluation -collect quantitative and descriptive data -analyze data to revise the course instruction and improve course website

Figure 3: 5D’s Model Outlines

Fourth, the course website is developed, built and furnished based on the instructional strategy that is established in the “design” phase and developed in the “develop” phase. Also, the course website is used as an instructional delivery medium to implement the course’s overall instructional design. Fifth, at the end of the cycle, the online course is evaluated comprehensively to determine its effectiveness regarding the students’ ability in achieving the course’s planned learning objectives. However, the instructional design cycle of the course is not complete without applying the required instructional revision based on the data and information collected by the various means of the course evaluation including students’ feedback.

BUILDING AND FURNISHING ONLINE COURSE WEBSITE

Due to the nature of the online instructional delivery medium, the 5D’s model includes and emphasizes the “deliver” phase as the most critical component of the process of the online teaching and learning. It focuses on using information and directions generated by the proceeding components of the model, mainly the instructional strategies designed and developed at the “design” and “develop” phases, to build and furnish the course website. As shown in figure 4, the course website starts with a home page that shows a thematic banner for the course (graphic design for instructional multimedia). The home page also includes all of the main content areas of the online course such as:

“Start Here”: It includes the course map (what to find and where to find it). It begins with a text and or video clip by the instructor to introduce him/herself and the course and also inform the students of what they are expected to learn and how to learn it.

Announcements: It is the area where students can find the instructor’s daily, weekly and monthly announcements that provide updates, weekly summaries, overviews, and outlines the course’s progress.

Course Syllabus: The course syllabus is one of the most, if not the most, important document of the online course. It is a comprehensive document. It includes the course requirements, learning objectives, assignments, schedule, policies, resources and online learning support system. It is considered to be an unsigned contract between the online instructor and the students. It is a tool that is required to present the first impression and engage students.

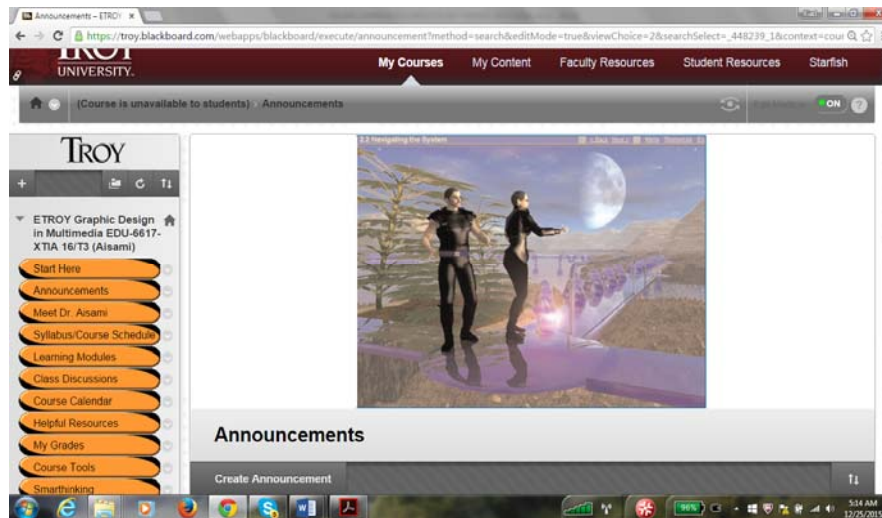


Figure 4: Sample of Course Website Home Page

Learning Modules: It is another important content area of an online course. It presents the course instructional segments in nine weeks (the duration of the sample course). One instructional segment per week all included in a folder with the week's number and title as shown in figure 5 below.

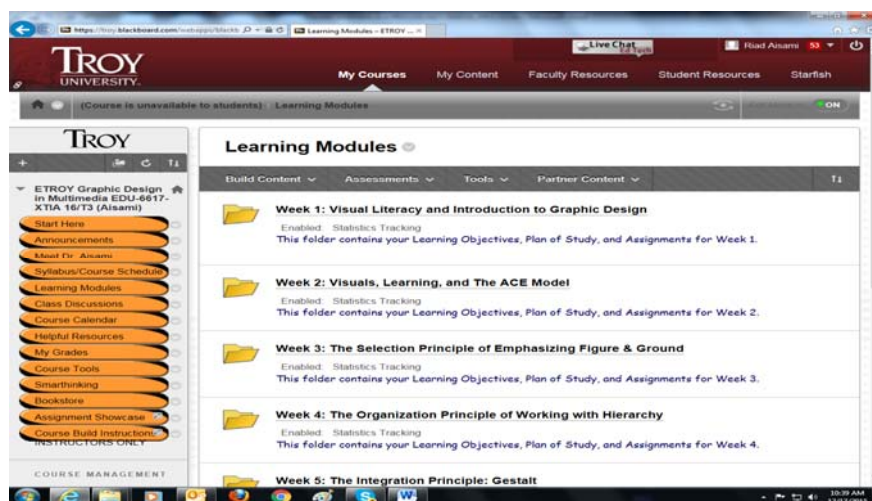


Figure 5: Sample of a layout for 9-Week Learning Modules

As shown in figure 6, each weekly folder includes the week's (segment's) learning objectives with an overview; a plan of study (what you need to know) and weekly instructional materials including lectures and related web resources. It also includes a step-by-step to-do checklist of the required weekly assignments and deadlines as shown in figure 7.

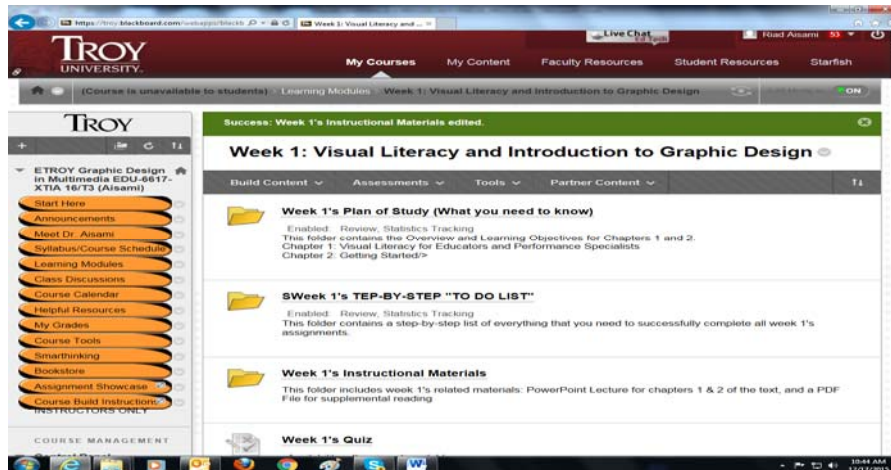


Figure 6: Sample of a one Week Learning Module's Content

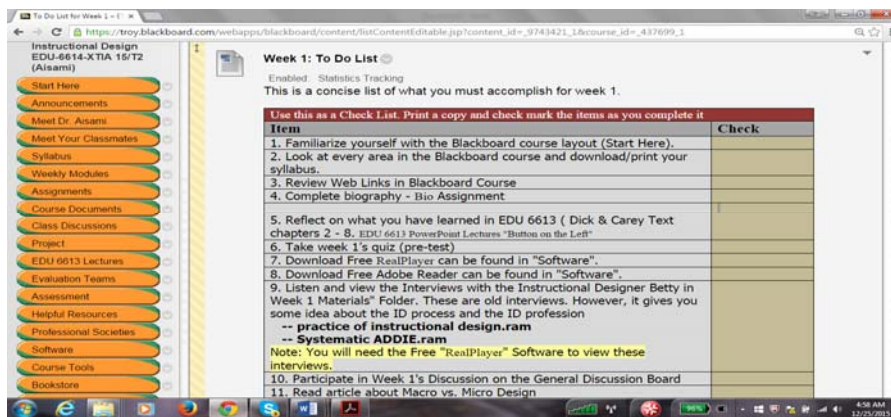


Figure 7: Sample of weekly step-by-step to do list

Other Content Areas: The online course website may also include “meet the instructor” and “meet your classmates” are used to create the sense of community and counter the social isolation that online students complain about the most in this learning setting. Also, other content areas are used to provide students with learning support. These areas may include “course tools,” “helpful resources,” and “bookstore.”

ONLINE COURSE EVALUATION

As visualized in figure 2, “Determine” (evaluate and revise) is the fifth phase of the 5D’s model and the first one in the reversed instructional cycle. It is the large evaluation circle that works interchangeably with the first three phases (define, design, and develop) to ensure that all are working together efficiently to build the stage for a successful online instructional delivery. Then upon course completion, the online course delivery gets evaluated to determine its success (students achieving the course learning objectives as defined and preplanned at the “define” phase). Therefore, students can offer useful information based on their learning experiences, and their feedback is essential for improving the course’s instructional design as well as instructional delivery.

The 5D’s model was first developed and published in the Encyclopedia of Distance and Online Learning in 2005 when there were not too many systematic online learning models. It also was updated and republished in 2009. For the last five years, it has been used in part or full to plan and teach several online courses. Upon the completion of each course, students’ feedback is solicited; data and formation are collected and analyzed, and the course gets revised accordingly. However, some of the instructional elements of the course such as online assessment also get revised as needed during the course delivery to ensure that the instructional activities and assessment are all well-aligned with the course’s learning objectives.

CONCLUSION

Online learning is more than the mere sum of isolated web-based events or media finesse. Also, media and instructional contents should not be conceived as mutually exclusive events. Instead, both events ought to be utilized as essential components of a comprehensive and systematic process in which all instructional events are integrated and together along with the Internet as an instructional delivery medium and web-based technologies drive to students' online learning success.

RECOMMENDATIONS

Finally, the following recommendations for planning and teaching online courses are made for online instructors based on the 5D's model's best practice experience and students' accumulative feedback:

- Plan, design, and develop course contents in advance
- Build a structured, organized, and engaging course website
- Ease students' anxiety before the course instructional delivery begins
- Build rapport with students
- Learn students' names
- Create an atmosphere of trust
- Establish rules of engagement
- Maintain close communication with students
- Engage students on the first day
- Plan and require students' participation and provide feedback
- Encourage students' collaboration and develop a learning community
- Include synchronous activities and make virtual classes as real as possible
- Make online learning an enjoyable experience
- Conduct an ongoing course evaluation and revise course activities accordingly

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Opinions And Recommendations about the Interaction Improvements of Environmental Education And Technology

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Abstract

Technology and environment facts, which are important factors in the opinions about the interaction improvement between environmental awareness and technology were inspected in this study in order to understand the opinions of Gazimağusa, Çanakkale area residents. These facts, which have decisive properties in life of humans, affect each other on every level. In this study, opinions and recommendations of Gazimağusa, Çanakkale residents about environmental awareness and technology interaction related to the Pond in the area were inspected.

Technology, which was improved due to necessity in early ages, has started to control people's lives nearing the end of 20th century. In 21st century it has started to be incorporated in every aspect of life and is now being questioned for the emerging environmental problems. Technology, which also has a central role in any state's improvement, being blamed for causing environmental problems is also seen as the source of resolution for said problems which is contradictory. Globalization fact is also causing complications in this situation. Continuous improvement is important on solving global environment problems. In this context, within continuous improvement framework, technologies used and policies applied have an important role. Within the scope of this study, improvement opportunities with the use of environment and technology facts for the Pond in Gazimağusa, Çanakkale area. In this context, with the residents' opinions, ethical discussions created by environment and technology interactions were inspected.

The sample of this research consists of residents living in the borders of Çanakkale area in Gazimağusa. In this qualitative research, opinions of the residents about the Pond were acquired by the semi-structured interview forms. The interviews were recorded on a voice recorder on a voluntary basis in order to prevent any data loss.

According to the gathered data, the efforts related to the Pond are not enough and there are important expectations about resolving environment issues. The recommendations, in relation with the gathered data, are showing that the Pond in Çanakkale area can be improved with the use of environment and technology interaction.

Keywords: Environment, Environment Education, Environment Awareness and Technology.

Introduction

The environment is the integrity of physical, chemical and biotic factors that have an effect on life of living organisms in a particular habitat (Yücel, 2006). As a rough approximation, the environment is the aggregate of the physical, chemical, biological and social factors that could have a direct or indirect effect immediately or within time on human activities and living creatures in a certain period (Keleş, 2007). The reasons for pollution, environmental degradation and decrease of resources is accepted as a combination of excessive consumption in industrialized countries and the excessive population growth in poor countries; populations that impair the environment live in industrialized countries that have a high rate of waste production and high source consumption (Erdem, 2000). The target group in environmental education is the whole people and the objective is to develop positive attitudes and behaviors in relation to protecting the environment. A great responsibility falls to schools in achieving the target of the environmental education. Should the environmental education be integrated in the curriculum of the schools, the environmental education is ensured to reach its goal (Şimşekli, 2001). The environmental education is a lifelong interdisciplinary that has a target for developing of the population of the world having knowledge, ability, attitude, incentive, personal and social duties and responsibilities that may contribute to the solution of the current environmental problems and prevent them to reform and which is conscious on matters regarding environment (Moselley, 2000).

The environmental awareness is the form of behavior, attitude and thought that individuals and societies should have in order that they have even relations with the environment. The environmental awareness develops correspondingly with the development of personality by the interaction of several

factors. The environmental awareness includes a dynamic structure that may improve throughout life. However, the basis that is formed in childhood has a major importance. Exclusively, the applications of environmental education that are implemented inside the school could contribute students to develop behavior patterns responsible for their environment.

The environmental problems are basically the product of the human-nature relationship. The struggle of human being with nature started with the beginning of history. Since its existence, this process firstly started to meet the needs of human being and then became to dominate the nature and to the wish to arrange it according to himself. This wish increased in time by being supported by economic system and man started to live in a world that would cause dangerous consequences for him. Exclusively during 20th century, the pressure of the technological developments on nature reached a level that it could not bear, and mankind could only realized towards the end of the century that there was a problem between them and the nature. The fact that mankind who sees himself as a ruling power understood that he had to settle with the nature corresponds to that time (Keleş, Hamamcı, 2005).

Parallel to economic and technological developments realized in historical process, it can be seen that the world is facing environmental problems. The improvements that have occurred as a result of improvement and development efforts that have been made by human since the Industrial Revolution caused the attention to be drawn to the environmental issues intensionally especially after the second half of the 20th century. The fact that the pressure of the rapid technological developments together with the economic development efforts on nature has reached a dangerous level, and the societies meet several unforeseen problems regarding the environment brought up the interest for environmental issues firstly to be only on scientific level but then to the agenda of communities too. In this way, the arguments about the environment started to take place. Exclusively there are several opinions about its scope. Accordingly, the assessments to be done firstly within the framework of pollution then gave its place to the environmental definitions including the problems such as population growth, poverty and development problems of the country, urbanization and depletion of resources, as the development efforts increased and the technology improved.

Method

1.1. The Model of the Research

Qualitative data has been gathered in the research and the research design has been determined as “content analysis”. The qualitative research is defined as the research where the qualitative data collection methods like observation, interview and examination of document are used, and a qualitative process is monitored regarding the perceptions and events to be set out in a realistic and holistic manner in the natural environment (Yıldırım et al. 2011).

In this research, semi-structured interview technique was used as data collection tool. The advantages of the interview technique can be shown that they provide a possibility to view the subject from the perspectives of the related individuals and to help these social processes forming this perspective to rise (Yıldırım et al. 2011).

1.2. Data Collection Tool

As a data collection tool in the research, in order to identify the views of the citizens regarding the environmental awareness and the possibility of development of technological interaction the questions in the semi-structured interview form were asked to the residents of Gazimağusa Çannakkale Pond. The interview technique is one of the most frequently used methods. It is aimed to catch and understand for a moment the relativity and mobility of social phenomena with the interview technique. The most important advantage of the interview technique can be shown that it provides a possibility to view the subject from the perspectives of the related individuals and to help these social processes forming this perspective to rise (Yıldırım and Şimşek 2011).

In the qualitative research approach, in order to collect data generally the depth interview (face to face interview), direct observation and document analysis technics are used (Legard , Keegan and Ward, 2003). The data of this research has been gathered through “face to face interview technique” which is generally preferred in qualitative research approach providing the possibility of deeply understanding the views of the participants about the matter and which cannot be observed directly by other data collection tools. The depth or face to face interviews have some major advantages like having a high response rate, providing flexibility on the order of questions, ensuring control possibility on the environment and giving deep information about the subject that is researched (Yıldırım and Şimşek, 2011). This method is a source of many dimensions such as the reasons forming the basis of response of the participants, emotions, thoughts and beliefs (Legard, Keegan and Ward, 2003).

In this research, the semi-structured interview method which is called as interview form approach too has been used. In the process of forming the semi-structured interview form, it was prepared

so as to put forward exactly the opinions of the participants by firstly examining the related literature and forming a draft interview form. In this research, the content analysis was used in the analysis and interpretation of the qualitative data obtained from the participants.

1.3. Working Group

The working group of the research is limited to 50 persons living in territory of Gazimağusa Çannakkale Pond of North Cyprus in 2015. When assigning the working group, the random sampling method was used (Büyüköztürk, 2009). An interview was conducted with the residents of the territory which was selected by sampling randomly and the “Opinions and Suggestions about the Development of Environmental Awareness and Technology Interaction” was tried to be determined.

1.4. Data Collection Process

The research data was obtained through an interview in the hours when the participants were available between the dates of 1 September - 25 October 2015. In the face to face interviews made with different persons in data collection process, a voice recorder was used and written notes were kept by listening to the views of the participants carefully and regardfully. In line with face to face interviews that were made with the local residents, each interview last approximately 20 mins. In this research, the content analysis was used in the analysis and interpretation of the qualitative data obtained from the participants. Different dimensions were tried to be determined in accordance with the opinions of participants.

1.5. Data Analysis

The answers given for each question according to the views of the interviewed participants were categorized separately and put in the tables. After this first categorization, data was examined again by the researcher and the basic themes and categories were formed. The themes and categories that are determined have been observed again by taking into consideration the related literature and the categories having similar patterns have been unified and the different ones were coded by being gathered in another category. The names of the directors giving the answers are given in orders near the categories. The phrases obtained from the categories are given as samples in the expression space. The individual interviews were carried out in the period that the administrators were available by making visits to the schools. The negotiations with citizens were conducted in an environment to be able to negotiate one-to-one.

After the interview form was applied in the research, the data obtained from the answers of the questions in interview form were resolved by content analysis. The data is analyzed in four steps in content analysis (Yıldırım et al., 2011).

1. Coding of Data After the breakdown of negotiations were made, the data obtained from the participants was divided into sections by being examined and these sections having meaningful complements in themselves were named and coded. After this data is wholly coded in this way, a code list was created and acted as key list in examining and arrangement of data. Later then, the coding keys and negotiating breakdowns were separately read by the researchers and the necessary arrangements were made by discussing the subjects “consensus” and “difference of opinion”.

2. Availability of Themes: *In this phase, the codes that were determined in coding of data were each regarded as a separate category and assessed as separate themes.*

3. Organizing and Defining Data according to Codes and Themes: The opinions of the participants in this phase were explained in such a way that the readers could understand and the views were presented to the readers. In order to determine which participant the negotiation notes belong to a footnote was used and the negotiation notes were given in quotation marks. Later then it was determined which participant the interview was belong to in the parentheses.

For example: “.....”(G:G(18)) G: GAZİMAĞUSA

4. Interpreting of Findings: The interpreting of the findings defined and presented comprehensively by the researcher and explanation of some results were realized in this step. The gathered data was interpreted by being passed through stages that the qualitative research entailed and a number of results were deducted.

Findings

2.1. Opinions about Development in combination with the Environment together with Technology Utilization of the Pond in Gazimağusa Çanakkale Territory

The findings and interpretations coming to light as a result of the analysis of data obtained from the participants for the purposes of the study. The data obtained from the negotiations in the findings section were subject to the analyses. The three themes forming the findings of the research can be given as follows: (i) *environmental awareness and technological interaction*, (ii) *environmental cleaning*, (iii) *environmental planning*. So in the conversation about them, as the individuals said themselves the findings are as follows:

2.1.1 Environmental Awareness and Technological Interaction

All of the participants stated their opinions in several ways about the development in combination with the environment together with technology utilization of the Pond in Gazimağusa Çanakkale Territory. One of the local citizens made this assessment: *“Developable. Beneficial steps should be taken together with technology. In this region that is an ecosystem field, the construction materials or things that could be harmful should not be used (G:M(2))”*. Developable according to G:M(1))”. The Pond is polluted with human factor and settlement is made in its vicinity. While making the expression that *there should be treatment system and configurations with the technology*” another citizen made such expression; *“Yes, the technology together with the environment could be developed in harmony (G:M(17))”*. Another citizen said that *“ i think recycling is inevitable for the 21st century. The wastes and solid waste should precisely be assessed by recycling thanks to the technology. There many positive effects of it. For the time being, this system is being used in our city, yet it is insufficient, more is needed for the environment. Because it is a beneficial system. If possible to do so, it can be contributed in the material sense too (G:M(16))”*. Another resident expressed that *“Surely, yes. It can be created very well possibilities there, as long as it is wished to (G:M(23))”*. To the same question, another one answered that *“the necessary studies are conducted and should be sensitive, it can be a perfect stopping point (G:M(25))”*. Another citizen stated that *“this Pond is an important value for Mağusa. It can be turned into more well-cared strolling area. It surely can be assessed without spoiling its natural structure by taking under control (G:M(37))”*. Another resident expressed that *“Yes. It will have contributed to the biodiversity (G:M(10))”*, and (G:M(18)) said *“Yes. The Pond water could be transferred to Gazimağusa as tap water by being treated”*. To the same question, another one answered that *“Yes developable. We could obtain clean water supplies by using treatment system (G:M(22))”*.

Another citizen said that *“Surely, developable. For example, the press and publishing tools are one of the most important ways for a livable environment. The programs made for the environment should be watched, but the programs that are made for this purpose are not enough. The awareness should be provided in the society more widely. It should take place in training programs in schools (G:M(16))”*.

A resident added that *“Surely, developable. Renewable power sources (solar panels, sources like wave and wind energy) should spread and the technologies that supply us now energy and to serve the next generations should take their places. Our natural power sources are indispensable for a renewable and sustainable environment (G:M(2))”*.

Another citizen said that *“Developable. For example, together with use of technology, the rainwater storing and beneficial studies should be carried out. It is important for meeting the potable and usable water needs. We should assess these waters with the technology. Every drop of water is important in our country, storage should be applied because we are an arid country (G: M(1))”*.

2.1.2. Environmental Cleaning

In order to identify the developable views of participants about the development in combination with the environment together with technology utilization of the Pond in Gazimağusa Çanakkale Territory, 42 of the citizens that are in the research group in Gazimağusa Çanakkale Territory stated their opinions about environmental cleaning. A residents of the town stated that *“There is insensitivity and negligence. Only the municipality will come and try to disinfect, but the medicine damages us too. The necessary solution cannot be found for the pond, even if this region has greens and it is settled. What a pity.... The mosquitoes and smells are quite disturbing. An overall cleaning should be done and the necessary studies should be carried out for pruning of trees and increasing the water level (G:M(4))”*. Another citizen said that *“If the water level could be raised, it can be in a better situation after the pruning of trees and the usage of technology (G:M(5))”*. Another citizen stated that *“Yes. The Pond is important for living creatures and it should be kept clean (G:M(14))”*. Another citizen pointed out that *“It can be opened to the public after landscaping. While stating that in order to prevent the odor cleaning can be done (G:M(45))”*, another one added that *“it could be done, if wanted to. The municipality has*

responsibility here. It can be cleaned, fish eggs could be left and a committee could be called, it can be designed as a picnic park and it can be named as recycling area, waste bins can be placed, tree planting areas could be created. If it is wished to, there is no hindrance ... (G:M(44))”.

2.1.3. Landscaping

The whole participants pointed out the necessity of landscaping in their views regarding this theme. A citizen stated that *“This pond is a very beautiful and special living area for the animals. Before this beauty is spoiled; a picnic area, zoo and natural life park can be created here. Together with this configuration, the freshwater in pond can be made usable with the technology (G:M(46))”.* Another resident answered that *“Yes. As well as increasing the natural life by landscaping and water increase together with the accumulation of rainwater a contribution could be made economically (such as tea garden, picnic area) (G:M(47))”.* Another citizen stated that *“That region could be turned into a social facility. The path could be filled with water and places for ducks, fish, accommodation facilities or tea garden could be created and opened to the public. A nominal fee could be collected in entry and can be used for cleaning (G:M(33)).* Another citizen pointed out that *“Such kind of natural environment hardly can be seen in our country. This pond is developable. Before the living life is destructed, its circumference could be arranged and a beautiful environment like walking track could be provided. Surely first of all, the dairies are distracted, the motor vehicles are kept away, the rehabilitation of the accumulated water and the whole should be supervised with punitive sanctions (G:M(3))”.*

Results and Suggestions

3.1. Opinions of the Citizens about “Development in combination with the Environment together with Technology Utilization of the Pond in Gazimağusa Çanakkale Territory”

The opinions about the development in combination with the environment together with technology utilization of the Pond in Gazimağusa Çanakkale Territory, the results obtained from the opinions of the participants according to the questions asked to the citizens and suggestions were stated in several ways in a single dimension and the citizens made suggestions:

3.1.1. Environmental Awareness and Results about Technological Interaction

All of the participants stated their opinions about the development in combination with the environment together with technology utilization of the Pond in Gazimağusa Çanakkale Territory and they made several suggestions.

The situation in the early 21st century became visible that it has confronted with environmental problems. Each day hundreds of kinds are exhausted; major natural resources like weather, water, soil are polluted and exhausted; forests, wetlands, lakes and rivers are dried and become destructed. The general trend in answering these questions is to highlight the science, technology, social and political issues including basic human activities. It is alleged that these problems arise from perception of the world and the nature that the modern thinking and lifestyle of mankind cause. The main problem arises from it. Actually the technology provided the pressure, effect and violence of man towards the environment to increase with his activities by increasing his self-confidence against the nature. Eventually, as the resource of the problems that mankind faces today it is shown that he perceives the nature as an objective that only he can use and to benefit from technology for this purpose.

It is another reality that the scientific and technological improvements allow for using the natural resources efficiently and for producing alternatives to depletable sources. Thanks to these improvements, many developments have been ensured like providing the increase of food with the new improvements in agricultural technology, waste cleaning technology and finding alternative sources to the fossil fuel (Torunoğlu, 2006).

According to Bacon, one of the pioneers of the idea of progress, the conquest of nature is the real task of man. The mechanic ethos has allowed scientifically the opinion of exploitation and the domination of nature that Bacon defends (Capra, 1982). According to him, the nature should be redesigned with help of technology and by human and should be ruled by human (Marx, 2007). Bacon who has opinion like taking over the nature by using force with help of science and technology said that “the nature should be taken over by pulling its hair” (McClellan, 2006).

Shortly, the nature should be arranged in order that it serves the humanity. The tools to be used for this purpose are science and technology.

3.1.2. Results of Environmental Cleaning

When the answers given by the participants in the research, we can see that there is neglect, indifference about the environmental cleaning around the Pond in Gazimağusa Çanakkale territory and there is no activity. Based on this result, it seems that the economy and political structure as well as the awareness of citizens about the nature are not enough and they arise from the lack of education.

The dependency relations between the developed and underdeveloped countries are shown as one of the major reasons of the environmental problems. Primarily the economic dependency, especially modern technology is quite expensive. Using modern technology is important with respect to the environment. In addition to not saying that every modern technology complies with the nature, the developed new technologies do not harm the nature as the old ones. The technology to be used for production is substantially in developed countries' power. In this context; as in our country, the necessary sub structure for the use of technology may cause problems for the underdeveloped countries usually. This relation and many similar ones have become complex, and have an irresolvable character mostly. As secondary, the depletion of resources and pollution cause environmental problems. It is alleged that the nonrenewable resources are considerably used by developed countries because of their technological and political advantages. For this reason, developing policies on a global scale in our country is necessary for enduring the proportional use of sources. However, it is asserted that it is difficult to realize it politically (Beck,1990).

3.1.3. Results of Environmental Planning

When the opinions of the participants about environmental planning together with Technology Utilization of the Pond in Gazimağusa Çanakkale Territory are examined, We can see that it is necessary to arrange and clean the greens around the pond (natural life park, picnic area, zoo, dibbling) and most importantly the pond should be turned into a freshwater pond with help of technology.

When the study of Yazıcı (2013) is investigated, it shows parallelism with this result. Based on these all results, it is possible to say that the environment and technology are integrated to each other and teaching the relation of the environment and technology in an integrated manner could provide a better learning output. As pointed out in literature too (e.g. Rubba and Harkness, 1993; MEB, 2010; Keşan and Kaya, 2008), the trainings regarding the environment is important and significant when integrated with education of technology and other fields. As a consequence, it is possible to make the following suggestions.

- It is necessary to arrange in-service training courses in relation to the methods and strategies that will increase the integrated approaches to the environment and technology, technological training and environmental training and that serve at all levels of education.
- The environmental education which is the biggest factor in gaining environmental awareness and the technological training regarding this should be spread to all sectors of society in time and it should be given to all people in all ages and occupation within a certain program.
- In order to draw the attention of individuals to the relation of the environment and technology several campaigns, symposiums and competitions may be organized.
- In establishing an environmental awareness, it should be kept in mind that certainly the most effective and the most accurate method is to train and it should be considered that this training should be taken in early age, even in pre-school ages.
- The civil society organizations should raise awareness among citizens and reorganize them.
- Awareness should be among people in order to ensure environmental planning, cleaning and prevent the desertification and several studies should be conducted in order that "Tree planting mobilization" is spread over the country.
- In solving the environmental issues, the approach that environmental technologies and the others should be replaced with "Clean Production" system. In this regard, innovation systems have important tasks too. The most important task is said to ensure the environment friendly technologies that entail less source and raw material and less energy to be developed and used on a global scale by taking into consideration the environmental values when the technological renewal is ensured.

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Practice-Based In Service Teacher Training In Health Promotion And Mental Health Promotion On The Basis Of Antonovsky's Theory

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ABSTRACT

Health promotion education should empower people with healthier lifestyle choices through not only functional knowledge acquisition, but self-detection, understanding of values, eviction of acting ability and a search for identity also. This comprehensive task asks for highly educated teachers, like those trained in Health Promotion and mental health promotion in-service training offered by the Institute of Applied Health Sciences and Health Promotion at the University of Szeged, Hungary. The educational programme is strong in methodology: team work, project method, problem based teaching and learning, workshop, skills development, focus-group method, adaptation of multimedia methods. Trainees work with these methods themselves that makes adaptation authentic.

INTRODUCTION

The Institute of Applied Health Sciences and Health Promotion at the University of Szeged, Juhász Gyula Faculty of Education has an educational and research history of 20 years. Education and research focuses on health promotion, health education, and mental health promotion embedded in the system of international cooperation.

The primary topics the institute's activities focus at are health, health promotion and healthy lifestyle. These core concepts are not only abstract categories, but they are functionally connected to the two most important activities: to education and to research. The other key element of this implementation process and activity is multidisciplinary, following from the content of health. This key element plays a substantial effect on the methods applied in the different forms of instruction.

Our understanding of health is based from the beginning on the scientific theories developed as a result of paradigm change in the 2nd half of the 20th century. „Health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity.” (WHO, 1948). The dimensions of health are: biological health: the proper functioning of our body; psychological health: our personal world view, behaviour principles, and the sign of peace of mind and peace with ourselves; mental health: the ability to think clearly and consistently; emotional health: the ability to recognise and properly express emotions; social health: the health of creating relationships with others (holistic approach).

The current interpretations of health outline mainly integrative models. The natural and social environment, the amount of available resources, the coping with problems, the feeling of success, and satisfaction are all determinants of health. Instead of looking at it as a passive state, health is understood mostly as a process. The development of the ability to act is a lifelong process; the individual strives at acquiring new competencies. Badura for example understands health as the ability to solve problems and direct emotions, enabling to preserve physical-mental satisfaction and their rearticulation (Badura, 1993).

We understand health as a process, in a positive approach, expanded to individuals, groups and the whole society, integrated to their natural and social environment, embedded into all individual-, group- and social level activities.

According to our approach, every individual, community possess resources in the process of enhancing their health opportunities. The resources are „biological, material and psychosocial factors that make it easier for people to perceive their lives as consistent, structured and understandable.” (Antonovsky, 1987; Lindström and Eriksson, 2006) These resources – called as General Resistance Resources (GRR) – are “money, knowledge, experience, self-esteem, healthy behaviour, commitment, social support, cultural capital, intelligence, traditions and view of life.” (Antonovsky, 1987; Lindström and Eriksson, 2006) GRRs enable individuals and groups to see their life as coherent and shape it accordingly.

What does sense of coherence (SOC) mean? The SOC is the capability to perceive that one can manage in any situation independent of whatever is happening in life. Components of SOC are: comprehensibility, as the cognitive component; manageability, which is the instrumental or behavioural component; and meaningfulness,

that is the motivational component (Antonovsky, 1987; Lindström and Eriksson, 2006). In the centre of the Antonovsky model - similar to the other previously mentioned models - stays health experienced subjectively by the individual. Stressors are of central importance in his model.

The foundation of health promotion is the complex health-approach developed during the paradigm change, which definition is the functional connection of scientific definitions created with different accent and systematization. That is, health has a subjective orientation, is holistic in perspective, salutogenic, meaning health is the starting point where health resources are central. Health promotion strives at making health a socially accepted criteria of decision making. It became a social and social-political concept: it focuses equally on the individual's socio-culturally influenced lifestyle and the environment influencing his/her life. It is a setting-oriented concept, placing people's life circumstances into the centre, on the different domains of life. Its most important value and aim is to promote health equality. Health promotion – similar to health – is also a process requiring active participation and individual action. It strives at democratic emancipation (equal rights) and at the individual's autonomy (self-sufficiency) over his/her health. The main methods of health promotion are health teaching, health education, health training, organisation development with the main tools of project management and lifestyle counselling (organising leisure programmes, conflict management, time management, nutrition counselling, social relations) (Benkő, 2009).

During its activities health promotion tries to involve the social sub-systems (Luhmann, 1996). It is very important for the different social subsystems – like economy, politics, administration, science, education, health care services, non-governmental organisations, family – to find their own health promoting tasks. Traditionally – as it is well-known – the health care system serves patient care. Health does not have an institutionalized structure, network, individual social subsystem that is why it intends to enter into all subsystems. So health is not the task and responsibility of one institute, one social subsystem, one definite profession, but it is a task embracing the complete institution system of the society (Grossmann, R. and Scala, C. 1993, Benkő and Tarkó, 2005., Lippai, 2009.).

From among the methods of health promotion health education and lifestyle counselling, from among the social subsystems public education is very important in terms of health education and health promotion. The aim is to promote the health opportunities of pupils. Apart from pupils, parents, the complete teaching and non-teaching staff of the school are also affected by this aim. It is also very important to highlight at the broader environment of schools, at all those institutes that work in close connection to them (health care, social, cultural etc. institutes) and have an effect on how schools can meet their complex social tasks.

The health promoting key role of schools motivated us in founding and launching the Health Promotion – Mental Health Promotion in-service teacher training at one of the biggest universities of Hungary. Regarding the huge interest in the training, we have built a network of 11 Hungarian higher education institutes and launched the training with the involvement of local human resources (Benkő and Erdei, 2005). Our primary aim was to enable educators to apply the acquired knowledge and skills in their own life, in their teaching and education work and in their tighter and wider environment (Benkő and Vetró, 1994, Benkő and Lippai, 2001, 2002., Benkő and Erdei, 2003., Benkő, 2011).

THE STUDY

To prove the above information we would like to present two Health Promotion – Mental Health Promotion in-service trainings, one for all helping professionals and one for teachers, educators alone. The paper focuses on the aims, contents and methodology of the trainings, as well as to the multidisciplinary perspective defining content and methodology. The presentation uses the two basic categories of Antonovsky's health model: general resistance resources and sense of coherence.

Both trainings teach educators, though one of them can welcome kindergarten educators, lower primary teachers, teachers, as well as medical doctors, nurses, social workers, lawyers, priests, policemen, soldiers, firemen etc., while the other one is for homogenous educator groups, as a diploma in education is a prerequisite of application. The two trainings are interoperable. The first two semesters are held together, then the two branches separate. The Health Promoter-Mental Health Promoter in-service training supports us with the most experiences, as this is our oldest one. The other training solely for educators is based on those experiences. One of the main values developed during the joint workshops of professionals with different diplomas coming from different social subsystems, is leading to the development of a common language on the platform of health promotion.

In the beginning of our introduction we state, that during the training participants' set of resources (GRRs) is enriched by: knowledge, experience, self-esteem, health conscious behaviour, commitment, social support, cultural capital, traditions and life philosophy. We will place these on the different professional and methodological domains of the training and on the domain of field practices.

The listed GRRs enforce participants' sense of coherence according to the following components: comprehensibility, as the cognitive component; manageability, which is the instrumental or behavioural component; and meaningfulness, that is the motivational component.

Introduction to the Health Promotion – Mental Health Promotion in-service training and in-service teacher training

Educational aims and programme in the joint phase (2 semesters)

By integrating professionals trained in different areas to the same training we aimed at creating a common language concerning health promotion, mental health promotion and health education, mental health education among the participants: educators, medical doctors, nurses, social workers, managers, public educators, priests, lawyers, policemen, soldiers etc. The primary aim of the training is not to create a new profession, but to transmit knowledge, skills and perspectives people working on various domains/social subsystems can integrate into their own profession and work and apply with great social benefits.

Theoretical sections of the training

Training in the theories and knowledge transfer represent knowledge expansion and systematisation from among the GRRs. Comprehensibility, with the experience of understanding the complexity of health is the cognitive component of the sense of coherence.

This knowledge to be acquired is multidisciplinary in nature, similar to health consisting of several elements. Health includes the biological, psychological-mental, emotional, social, economic, ecological and spiritual components. Health is realised in the natural, built and social environment. Among the trainers there are medical doctors, psychologists, sociologists, philosophers, economists, political scientists, environmental specialists, public health professionals, educators, priests, marketing professionals etc. There is a need for many workshops for these professionals to enable them to find their place in the training. This workshop helps the different professions not only in creating the elements, depth and functions of content, but it also aids the choice of methods fitting knowledge transmission the best. In this workshop choosing the methods used at staff meetings can help a lot, hence it can orient the teachers in choosing their own methods. In the Health Promotion – Mental Health Promotion in-service training the essence of multidisciplinary is in providing a priority to none of the scientific disciplines, courses or modules. Each element is of equal importance for the health promotion activity. That is why the head of the staff functions as a coordinator. Each profession preserves its autonomy, and representatives of the same profession share the tasks among themselves, for example teaching different specialisations of sociology, or the theoretical and clinical medical subjects, or the theoretical and practical subjects in education sciences, distribution of tasks, defining emphasis, and time frames within the specified frames.

When developing the content of the training – taking into account foreign educational experiences, health promotion charters as well as our own national researches too – we strived primary at transmitting the health related somatic, psychological, social, environmental protection, educational sciences and ethical knowledge.

A) Social and Public Health knowledge

Health promotion relevant knowledge on the society are transmitted by the following subjects: family-, lifestyle-, health-, and deviance sociology, social policy, management/health management, ethics, bioethics, political sciences, economy, health economy, legal studies, public health (being multidisciplinary in itself as it transmits medical, environmental and social knowledge also), introduction to health promotion, health education, introduction to social work, statistics.

B) Knowledge and adaptation of psychological development

This set of courses covers developmental psychology, personality psychology, psychotherapy, mental health promotion, theory and practice of counselling, communication, introduction to remedial education. It also contains what we find the heart of the training: communication skills development, stress management, conflict management and practice of counselling.

The theoretical courses and the group work are also held by psychologists, who are active in sciences and also possess specialised degrees in psychology. Preferably the specialities focus on clinical psychology, psychology of counselling, and psychology of health promotion.

C) Medical knowledge

The main emphasis within medical knowledge is to introduce the operation of the healthy human body, organism, and life. There is also a need for knowing about the morbid processes to enable the candidate to enter into the processes of health promotion and its organic parts like primary prevention and rehabilitation. Participants meet the healthy and morbid physical development of the body within introduction to medical sciences, and they also discuss about the basis of chronic physical and mental illnesses, their somatic and mental health promotion aspects during courses like internal medicine, paediatrics, psychiatry, child and adolescent psychiatry.

Lifestyle gets a prominent role in the whole knowledge system, hence it is very important in health promotion, prevention, rehabilitation, in all domains and settings, so it is of key importance in the work of educators also.

Methodological/practical section of the training

Methodological elements

The training pays special attention to the methodology of knowledge transmission and to the personality- and social skills development of participants. This section contains the possibility to develop the following GRRs: experience, self-knowledge/self-esteem, health conscious behaviour, commitment, social support, cultural capital, traditions and life philosophy.

From among the components of sense of coherence it addresses manageability, which is a behavioural component. Students have this opportunity during group work and seminars, where they acquire those methods in practice which they can apply in health promotion, mental health promotion or which help them know their own personality better. From among these sessions we would like to highlight at communication skills development, stress management and conflict management that help to raise the most important elements of the sense of coherence to a higher level. Self-knowledge and personality development groups contribute to the experience of meaningfulness that is they are the motivational components of the sense of coherence.

Seminars apply the method of thematic small group work, enabling to apply the acquired knowledge and make it alive. Similar aid is provided for knowledge application by different related homework – built on individual observation, collection of information - and their processing together. The third important method, applied mainly in an integrating manner, is Problem-Based Learning (PBL). Lectures and seminars are held by university teachers who are experts on the given domains. Differences in methodology result from the different qualifications and methodological preparedness.

Let us look at how knowledge practiced and adapted during the theoretical modules, practices and field practices is arranged around a content and domain related junction, which is one of the direct ways of fulfilling multidisciplinary:

The so called professional integrations

Based on the perspective presented in the introduction we have created course blocks from some disciplines we named as professional integration. This means that students process certain topics in small groups with the help of 2-3 teachers of different disciplinary backgrounds. The developed integrated topics are the following:

The educational, psychological, sociological system approach of *families* from the aspect of health and mental health promotion. This integration enables the sophisticated processing of the most important social small group.

The analysis of *deviances* from the aspect of sociology, public health, and psychology enable the multidisciplinary processing of alcoholism, suicide, drug abuse, and crime. Partial disabilities are processed together by the special needs educator and the child psychiatrist.

Integrations are fulfilled usually in 5 hours long so called “mini workshops”. Our experiences so far inspired us to create further integrations based on a similar thorough professional and methodological preparation

Teachers are required not only to be highly prepared in theory and teaching practice, but also to compare and harmonize theoretical knowledge with participants’ practical experiences, building the applied disciplines as an

applied science into the training. The sessions require knowledge transmission and the application of the previously listed methods also, which include the problem revealing, -analysing and -solving techniques too.

Field practices

Participants get an opportunity during these practices to meet the different settings of health promotion and mental health promotion, and to later work and carry out in or together with these settings health promoting and mental health promoting projects. In this context they have the possibility to participate in a complex health promoting project (Benkő and Tarkó, 2005).

Field practice institutes are listed here according to the social subsystems:

- educational institutes
- health care institutes
- money- and profit oriented institutes
- state administration institutes
- institutes of high risks (military, police),
- Non-governmental institutes (churches, foundations, associations).

When selecting field practice institutes for the participants we consider that they should possibly visit a different kind of institute than they work at. While there is an individual observation and analysis on the first field practice, we intend to create teams of 2-3 people during the second one, supporting students in practicing group work among different professionals.

Each practice period is followed by professional consultation, where there is a possibility to complete the field practice diary prepared according to pre-provided aspects.

At the 'field practice seminar' students describe their field practice activities, introducing their work to the group utilizing the results of individual consultations also. Through this multi-structured method of practice and reporting there is a possibility for individual and team work, for presentation, for discussions and for exchange of experiences also. One of the biggest benefits of field practice seminars is to enable students through discussing and processing their individual and group work together to 'get to' each workplace.

To sum up, the following content and methodology parts are there in the field practice work. There are 3 field practices during the complete training. The first 30 hours long practice are fulfilled individually, the second 30 hours are fulfilled in groups of 2-3 in institutes invited by us.

The third field practice is the main part of the second year. The two in-service trainings separate here. Teacher in-service trainees fulfil their practice in kindergartens and schools – mainly in their own workplaces. This is carried out on three venues: in classrooms, at school and in the health care and social institutes around school. In the classroom they integrate the health promotion content into their own subjects and apply the already acquired methods. Form masters hold thematic sessions at their classes. Trainees prepare for these tasks at the educational methodology course, model the classes for one another and perform the tasks with their own pupils. Health promotion at school is fulfilled through the project method and is built on team work including other interested teachers and the health care workers of the school (nurse, school doctor). In this school health promoting project parents and the non teaching staff are also important target groups. The third pillar of this practice-oriented year is the institutional and natural environment of the school. These three areas provide the practical part of the thesis, which also contains related theoretical and empirical research arrangements.

Final exam

The final exam of our training – corresponding to the international practice – consists of two main parts. Each participant writes a thesis. The thesis should contain a literature review as well as an empirical study applying any scientific methodology they acquired during their training. Students' choice is aided by a wide collection of topics. The oral part of the final exam starts with the defending of their thesis. In the second part the candidate is given three theoretical questions related to the topic of his/her thesis, which should be worked on and presented. The diploma qualification is computed on the basis of comprehensive exams, the thesis and the grade received on the theoretical questions.

Enrolment to the training

The enrolment requirement is to have a university or college level diploma and fill out an application form and hand in a CV. There is an admission interview in small groups and individually also. First we tell the applicants about the essence and applicability of the training on the different work areas, then we inform them about the

requirements they should meet if they gain admittance. The small group discussions are based on pre-structured questions. The candidates tell us about their expectations and about the areas they want to/can apply what they learn. After the small group discussions candidates should answer to some questions in writing, followed by the individual discussions. There are different professionals (psychologist, medical doctor, and sociologist) in the Selection Committee and they are responsible for selecting the maximum number of 24-26 participants. Oversubscription makes it possible to select candidates working along the widest professional scale, taking intersectorality into account also. Further important aspects are the distribution according to settlements and position at work.

CONCLUSIONS

The multidisciplinary content of the above introduced training, the practice-oriented application of health promotion at school enables teachers to connect all participants of school into a network (pupils, parents, teachers, non-teaching staff). The several years in-service experience and skills of trainees are reinforced, new skills are acquired and adapted into their own teaching area and into other school-related activities through educational methods learnt and rehearsed during the training.

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Predictors Of Student Preferences For Blended Learning: An Empirical Investigation

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ABSTRACT

This study investigates engineering student preferences for blended learning adoption in higher education. No major study to date, however, has taken into consideration the influence of interaction, digital technology, social presence, and internet self-efficacy on student preferences for blended learning approach. This study is based on a sample of 126 students who can use Moodle platform at University Politehnica of Bucharest in Romania. Hierarchical multiple regression was employed to test hypotheses. Results revealed a significant effect of most predictors on student preference for blended learning. The findings are expected to enhance the understanding of blended learning for teachers and students.

INTRODUCTION

Distance learning refers to the use of information and communication technology (ICT) in teaching and learning processes (Salmon, 2005). Online learning is less expensive, it provides access to education for students who aren't located near university, and it also offers more flexibility to students in terms of how and when they attend classes. Blended learning or hybrid learning combines traditional classroom or face-to-face with online education (Graham, 2013). This approach is a fundamental change in the way teachers and students interact and how they meet new learning experiences. Limited interaction may affect students' satisfaction without the utilization of appropriate technologies in fully online learning settings (Kuo, Walker, Schroder, & Belland, 2014). Blended learning incorporates technology to customize student learning. Student-centered learning process means that students know how to collaborate, communicate, and solve problems in group and individually. Online learning requires students to be willing and able to self-manage their learning process (Sun & Rueda, 2012).

New technologies based on internet provide teachers and students tools that can be used to improve the teaching and learning processes. E-learning platforms or virtual learning environments (VLE) support teaching and learning. They provides over internet different tools such as uploading of content, students assessment, communication, wikis, blogs, forums, tracking, manages the students' database, quizzes, and other activities in each top section. Quizzes are a useful tool for students to test their level of knowledge. An example of open-source platform is Moodle (Modular Object-Oriented Dynamic Learning Environment). This platform has been used as a modular and open source learning management system (LMS) for sharing information and knowledge management in teaching and learning processes. LMS is used to manage delivery of course material. Moodle offers a wide range of functionalities for students and teachers. Asynchronous communication technologies would be best suited for collaborative learning approaches. Every student has unlimited access to Moodle resources. One interesting tool of Moodle is the fact that students can ask questions to their teachers or their colleagues (Martín-Blas & Serrano-Fernández, 2009). This study examines a case of using Moodle platform at the University Politehnica of Bucharest, Romania, to develop online courses as a complement or an extension of the face-to-face courses. Reliable and robust infrastructure must be in place to support students demand for convenient online education delivery.

While a number of studies have explored the drivers and barriers to blended learning adoption in higher education (Porter, Graham, Bodily, & Sandberg, 2016). Further, little research has explored factors associated with student preferences for blended learning, especially in technical universities. Student preferences for hybrid teaching may influence their engagement, and consequently, the effectiveness of teaching and learning

processes. Accordingly, we identified and explored factors that influence the engineering student preferences for adopting blended learning. Specifically, we sought information concerning how students perceive hybrid learning as a valuable alternative to traditional face-to-face teaching approach influenced their willingness to adopt blended learning. For this purpose, an empirical study has been conducted using a survey to ask the engineering students from sample to tell us their preference about different kind of teaching and learning approaches. The present research aims to enhance our understanding of how engineering students may benefit from traditional face-to-face teaching combined with online course provided them using Moodle platform. In addition, we are interested in exploring the indirect effects of control variables on student preferences for blended learning. The results of the study have important implications for faculty members, students, researchers, and ICT developers.

Next follows a literature review and hypotheses development. Then a section is dedicated to test our model and hypotheses on data collected from respondents. Next section provides details about the empirical results. Finally, a concluding section presents implications, limitations, and directions for future research.

THEORY AND HYPOTHESIS DEVELOPMENT

The integration of face-to-face and online learning enhanced active learning possibilities of the online environment and gives teachers the flexibility to work with students one-on-one. Thus, with the learning management system, one teacher can work with students in small groups or individually by organization the content and facilitate communication. Asynchronous learning is a student-centered teaching method that uses online learning resources to facilitate learning in traditional brick-and-mortar university. This asynchronous learning network supports online interaction, resource sharing, content development, and so much collaboration allowing users to organize discussions, upload courses and access multimedia. Today, one of the most important ideas in education is that students do not acquire, but instead construct new knowledge (Bjork, Dunlosky & Kornell, 2013). In this section, we explore the influence of interactions, technology, social presence, and self-efficacy on student preferences for blended learning in higher education institutions. We next propose a conceptual model to investigate the relationships between these factors and student preferences for hybrid learning.

Watson advanced the idea that blended learning is the result of convergence of online and face-to-face education methods. Teachers have increased their use of internet-based content and other digital resources in their classrooms. Traditional higher education learning environments are characterized by desks, black boards, and lecture halls. The organization of student learning has tended to follow traditional approach through face-to-face taught sessions. The percentage of the student population seeking a fully distance-based education will remain relatively low.

Interaction refers to a two-way communication between students and teachers. It is important factors in all forms of education. Interaction allows students to link existing knowledge with new knowledge and make new meaning through analysis and integration (Juwah, 2006). Through interactions students cognitively elaborate, organize, and reflect on the new knowledge. Other studies indicated that interaction among students or between students and teachers is a predictive of student satisfaction (Rodriguez Robles, 2006). Students in a collaborative interaction have higher satisfaction and can support the engineering student preferences for blended meaning. We thus propose:

H1: *Interactions among students and teachers are positively related to the engineering student preferences for blended learning*

Universities must provide a computer network infrastructure, including software, servers, and other hardware needed to develop a powerful asynchronous learning environment. In addition, students must also have the digital skills required to participate in the asynchronous learning environment. The value of technology has great power to influence teaching process. The software is following a problem-solving approach engaging students in inquiry-based activities, including collaboration tools, wikis, polling tools, as well as various content-specific applications, this is essential for ensuring an effective learning environment for students. Digital technologies provide an interactive and dynamic environment within which students and teachers engage in collaborative learning. Digital technology plays the role of a mediator in blended learning. Students may organize their learning program in terms of their time requirements and job schedules. Student collaboration and teacher interactions are facilitated by connectivity, mobility, and online support. Due to the importance of technology tools in web-based learning, determining exactly which technology tools best enhance learning process is essential to continue integration computer interaction with traditional classroom activities. Therefore, it is hypothesized:

H2: *Digital technology is positively related to the engineering student preferences for blended learning*

Online communications is used to support learning but the lack of facial expressions, tone of voice, and non-verbal cues is one common difficulty in online learning environments. Interactivity is a potential quality of communication and it is necessary to increase effect of education in face-to-face and online courses. In asynchronous online environments the possible delays can affect levels of student participation and interaction. This effect is a lack of social presence (Kear, 2011). Thus, in order to increase the level of online interaction, the degree of social presence must be increased because social presence can influence the participation in the online learning process. Unless students feel comfortable when communicating online this may result in low levels of engagement and can affect their preferences for blended learning. Some exploratory and confirmatory factor analyses consistently revealed five factors what characterizes social presence in online environments: social respect, social sharing, open mind, social identity, and intimacy (Sunny & Mayer, 2012). On the basis of the above discussion, the following hypothesis is proposed:

H3: *Social presence is positively related to the engineering student preferences for blended learning*

Students may differ substantially in their skills, especially in their internet experiences and capabilities. Internet self-efficacy refers to one's belief in his or her capability to accomplish online tasks or assignments, including understanding of internet software and hardware (Eastin & LaRose, 2000). Online learning environments are designed to promote personalization and adaptability to the students' needs. Still, many students do not use the available digital tools because the lack of appropriate digital skills. Liang and Wu (2010) indicated that higher internet self-efficacy led to higher motivations for web-based learning and show preference for blended learning. Therefore, it is hypothesized:

H4: *Internet self-efficacy is positively related to the engineering student preferences for blended learning*

To reduce the variance caused by other factors, we controlled for the age, digital skills, and gender of respondents. The conceptual framework is shown in Figure 1. Relationships among the constructs were empirically tested as follows.

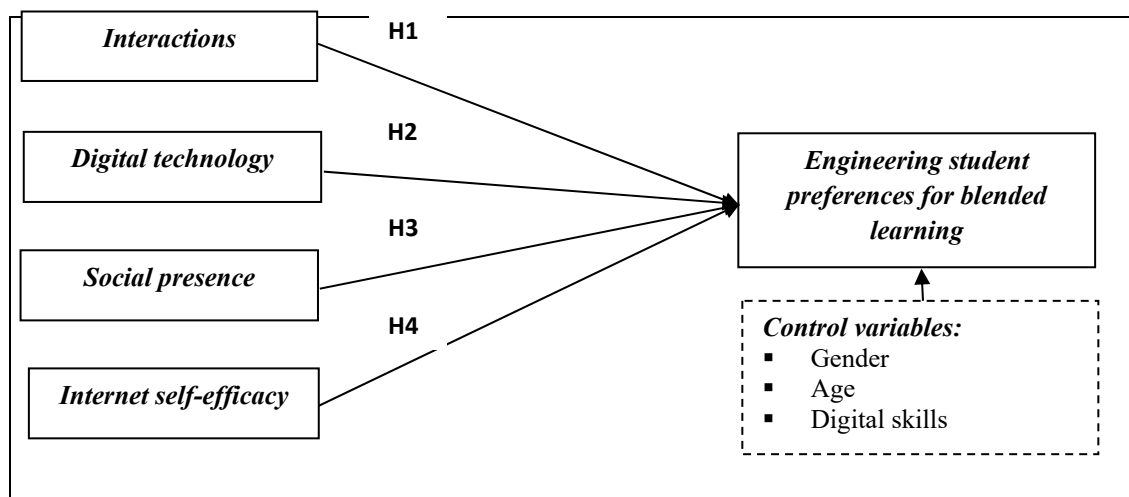


Figure 1: Conceptual framework

METHOD

Research context: To test the conceptual model and hypotheses, we conducted a survey using a paper-based questionnaire and some interviews with faculty members at University Politehnica of Bucharest. This study used cross-sectional survey data. As for, a survey instrument was created using a combination of existing and newly development measures. University Politehnica of Bucharest (UPB) is the largest and the oldest technical university in Romania. The use of technological information in education and professional training are elements that define the university profile. A few years ago, UPB offered its students the possibility to use in their education process a combination between face-to-face and online learning through using Moodle platform.

Sample: Data were collected from a sample of engineering students (N=126) were recruited from UPB, during March and May 2015. All of engineering students have returned the filled in questionnaire, and after rejecting

eight partially filled in questionnaires 118 could be used for analysis. The response rate was 93.7 percent. The data were assessed for the extent of missing values. This assessment found missing values for 14 of the 126 possible responses (11%) and determined that these values were missing completely at random. Therefore, the means substitution method was used to replace missing values. All of the items were measured on a 7-point scale ranging from 1 (strongly disagree) to 7 (strongly agree). About 62 percent of the respondents were males and 38 percent of the respondents were females. The age of the respondents ranged from 20 to 24 (SD=1.7 years). About 70 percent of the respondents were between 21 and 23 years old. The average age was 22.6 years.

Measures and instrument development: When possible, construct measures were created based on previously validated survey instrument. In addition, individual measures were averaged to obtain a simple value for each construct. *Engineering student preferences for blended learning* (dependent variable) were measured using 4 items adapted from Moss, O'Connor and White (2010) and Mishra and Panda (2007): "In comparison to the traditional classroom teaching (face-to-face), blended learning offers student greater flexibility to complete her or his tasks any place and any time", "Blended learning enhances the pedagogic value of a course", "Blended learning experiences cannot be equate with other forms of learning", "Blended learning improves communication between students and teachers", and "Blended learning can engage students more than other forms of learning". *Internet self-efficacy* (independent variable) was measured using 2 items developed by Eastin and LaRose (2000) and adapted for this study: "The extent to which students feel confident with the internet hardware and software", and "The extent to which students can gather data through internet". *Interactions* (independent variable) were measured using 3 items derived from scale developed by Kuo (2009): "Activities during class gave me chances to interact with my classmates", "I received enough feedback from my teachers when I needed it", and "Online course materials helped me to understand better the class content". *Digital technology* (independent variable) from student's perspective was measured using a scale consisting of 3 items: "Technology makes teaching and learning processes more flexible", "Technology improves the interactivity and collaboration between students and teachers by customized interface", and "Technology need to make the learning process more enjoyable and easy of navigation". *Social presence* (independent variable) was measured using 3 items developed by Suny and Mayer (2012): "I was able to form distinct social identity", "I enjoyed myself of social respect and intimacy", and "I felt comfortable interacting with other students and teachers". Three additional variables were included in the analysis – gender, digital skills and age (control variables). *Gender*, as dummy variable, was included to control for the specific impact on the engineering student preferences for blended learning. We coded male respondents as 0 and female as 1. The students' *digital skills* were measured using 3 items derived from scale developed by Kennedy's et al (2008). The respondents was asked to rank their digital skills on a scale where 1 was "not very skilled", 2 was "moderately skilled", and 3 was "highly skilled". Student *age* was represented as the log of the number of years.

ANALYSES AND RESULTS

Data was analyzed with SPSS 20.0 software with maximum - likelihood estimation. Cronbach's alpha was used to determine the internal consistency of items in each scale. Statistical procedures were used to establish the reliability and validity of the measures with all items. Reliability of the factors was measured using Cronbach's alpha for each construct and was found to be greater than the recommended minimum of 0.7 indicating high reliability (Hair et al. 2007). The Cronbach's alphas ranged between 0.847(for internet self-efficacy) and 0.753 (for student preferences). Descriptive statistics and scale reliabilities are presented in Table 1.

Table 1: Descriptive statistics and scale reliabilities

Construct	Mean	SD	Cronbach's alpha
Student preferences	5.87	1.46	0.753
Interactions	5.34	1.23	0.804
Digital technology	6.18	1.79	0.786
Social presence	4.38	1.22	0.823
Internet self-efficacy	5.26	1.17	0.847

The correlation coefficients of all constructs are within acceptable levels (no bivariate correlation is greater than 0.56). The highest correlation coefficient is between digital technology and the student preferences for blended learning. This correlation coefficient is equal to 0,563. The measures of interaction, digital technology, social presence, internet self-efficacy, gender, digital skills, and age were positively correlated with the measures of student preference for blended learning, with correlation coefficients ranging from 0.001 to 0.563. The correlation analysis show that most coefficients are low, which minimizes concern with multicollinearity issues in our analysis. Correlations greater than or equal to 0.186 are significant at $p < 0.05$. Correlations greater than or equal to 0.231 are significant at $p < 0.01$. Table 2 presents the correlation matrix of all the variables used in this study.

Student preferences towards blended learning were investigated using a hierarchical multiple regression. Gender, students' digital skills and age were entered in first stage of the regression as control variables (Model 1). The independent variables (interaction, digital technology, social presence, and internet self-efficacy) were entered in the second stage of the regression (Model 2). In the third stage, the hypothesized interaction terms (interaction x digital technology, interaction x social presence, interaction x internet self-efficacy, digital technology x social presence, digital technology x internet self-efficacy, and social presence x internet self-efficacy) were entered (Model 3). The interaction terms were calculated by multiplying and centered the corresponding construct values. The hierarchical linear regression results are summarized in Table 3.

Table 2: Correlation matrix among independent variable and student preferences for blended learning

Construct	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Student preferences (1)	-						
Interaction (2)	0.343	-					
Digital technology (3)	0.216	0.563	-				
Social presence (4)	0.124	0.386	0.237	-			
Internet self-efficacy (5)	0.473	0.189	0.492	0.157	-		
Gender (6)	0.021	0.002	0.034	0.231	0.179	-	
Digital skills (7)	0.186	0.237	0.513	0.183	0.534	0.326	-
Age (8)	0.041	0.001	0.017	0.09	0.392	0.002	0.187

Note. *p < 0.05, **p < 0.01

Table 3: Regression results.

Construct	Model 1		Model 2		Model 3(full model)	
	b	SE	b	SE	b	SE
<i>Control variables</i>						
Gender	-0.076	0.048	-0.051	0.039	-0.049	0.042
Digital skills	-0.049	0.031	-0.033	0.031	-0.026	0.037
Age	0.134*	0.059	0.048	0.056	0.052	0.048
<i>Direct effects</i>						
Interaction			0.197*	0.064	0.199	0.052
Digital technology			0.041	0.021	0.054	0.0038
Social presence			0.196*	0.084	0.203	0.065
Internet self-efficacy			0.213*	0.074	0.287	0.067
<i>Interaction terms</i>						
Interaction x digital technology					0.108	0.045
Interaction x social presence					0.037	0.028
Interaction x internet self-efficacy					0.089	0.036
Digital technology x social presence					0.167	0.052
Digital technology x internet self-efficacy					0.263	0.053
Social presence x internet self-efficacy					0.048	0.032
R ²	0.143		0.267		0.368	
R ² (Adjusted)	0.12		0.22		0.289	
R ² change	-		0.124		0.101	

Note. N=118 engineering students; b = unstandardized regression coefficient; SE = standard error of b; *p<.05; **p<.01 and ***p<.001 (two-tailed)

The individual reliability of all constructs was estimated with R square because this coefficient indicates how well a model fits data. The adjusted R square is used to compare models with different numbers of predictors as our case. The results of the regression analysis show that Hypothesis 1 is accepted. To test Hypothesis 2, we examine whether digital technology has a positive and significant effect on the engineering student preferences for blended learning. The results of research show that Hypothesis 2 must be rejected. Hypothesis 3 proposes that social presence into teaching and learning processes is a good driver for the engineering student preferences for blended learning. Social presence explains important social relationships among students and teachers and the social climate that contributes to success of learning. Thus, on the basis of our research we accept this hypothesis. Finally, on the basis of study results, Hypothesis 4 have been accepted, this states that internet self-efficacy significantly affect engineering student preferences for blended learning. Results showed that gender and digital skills are not significant factor in terms of influencing the student preferences for blended learning.

CONCLUSIONS

This research has investigated the impact of interactions, digital technology, social presence, and the internet self-efficacy on the engineering student preferences for blended learning. We found that students' preferences for blended learning are influenced of interactions between teachers and students, social presence and internet self-efficacy. The quality of learning depends on the level of student engagement in the learning process.

Several limitations should be noted. First, the respondents came from one university (UPB), so results may not generalize well to other higher education institutions, only with caution. Second, the sample size provides the minimum number of participants required, the result would be more reliable with additional respondents. As regards the sample, a larger sample would reduce the influence of random variation. Future research using larger samples should aim to examine the robustness of our findings, preferably by simultaneously testing them. Third, future research is indeed needed to more precisely understand the effects of dynamic nature of influence of various factors on innovation. The present research assumes that relationships between variables are in some kind of statistical equilibrium. Nonetheless, we encourage researchers to engage in longitudinal research on mediating effects of the relationship between predictors and student preferences for blended learning. Researchers using a longitudinal study can provide more specific information about the stability and change of the variables, and thus could complement the present empirical finding. Fourth, any theoretical model could be improvement. Nonetheless, more variables can be added to our research model. Also, other measurements such as blended learning adoption and service education quality need to be taken into account. Future studies look to refine this variable through further pilot testing with faculty members, students, and employers, or by selecting a different set of items to represent this construct.

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Processes of the School Management, Usage of Information Technologies in Adolescents and Aggression Relation

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Summary

It is a finding which has been set forth by many researches that information technologies, namely technological devices such as mobile phones, internet, computers and phones are used commonly by individuals of all ages today, especially by adolescents and young people as means for socializing. Particularly, internet usage can be seen commonly in daily life practices in our country where young population is dense. It is believed that Information Technologies cause individuals to develop behaviours including anger and aggression by influencing their behaviours. This study where quantitative research is used is a descriptive study including “Relational Scanning” which is among the general scanning models. In this research it is studied whether technological tool usage by high school students has effect on their anger and aggression behaviours or not, and after the investigation whether the factors influencing technological tool usage change accordingly with demographic characteristics of students or not a general assessment has been conducted upon data analysis.

Key Words : Information Technologies, Adolescent, Anger and Aggression.

Introduction

In our age, information and communication technologies have important place in our daily life. These developments in technology give important opportunities to people for their life. New technologies especially internet contributes students to reach knowledge and to develop their abilities to use information. As things stand today, knowledge and communication technologies reflect the changes like technology improvements, facilitating and making permanent learning to the educational environment (Peker, 2013a).

As well as the positive improvements that knowledge and communication technologies provide it has created a new area for young people. Today computers, internet, mobile phones and other technological tools have been a part of young people's lives. So, making and maintaining new friends and forming community and social relations and norms are possible through these technological tools (Yaman, Eroğlu and Peker, 2011).

When young people use the information and communication technologies that have contributed to their social relations differently, they have the need to put their own rules in order to carry these relations in a healthy way. When the rules determined by them in virtual environment are not obeyed, they start to conflict with others. Consequently, sometimes young people face problems when they use these technological tools. As a result, the information and communication instruments may be used in a way to harm each other in lives of young people.

Discussions and researches about the effects of technology that has been emerged on social life have begun in recent years. Depending on these researches *“even though the large-scale effects of improvements are cared, it has not been thought on how to influence our immediate environment. It is extremely usual that major behaviour and attitude changes come to light when considering that every new technology has entered to home environment, workplace and other areas of our life”* (Naisbitt, 2004; Akt:Beşli, 2007). In recent years, the effects of new technologies that are improved rapidly have influenced schools too just like every other institution and the usage of technological devices like computers and mobile phones has been spread rapidly among students. Correspondingly to this development, several problems can be faced with regard to the usage of such tools by young people. Researches that are carried out today on this matter show that bullying faces off against another form *“cyber mobbing”* (Breivik and Olweus, 2006).

One of the concepts that are handled in this research is aggression. Several descriptions have been made in the related literature about aggression. Baron and Richardson (1994) remark the aggression as giving harm to others' lives directly and any behaviour that has aim to hurt. According to Boxer and Tisak (2005), aggression can be defined as offensive and disturbing behaviours towards any other creature or object. On the other side, Berkowitz (1993) reports the aggression as course of action for the purpose of harm or hurt intentionally to another person or object. There are many researches that have been conducted both in Turkey and abroad regarding aggression. When the conducted researches are observed, it can be seen that the relation of aggression with several variants has been studied. It can be seen that researchers investigated the relationship between the

aggression with perceived social support from family (Yalçın, 2007), domestic violence (Ayan, 2007), problem solving (Gökbüzoğlu, 2008; Temel, 2008), sense of self (Akduman, Çolak and Cantürk, 2007), sense of self (Rill, Baiocchi, Hopper, Denker and Olson, 2009), focus of control (Efilti, 2008), irrational beliefs (Kılıçarslan, 2009), attachment styles (Kaplan, 2012), social adaptation (Yeğen, 2008), cognitive distortions (Uğur, 2013), suicide (Miotto and Preti, 2007).

Anger and aggression sourced events are faced in the living and working places without boundaries, and they have been one of the major problems of our age by increasing within time. In recent years, especially violent behaviours that are encountered in schools have increased notably (Yavuzer and Üre, 2010). Anger and aggression are the senses and behaviours to affect the development of adolescents and they influence individuals' lives deeply. Because of this, individuals should comfortably express their anger and associated negative behaviours just like other feelings and thoughts by understanding and accepting them (Öz, 2005).

Yavuzer (1992) and Kulaksızoğlu (2004) stated that behaviours related to anger and aggression are faced in adolescence period mostly in human life and the behavioural disturbance and offenses that are made as a result of these emotions and behaviours are seen in this period mostly. Besides that, increase in physical power and getting pleasure from violence relating the current environment in adolescence period provide a basis for the emergence of aggressive behaviours.

Yağcı (2010) has found out that there is a significant difference between the type and frequency of computer usage by adolescents and anger and aggression levels in his study. As the computer use by the adolescents during the day increases, he determined that the anger and aggressive behaviours increase too.

The events that anger and aggression caused have been one of the major problems of the 21st century by showing a continuous increase at home, work and school, and violence actions especially at schools have increased. Due to all of these reasons, the anger and aggression can be said to be emotion and behaviour that should be kept under control in a way to contribute to the development of individuals that are in adolescence period which is the reorganization of the personality. Individuals should express their feeling of anger just like other feelings in a healthy way by identifying and accepting it.

The anger and aggressive behaviours that cannot be controlled may cause new problems to emerge as well as the current problems by influencing the lives of adolescents mostly negatively (Saydanoğlu, 2011).

The conducted researches show that cyber mobbing is getting widespread increasingly among adolescents. Consequently, the factors that lead to cyber mobbing should be found out in order to fight against cyber mobbing.

It is believed that one of these factors is the aggression behaviours of adolescents. For this reason, it is aimed in this research to study the use of information technology among adolescents and the aggression relation.

Method

Quantitative research methods were used in this research. This research is a "Relational Scan" model that is located within the general screening models. It also is a descriptive study. "Assessment of Technology's Effects on Adolescent Aggression and Anger" is intended for this study, which was applied to determine the opinions of students. The survey was carried out in order to create a situation assessment about whether the use of technology on adolescents is effective on behaviour like anger and aggression. Whether the factors affecting the use of technology, which was attempted to determine with quantitative research models change according to the demographic characteristics of students were examined in this study. With this aspect, this research can also be called Comparative Case Study. The survey that is used in this study to apply students is a Likert questionnaire type with 5 scale and includes a first section where the demographic structures of the students are measured, the second section where there is the students' use of technology and the third section that contains the statements developed to measure students' anger and aggression levels.

Working Group

This study was applied to the population that involved randomly chosen total 215 students studying in 9th and 10th grades during 2013-2014 and 2014-2015 academic year in a public school Lefkoşa Türk Lisesi and a private school Near East College in TRNC, Nicosia.

Data Collection Tools

In the study "About the Use of Technological Tools" and "Anger and Aggression" scale is used on the students as a data collection tool to assess the impact of the use of technology on adolescent aggression and anger.

The Student Scale "About the Use of Technological Tools":

Developed by Arnavut (2013) and used to perform validity and reliability studies, this scale was applied to the students. 93 articles were prepared by Arnavut (2013) to perform validity and reliability analysis on the scale. As result of the factor analysis, fifteen unsuitable expressions were excluded from the scope. To reveal the main components (subscales) of the scale, Principal Component Factor Analysis and Varimax Rotation were applied. As a result of factor analysis, five dimensions were emerged. Scale was structured as a five-factor and the articles of the factors were organized in terms of their content and structure as "View on Technological Tools" (24 articles), "Social Media" (12 articles), "the place of technology in the Life" (8 articles), "educational use" (9 articles), "Communication" (7 articles).

"Anger and Aggression" Survey:

A data collection tool used to measure the levels of anger adolescents in the study, "State-Trait Anger Expression Scale" is used which was developed under the name "Trait Anger Expression Scale" by Spielberger and his friends (1988). In the stage of validity and reliability of measurement tools, expert opinion has been taken. The scale has 34 Likert statements. Each item contained in these articles was expressed in the form of four scales as "Completely (4)", "Pretty (3)", "a little (2)", "No (1)". The resulting data are coded by giving a value from 4 to 1.

The obtained Cronbach's alpha values were calculated separately. These were found to be: 79 for Continuous anger size, 84 for Controlled anger size, 78 for showing anger size and 62 for suppressed anger size (Savaşır and Şahin, 1997).

Data Collection Process

In the process of collecting the data, students from a public school Lefkoşa Türk Lisesi and a private school Near East College were interviewed. The surveys applied to the students in this research, were held in accordance with the timetables that were agreed with the school administration and teachers after obtaining the necessary permits from the principals and the Ministry of Education and consulting with school management and teachers. The study data was collected during the fall of the 2013-2014 school year.

Data Collection Analysis

For quantitative data obtained from the analysis of data collected by survey and scale, SPSS 16 software was used and correlation, T_ test and F test statistics were used. In the analysis, the significance level was taken as $p < 0.5$.

In explaining the analysis results, averages calculated for each sub scales were considered to be students' anger and aggression levels. Students' average of anger and aggression has taken place in the options below.

In the study arithmetic average (\bar{X}), standard deviation (s), the lowest and highest values were used on the analysis of the data collected to answer sub-objectives.

Table 1: Score Limits of Five Grade Scale

Significance	Limits	Perception-Opinion
1	1.00-1.79	Strongly disagree
2	1.80-2.59	disagree
3	2.60- 3.39	undecided
4	3.40 -4.19	agree
5	4.20- 5.00	strongly agree

The average scores of all students in anger and aggression scale are calculated as shown in Table 1.

To test whether there is significance between the levels of anger and aggression, a t-test was performed and to analyse the differences or similarities between 3 or more groups ANOVA was used. If there were any significance among the variables, then the Post-Hoc LSD test was used.

In the measuring of the students' anger and aggression the average points have been calculated.

Results

In this section, the data obtained by the achieved results of the data analysis through data collection tools and the opinions of the participants were given in all sizes.

Results and Comments on the First Sub Problem

The first sub problem of the study was indicated, as *“Is there a significant difference between students’ gender and their use of technological tools?”*

Table 2: Genders and technological tool use of students

Gender	N	X	S	sd	t	P	P < 0.05 Means
Female	94	2.96	1.06	213	2.781	.006	Significant
Male	121	2.53	1.19				

In table 2, it was examined through the t-test analysis, whether there is a significant difference between students' gender and their use of technological tools. It was found that female students' average view on the use of technological tools is (=2.94) and male students' is (=2.53). As shown in the table above, there is a statistically significant difference between female and male students' use of technological tools. . Also the use of technological tools is higher among the female students than male students. Altınay et.al (2013) obtained a similar result in their studies and they found that the use of technological tools is higher among the female students than male students.

Results and Comments on the Second Sub Problem

The second sub problem is *“What are the students’ opinions on the use of technological tools?”*. The views of the surveyed students were examined and average scores were calculated on the following table.

Table 3: Students’ opinions on the use of technological tools

Total	N	Min.	Max.	Std. Deviation	
	215	1,00	5,00	2,72	1,15

The average of the students’ opinions on the use of technological tools were stated as indecisive (=2.72). It can be concluded that the students couldn’t provide proper opinions due to their lack of information about the use of technological tools. It is thought it was difficult for individuals who have inadequate information about technology to provide an opinion about its advantages or disadvantages. The reason of a student’s undesirable behaviour could be the lack of information and this problem can be solved with the help of a teacher (Çelik, 2002; Öztürk, 2002; Özdemir, 2004).

Results and Comments on the Third Sub Problem

The third sub problem is *“Does the average duration of daily use of technological tools affect the anger aggression behaviours of students?”*.

Table 4: Average and standard deviation values of the effect of the daily average duration use of technological tools on anger and aggression

Size		N	SS	
Aggression	Less than 3 hrs.	54	2.29	.60
	3 hrs. - 7. Hrs.	66	2.24	.77
	7-11 hrs.	43	2.23	.48
	11 hrs+	52	2.17	.65
Anger	Less than 3 hrs.	54	2.36	.82
	3 hrs. - 7. Hrs.	66	2.53	.90
	7-11 hrs.	43	3.00	.88
	11 hrs+	52	2.92	.97

Whether there is a significant difference between arithmetic averages was examined with one-way analysis of variance and results are given in Table 4.

As shown in Table 4, when the scores of the effect of the daily average duration of use of technological tools on anger and aggression are examined, it is concluded that the daily 7-11 hrs. Of technological tool users have the highest score (=3.00, SS=.88)

Table 5: Anova results on the effect of daily average duration of use of technological tools on anger and aggression

Size	Source of variance	Sum Of Squares	Sd	Average of Squares	F	P	Explanation
Anger	Intergroup	13,442	3	4,48	5,523	.00	P<0.05 significant difference
	Learning Groups	160,642	212	0,811			
	Total	174,084	215				

One of the multiple research techniques named Anova is used to determine the effect of daily average duration of use of technological tools on anger and aggression. As shown in Table 5, it is concluded that there is a significant difference ($F(5;52)=5,523$, $p<0.05$) between their daily average duration of use of technological tools and their views on anger. LSD test was used to determine the groups that have difference and the results are given in Table 6.

Table 6:LSD results about the effect of daily average duration of use of technological tools on anger and aggression

(I) s9	(J) s9	Mean Difference		Sig.	95% Confidence Interval	
		(I-J)	Std. Error		Lower Bound	Upper Bound
1	2	-,17226	,17121	,316	-,5099	,1654
	3	-,64000*	,19243	,001	-1,0195	-,2605
	4	-,56157*	,17926	,002	-,9151	-,2081
2	1	,17226	,17121	,316	-,1654	,5099
	3	-,46774*	,18409	,012	-,8308	-,1047
	4	-,38931*	,17028	,023	-,7251	-,0535
3	1	,64000*	,19243	,001	,2605	1,0195
	2	,46774*	,18409	,012	,1047	,8308
	4	,07843	,19160	,683	-,2994	,4563
4	1	,56157*	,17926	,002	,2081	,9151
	2	,38931*	,17028	,023	,0535	,7251
	3	-,07843	,19160	,683	-,4563	,2994

*. The mean difference is significant at the 0.05 level.

With the LSD test, daily average duration of the use of technological tools' effect on anger and affected groups was intended to be determined. It was concluded that there is a statistically significant difference between the anger levels of students using technological tools in less than 3 hours per day, in less than 7-11 hours per day and more than 11 hours per day.

Results and Comments on the Fourth Sub Problem

The fourth sub problem is; *"Does the use of technological tools have an impact on the anger and aggression among students?"*.

Table 7: Findings on the effect of the frequency of students' use of technological tools on anger and aggression

Variable	N	R	p	Explanation
The use of Technological Tools	215	0,374	0,00	P<0.05
Aggression		0,273	0.00	Significant difference
Anger				

The results of the correlation analysis of students' use of technological tools' effect on anger and aggression are given in the table above. It is concluded that there is a significant difference between students' use of technological tools and their anger and aggression ($r=0.374$, $p<0.01$), ($r=0.273$ $p<0.01$). Accordingly, it was determined that these variables influence each other. Huesmann et.al (2003), have determined that watching violent programs on television is the determinant of the aggressive behaviour that can be observed in individuals after 15 years. Sağay (2013) have concluded that whether having internet connection at home, whether having internet access on mobile phone, Internet usage period, method of spending time on the Internet and the type of program watched on TV has a significant effect of anger. It can be said that, students, as a result of the frequent use of technological tools, are mixing the real world with the virtual world over time. This may lead to the emergence of negative behaviours such as anger and aggression as well as positive behaviour.

Conclusion and Recommendations

In this section, review results are described based on the findings provided in the research process and proposals are given based on these results.

There is a significant difference between students' gender and their use of technological tools. According to the data, female students use more technological tools than male students. In a similar research of Altınay et.al (2013) named "*the relationship between the High School Students' Internet and Computer Use and Aggression*" have found a significant difference between aggression scores and genders of students who indicate that using computer games and the internet on a regular basis. It was found that the ratio is higher for male students. It was determined that the gender is an effective factor in the use of technological tools.

The average range of students' views on the use of technological tools is stated as indecisive. It can be concluded that the students couldn't provide proper opinions due to their lack of information about the use of technological tools. It is thought it was difficult for individuals who have inadequate information about technology to provide an opinion about its advantages or disadvantages.

It was determined that the daily average duration of the use of technological tools has an impact on anger but it does not have an impact on aggression. It was concluded that there is a statistically significant difference between the anger levels of students using technological tools in less than 3 hours per day, in less than 3-7 hours per day, and more than 11 hours per day. According to the data, it can be concluded that when students use technological tools for a long period, their anger levels increase.

Similar to the result of this research, Fuat and Him (2013) applied their research "*Correlation Between the College Students' Internet Usage Status and Aggression Levels: Internet welded Attitude Changes on GAU Psychology and Counselling and Guidance Department Students*" on university students studying in TRNC.

A significant correlation value of $p \leq 0.01$ was confirmed between The participants' frequency of the use of the Internet and cannot contain themselves from hurting others; feeling like a bomb ready to explode because of excessive internet use and insomnia; failing to respond someone's hit and duration of the internet use. Similar to the result of this research, Özbay and Eren (1997) have stated that individuals, who watch television for a long time, tend to show more aggressive action than those who watch television for less time.

In this study, it was determined that students' use of technological tools affects anger and aggression. Similar to the result of the study, Sağay (2013) in his study named "*the effect of Secondary School Students' Use of Visual Communication Tools on Anger and Communication Skills*", have concluded that the students' gender, whether having internet connection at home, whether having internet access on mobile phone, Internet usage period, method of spending time on the Internet and the type of program watched on TV has a significant effect of anger and communication skills. Also it was found that whether having the internet connection at home, the type of computer game played and the duration of watching TV do not have a significant effect on anger and communication skills.

Similar findings have been obtained in another study. Erdemir (2012) have found a significant difference between high school students' internet use and their anger levels in his study "*Examining the relationship between the internet usage status of the students in different types of school and their aggression levels*" (Gaziantep example). Aggression scale scores of students varies in a meaningful way based on their gender, internet use, internet site, internet purpose, Internet usage time, websites they use in general, the types of games they play on the Internet, and the negative content they encounter on the Internet. Based on the findings obtained in the study, suggestions were made to practitioners and researchers.

In another study named "*The effect of the type and frequency of computer use on adolescent's anger and aggression levels.*" Yağcı Gerçel (2009) researched the relationship between type and frequency of computer use among adolescents and anger and aggression levels on his study. As a result of the study, a statistically significant difference was not determined for anger and aggression between adolescents who play and do not play computer games and adolescents who play computer games in different places.

In another study "*The effect of the TV programs on elementary school students' resorting and approach to physical violence.*" by Tokdemir et.al, it was found that students who watch violent content programs may apply higher rates of physical violence and may see it as a solution to problems.

Huesmann et.al (2003), have determined that watching violent programs on television is the determinant of the aggressive behaviour that can be observed in individuals over 15 years.

In another similar study “*The relationship between the adolescents' use of information Technologies and aggression.*” Ulusoy (2008) has examined the relationship between adolescents' use of information Technologies and aggression. Study results showed that adolescents who use computers and the Internet have the higher average aggressiveness than the adolescents who don't use them. There is a significant difference between the aggression rates of adolescents who use and do not use computer games. The aggression rates of the students who prefer war and strategy games found to be higher. No significant difference found on the level of aggression according to the place of use of information technology. A significant difference found on aggression levels in parallel with computer and internet usage time.

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Psycho-Social And Educational Aspects Of Development Of Financial Literacy In Adults

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ABSTRACT

This paper deals with financial literacy in adults. The topic is approached from psycho-social and educational viewpoint. Financial literacy is one of the key topics of today's world which is based on market-oriented economy. A research carried out in 2014 and 2015 in the Czech Republic will be presented. Its goal was to map financial literacy in adults in relation to possibilities and offers of further education. Debts are often accompanied by negative social, economic and psychological factors. The results suggest a possible link between financial problems of people and exposition to long-term stress which can lead to psycho-somatic disorders.

INTRODUCTION

The concept of lifelong learning has been growing in significance in most European countries as a leading trend in education. The reforms of initial education are based on the acquisition and development of key competencies. It is then natural that the competence paradigm bear an influence on adult education and learning (Veteška, 2011). Learning outcomes, alongside abilities, intelligence and competencies, present another significant category, which appears in theory and practice of European education systems. This concept includes knowledge, skills and competencies (The shift to learning outcomes, 2009).

The main objective of the transformation of the school education in the Czech Republic after 2001 was laying foundations for lifelong learning, providing students with social, civil and professional competencies and motivating them for learning throughout the whole life. Education institutions strive to ensure that education should be meaningful and socially significant for all students. This objective has primarily required alterations in educational contents, methods and forms, as well as shifts in school climate. The adult generation of today did not have such educational opportunities. School education used to have different aims and contents, and was not to such extent focused on social assertion, self-efficacy, new social roles and, most importantly, competitiveness. From this viewpoint, there are three basic general categories that constitute learning outcomes: literacy, qualification and competence. However, the changing social demands, ICT development and globalization generate different demands in these categories. Their intension and extension are subject to changes as well. Social development brings about changes to which people have to adapt.

COMPETENCIES AND LITERACY OF ADULTS

In the present andragogical theory and practice, the terms literacy and competence are used in order to express certain personal qualities, abilities and skills. They refer to anticipated behaviour and demanded performance on a measurable scale. The concept of literacy is older the competencies, the latter presenting a broader view of education reality concerning an individual and society. Literacy reflects cultural and socio-economical aspects and characteristics of a certain historical period.

According to Knowles et al. (2005) competency means a combination of knowledge, understanding, skills, attitudes and values. This combination comes in the form of an individual potential necessary for social assertion. This conception (competency) can be applied to many working areas where competency means unique human potential. The latter (competence) refers to behaviour and relates to personality.

Competencies represent what people can do rather than what they know. "This has several implications: 1) if competency relates to behavior, then it must have a context; 2) competency does not tell us anything about the learning process, it is a learning outcome; 3) in order to reliably measure somebody's performance there needs to be clearly defined and generally accessible standards by which a performance can be measured and evaluated; 4) Competency is a measure of what people can do at a given moment" (Tight, 2003, p. 134). The fact that competency manifests itself through behaviour and nobody possesses all the necessary competencies remains the fundamental problem in creating a complex competency model. Competencies are further developed and transformed in the process of sharing specific competencies and in transferring them to other people. This finding is significant especially for adult learning and literacy development.

Literacy means the ability to master various types of communication and counting in order to make use of information accessible from texts and diverse life situations. It is a complex and changing phenomenon. Its content and modality reacts to specific social context, needs and changes of society, its customs, traditions and norms. Originally, the term literacy referred to the acquisition of elementary communication skills – reading, writing and counting. Literacy therefore includes both knowledge gained through formal education and personal experience from various everyday situations.

Financial literacy can be characterized as ability to read, analyze and manage personal financial conditions which affect material well-being. It includes the ability to make financial decisions, talk about money and financial matters without feeling uncomfortable, make plans about the future, and react competently to life situations which affect everyday financial decisions including those resulting from the current state of economy (Bertl & Veteška, 2015). In these days we distinguish several kinds of literacy that reflect individual needs and social demands for competitiveness. They are crucial for social success and quality of life. Literacy can be divided into: general, functional and basal; reading, mathematical, information (computer), financial and others.

FINANCIAL LITERACY – PHENOMENON OF TODAY’S SOCIETY

The Czech economy has been changing significantly since the early 1990’s, after the economic isolation, when the Czech economy opened up to market principles. Today’s adults attended formal school institutions in a politically and mainly economically different era. That is why an adult person of today may not understand all the economic changes. Simultaneously, he must cope with the ever changing economic situation. If he is not able to face these changes, there arise a whole lot of social and psychological problems, the danger of insolvency, poor social roles realizing. In extreme cases, psychosomatic disorders may occur as a result of a long-lasting stress.

How is this disproportion between the school knowledge of adults and the different economic-social reality to be removed? By means of well-aimed education, enlightenment and counseling. Relying on a financial-problem-solving adult to understand that their situation can be improved by participating in a suitable educational activity is not possible. Such a problem-solving individual can have a tendency to forcefully ignore it, play it down or externalize it (Bertl & Veteška, 2015). Not dealing with this problem accompanied by more negative factors may have fatal consequences – for an individual and the whole society, because problems of this kind limit the productive power of economy, growth of socially pathological phenomena or extreme profiling of certain social groups.

Literacy is not an inborn disposition. It is formed during the lifetime with the working of inner and outer factors which it also influences. Among the inner (objective) factors belong social and cultural influences and economic environment. The key social-cultural aspect is education in family and school. Dolezalová (2009) includes among the inner (subjective) factors inborn talents, special features of the nervous system, personal features and gained experience, along with age, abilities and willingness to participate in further education, intelligence, will and adaptation abilities. In these factors we can see the source of literacy development or, vice versa, the cause of illiteracy. According to Bertl (2014), financial literacy affects people’s behavior and development so that they make long-term plans and manage their intentions in this area thanks to such knowledge. The change in economic and political system influenced in the first place large corporations and companies but consequently had an effect on private lives of all people. Family budget is run by adults (Šauerová, 2014).

RESULTS OF RESEARCH

Since January 2008, debtors – natural persons who do not do business – file for personal bankruptcy to solve their difficult situation. Since its coming to force up till the end of January 2014, this was used by almost 59 thousand persons. Between 2013 and 2014 there were 19 017 cases of personal bankruptcy, which is 1 673 cases more than the previous year. The number of cases of personal bankruptcy increased by 10 % within a year. The analyzed data show a gradual growth of personal bankruptcy cases and filings. This also signals an increase in this kind of problems among the adult population of the Czech Republic. Personal bankruptcy points to the legal practice in this area. When looking at the age group, we find out the three most represented groups include people of 35 years of age and older (74 %), that is the adult population dealing with the world of market economy (after 1990). As labour market participants they do not usually attend formal education any longer. These people are therefore lacking in personal and family finance education and the education about the principles of market economy.

Respondents were monitored according to several objective criteria. This respondent sample presented here

was made up of 196 persons, in whom the following was observed:

- emotional problems stemming from debts,
- existence of family conflicts, stemming from debts,
- efforts to look up help of specialists,
- overall understanding of matters connected with financial problems,
- motivation for further education.

The research shows that a significant group of respondents (33 %) experience psychical discomfort due to the utilization of financial instruments. Up to 60 % of respondents create conflicts of various intensities. 10 % of respondents even got divorced due to financial problems. Almost the same number of persons (9 %) sought out a psychologist or other medical expert to solve the problems stemming from their financial difficulties. A very positive finding shows that there is a comparably large group of respondents (34 %) who turned to non-psychological help, i.e. they solve their problem in an active way in order to stop the increasing debt, avert the thread of property execution or personal bankruptcy (according to the insolvency act number no. 182/2006 Sb.). Another positive finding is that 41 % of respondents know where to look for such assistance (Bertl & Veteška, 2015).

Nearly one half of respondents (46 %) are willing to undergo further education to gain necessary financial competencies. However, it is not certain whether or not the education market provides such courses that are aimed primarily at adult learners. The number of those who consider their currently drawn credit or loan to be futile (32 %) is a warning sign. They fell victim to the psychological influence of media towards potential debtors, without realizing what the credit or loan brings into their lives, what they would have to repeatedly face, what problems they would have to handle, what stressful confrontations they would encounter. Approximately one third of respondents (37 %) do not make sense of the official economic financial terminology used in documents of credit or loan.

A following research was aimed at the overall emotional problems connected with unattended financial problems. The aim was to discover educational tools which would serve preventive purpose. The results will be known in mid-2016.

DISCUSSION

Psychological and educational approaches to the measurement of literacy and competencies are based upon the attained level of personal development and activity, including proficiency. According to this concept, both personal character and cognitive processes (thinking, memory, learning, perception) develop. The attained high level of literacy is important not only for the competitiveness of states but also for humane reasons. It enables people to participate in social life. The spread of literacy is also crucial considering the growing globalization. There are two conditions to the development of literacy: initial education of infant population needs to be of sufficient quality; in adult education there must be a large enough offer of further education. This points to the significance of lifelong learning. The development of further education, edification and counseling means the prevention of these undesirable negative social phenomena. Among the main input determinants in adult education is motivation to learn, age, educational contents (cognitive challenge) and specific educational situations.

Financial literacy in adults is, in the context of lifelong learning, examined as a set of various competencies, attitudes and behaviours. The research also focused on analyzing further education offers in relation to the obtaining and developing of competencies, especially those connected with financial literacy. The topic is also significant in terms of social exclusion prevention, preventing psychological problems in individuals and the development of financial counseling for adults. The research showed that rather than poor understanding of economic and financial terms by respondents another problem emerges, namely that of low resistance of people against the influences of institutions offering credits and instalment sales that look cheap at first sight (Šauerová, 2014).

CONCLUSIONS

Literacy as a multiform category is based on intellectual abilities which are determined by the outer, mainly socio cultural, educational and economic, environment. In these factors the source of literacy or illiteracy can be traced. Adult literacy from the psychological and pedagogical viewpoint is seen as a set of various competencies. Some authors call the various kinds of literacy by the summary name of functional literacy. The definitions of literacy have been lately oriented on processing information, its everyday use, effective inclusion into society and mastering routine jobs and situations. To do this, and individual needs the person possesses the ability to effectively transform information to fit goals and needs.

The research has shown that adult people lack competencies necessary for solving their current financial situation and that their related knowledge and skills attained in the course of formal education are insufficient. At the same time the theory and practice of adult education must didactically process the topics linked with financial literacy. It is not possible to use materials which were primarily designed to serve young school attendants, neither can we use study materials for future economic experts. Its form and contents would be likely to put adult non-specialists off. The emotional side of learning is not to be underestimated as it can have a key influence on the education success and the ability of learners to meaningfully and willingly use the newly acquired competencies.

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Pupils' Mathematical Self-Concept In The Beginning Of The Sixth Grade

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ABSTRACT

The article shows the mathematical self-concept of the sixth grade pupils (n=57) in relation to their mathematical skills in school. Mathematical skills were measured with the help of a survey of the command of the decimal system and on the basis of the report grades in mathematics. The pupils' mathematical self-concept was surveyed in the beginning of the sixth grade with the interviews and a questionnaire using the Likert-scale. The mathematical self-concept seemed to be more positive the better the mathematics skills pupils had.

Key Words: Mathematical self-concept, elementary school

INTRODUCTION

The Finnish pupils' skills in mathematics have often been discussed at the level of the whole society. The excellent mathematical skills of the Finnish pupils' have also received international attention. The success in the PISA-studies has especially affected this discussion. However, in the last PISA 12-study the mathematical skills of the Finnish adolescents had weakened compared to the results of the previous PISA-studies. (Kupari, Välijärvi, Andersson, Arffman, Nissinen, Puhakka & Vettenranta 2013.) The decline in the skills in mathematics has raised concern for the state of the Finnish learning environments in mathematics.

Finnish pupils' learning results in mathematics, attitudes towards mathematics and the factors which affect the level of learning results have been studied and are examined at a national as well as international level. The Finnish National Board of Education is responsible for the evaluations at the national level. Some of the international assessments that have been carried out in Finland are, among others, PISA (Programme for International Student Assessment) and TIMMS (Trends in International Mathematics and Science Study). PISA-assessment measures skills in mathematics, natural sciences and reading comprehension. TIMMS-assessment concentrates on the evaluation of the skills in mathematics and natural sciences. It was possible to see the declining attitudes towards mathematics in all the national and international surveys and research studies carried out in the 2000s. In the assessments of mathematics three attitude factors have been examined: mathematical self-concept, performance confidence and mathematics anxiety. The self-concept of the mathematics is a matter of the pupil's belief in their own abilities in studying mathematics. In the performance confidence of the mathematics the pupil's confidence in themselves in managing the mathematical tasks is examined. The mathematics anxiety means the anxiety, helplessness and frustration the pupil experiences whilst studying mathematics. (Kupari, Välijärvi, Andersson, Arffman, Nissinen, Puhakka & Vettenranta 2013.) This article focused in particular on the examination of the pupils' self-concept.

There have been national evaluations of the comprehensive school which were carried out by the Finnish National Board of Education during the years 2007 and 2008. In 2007 the mathematical skills and attitude factors of the sixth grade pupils of the comprehensive school were evaluated. In regard to mathematical self-concept, it was found out that the more positive the attitude the pupils had towards mathematics the better their learning results were in the mathematics. In particular, the boys' attitudes towards mathematics and their self-concept were better than those of the girls. (Niemi 2010.) When the results of the national 2007 evaluation were compared with the study that had been carried out at the beginning of the third grade, three years earlier, the pupils' attitudes towards mathematics and their concept of themselves as experts of mathematics had weakened distinctly. This result is parallel with earlier studies because the learners' concept from themselves as experts of mathematics weakens during the lower grades. According to (Metsämuuronen 2010) Kupari (2013) among others, the pupils' strong self-concept can be seen on the one hand as a result of education but on the other hand its significance can be seen as a predicting factor in the pupils' performance in mathematics. Self-concept has for its part a significance in what kind of targets the pupils sets for themselves and with what kind of studying methods they intend to reach the objectives. Self-concept is also reflected in the pupil's overall well-being and personality. The Finnish pupils' success has been excellent in the PISA-surveys, even though in the last evaluations there has been a decrease in

the learning results in mathematics. In the last PISA-survey the mathematical self-concept of the Finnish pupils' was near the average for OECD countries. According to the PISA 2012-results those pupils who had a strong self-concept in mathematics achieved considerably better learning results in mathematics than the ones with a poor self-concept. The boys' self-concept in mathematics was better than the girls' self-concept. When comparing these results in the light of the PISA-results for the year 2003, one can state that the self-concept of the Finnish ninth grade pupils' in mathematics has improved a little.

In the TIMMS-survey of 2011, the fourth grade pupils' self-concept and how much the pupils like mathematics and how they commit themselves to studying mathematics were examined. The fourth grade pupils liked mathematics less than others when compared internationally but their confidence in their own skills was internationally at an average level. However, the commitment to studying mathematics was extremely poor when measured internationally. From the point of view of the learning results in mathematics, the pupil's self-concept had the strongest effect of the three. (Kupari, Sulkunen, Vettenranta & Nissinen 2012a.) TIMMS 2011-study also surveyed the skills of the eight grade pupils of the comprehensive school, and the same matters were examined as with the fourth grade pupils. Furthermore, the appreciation of the eight grade pupils towards mathematical skills was measured. It is worrying that Finland was placed with four other countries in a group where those pupils who liked mathematics the least were found. When assessed internationally, the Finnish eight grade pupils appreciated mathematics very little, the commitment to studying mathematics was extremely poor and the self-concept was average internationally. (Kupari, Vettenranta & Nissinen 2012b.)

Even though the pupils' self-concept as experts in mathematics gets nationally poorer during the lower grades, the pupils' self-concept is internationally at an average level in the light of surveys that have been described above and according to the PISA-surveys the self-concept of the pupils at the end of the comprehensive school has become more positive during the years. The results tell rather about the pupils' low commitment and attitude towards studying mathematics. According to Linnanmäki (2004), learning in mathematics is generally regarded as important. National and international measurements that have been presented above also demonstrate the importance of learning mathematics. The abstract nature of mathematics and yet on the other hand its importance in managing in the everyday life make it a unique subject. One must be able to apply the skills in practice. In learning mathematics the pupil's self-concept has a strong role. The study by Linnanmäki (2004) shows the correlation of the self-concept with the achievements in mathematics. The teachers indeed should work systematically to develop the pupils' self-concept in a positive direction and they should share information about the methods they use with their colleagues. The experiences of success that the weaker pupils gain are paramount in reaching the objective.

The Finnish teaching tradition of mathematics has followed the international trends of teaching and learning with a small delay. In the 1960s the so-called "new mathematics" (New Math) was trendy, the objective of which was to make school mathematics resemble higher scientific mathematics. However, the learning results remained quite superficial and in the 1970s as a reaction in many countries so-called Back to Basics –movement was created, where the aim was to get back to the basics, not wanting to emphasize the scientific nature of mathematics any more. The emphasis on problem-solving skills arrived in Finland in the 1980s. After this the constructivist learning theory has prevailed in teaching mathematics. In Finland, with the 1994 national curriculum reform, the understanding of learning as an active operation and the mathematical skills which can be adapted to different everyday life problem solving situations became the most central focus of teaching mathematics. The objective was that the pupils would have a chance to adapt mathematics in situations that are meaningful to them. The core curriculum 2004 for basic education still leans on the constructivist learning theory. The point of view of mathematics teaching has not really changed from the previous reform. The central focus areas are still problem solving and the development of thinking skills. (Patrikainen 2012.) In the core curriculum of 2014 for mathematics the constructivist point of view is still emphasized in the teaching of mathematics and now supporting of pupils' positive attitudes towards mathematics and their positive self-concept as learners of mathematics is sought after (Core Curriculum for Basic Education 2014). One aim of the Gamification-project carried out in the school year 2014-2015 for the three sixth grade classes of comprehensive school is to support the positive development of the pupils' mathematical self-concept. For this reason it is important to find out the connection between the mathematical skills of the pupils (n=57) who participate in the project and their mathematical self-concept.

MATHEMATICAL SELF-CONCEPT

Mathematical self-concept is essentially connected to the skills in mathematics. According to the studies (among others, Chen, Yeh, Hwang & Lin 2013; Linnanmäki 2004) the relationship between the skills in mathematics and the mathematical self-concept is reciprocal. The mathematical self-concept affects the adoption of the skills in mathematics and correspondingly the skills in mathematics affects the building of the mathematical self-concept significantly. Building the mathematical self-concept is a complex process and its construction is connected also to the other factors in addition to the skills in mathematics (Skaalvik & Skaalvik 2002). Shavelson, Hubner and

Stanton (1976) define self-concept as the views of the human on the ego. Self-concept is built from the interpretations of the environment and from the experiences received there. Shavelson etc. (1976) has divided a general self-concept into academic and non-academic self-concept. The non-academic self-concept is built from the social (the relations with peers, significant people), emotional (feelings) and from physical (physical capability and appearance) self-concept. The academic self-concept can be examined through subject-specific (mother tongue, history, mathematics and natural sciences) self-concepts. Marsh and Shavelson (1985) have condensed an academic self-concept further. According to them, the academic self-concept can be divided into a mathematical and a linguistic academic self-concept. Marsh (1990) has further focused the model of the academic self-concept. According to him, the mathematical academic self-concept is built from the self-concepts of the subjects of mathematics and natural sciences. Whereas, the linguistic academic self-concept is based on the self-concepts of the native language and foreign languages. The general school self-concept as well as those in biology, economics, geography, history are connected to both mathematical and linguistic self-concepts. In this article the academic self-concept is examined with particular regard for mathematics.

Skaalvik and Skaalvik (2002) write that the areas of self-concept are built through internal and external comparison. In the internal comparison an individual evaluates their own skills in mathematics with respect to their other skills. Thus, the skills in mathematics can be either a strength or a weakness for the individual. In the external comparison an individual compares their skills with the information from the environment. The pupils receive information for both internal and external comparison from following their own performance, from the teacher's comments and assessments, the comments and performances by the peer group and from the grades they have received.

According to earlier studies (see Metsämuuronen 2010) the pupils' own experience of themselves as being good in mathematics declines between the third and the sixth grade. In particular, the girls' confidence in their own skills gets weaker than that of the boys. Generally, those pupils who have a strong mathematical self-concept are distinctly better in their skills in mathematics than the ones with a poor mathematical self-concept. Similar results from the connection between the self-concept and the performance in mathematics especially in the higher grades of the comprehensive school have been also obtained in other studies (among others, Linnanmäki 2004; Valentine, DuBois & Cooper 2004; Guay, Marsh & Boivin 2003).

RESEARCH METHODS AND DATA COLLECTION

At the initial stage of the project the focus in the research was on surveying especially the pupils' mathematical self-concept. Based on surveying the mathematical self-concept, the objectives of the project are drawn up for developing game-like learning environments and supporting the positive mathematical self-concept. The pupils of three sixth grade classes ($n = 57$) of the comprehensive school participated in the study. The research material has been collected with the Ten Base-survey 2 (Ikäheimo 2011) for the pupils, through the pupils' interview and with an inquiry which surveys mathematical self-concept. The pupils' report grades were used as an indicator of their skills in mathematics in addition to the Ten Base-survey in mathematics. The pupils' report grades varied in the range of 6-10. In the study group there were more than 40% of pupils who had got a poor (6-7) report grade in mathematics, a third had received an excellent and the rest (25%) of the pupils had received a good report grade.

Ten Base-survey 2 was carried out at the beginning of the project as an initial measurement of the skills in mathematics at the end of the fifth grade in the spring of 2014 as well as at end of the project as a final measurement in spring of 2015 of the sixth grade. Ten Base-survey 2 is meant to be carried out at the end of the fifth grade. The survey contains the tasks which are related to the concepts of both natural numbers and decimals, basic calculations and the conversions with the units of measure which are central from the point of view of the command of the decimal system during grades 1-6. The starting point for the survey is that at the end of the fifth grade the pupils have command of the contents of the survey to receive the mark 10. The First Ten Base-survey 2 was carried out with all the pupils in May 2014, and the pupils were divided into three groups on the basis of the results: those whose performance in the survey was poor (30%), average (44%) and good (26%). The group of pupils who had performed poorly had received 0-40 points, the average group received 41-57 points and the group which succeeded well had 58-70 points. The maximum number of points in the survey is 70 which none of the pupils reached. From all of these three groups 18 pupils were chosen for the interview which was carried out in October 2014. The interview was a group interview which was carried out six times. In each interview three pupils (one pupil from every sixth grade class) who were at the same level from the point of view of the skills in mathematics participated. A Likert-scale questionnaire concerning mathematical self-concept that was drawn up based on the interview was carried out in December 2014 and a second time in May 2015. The questionnaire was divided into three main points: the pupils' self-concept as learners of mathematics, the pupils' ideas of learning and teaching in mathematics and the pupils' ideas of the nature of mathematics in relation to the solution processes of the tasks in school mathematics. The research material was examined from the connections between the Tens Base –survey

2, the report grades and the questionnaire regarding the self-concept. In the examination attention was also paid to the differences between the genders.

FINDINGS

Tens Base –survey and report grades

The skills of the fifth grade pupils participating in the study were lower than the anticipated results of the Tens Base –survey 2. In other words, none of the pupils reached a perfect standard (a grade 10). The pupils' skills were inadequate. Next we will examine the pupils' success in more detail. Based the results on the first Tens Base –survey 2 the boys succeeded better than the girls (cf. PISA results). 45% of the boys belonged to the group that had succeeded well (got 58-70 points) while for the girls the figure was 29%. Otherwise the pupils' division into three levels in the survey on the basis of the skills (poor, average, good performance) was even, in other words, every level represented about a third of the pupils. An interesting observation can be made in connection to the boys' report grades because, the report grade was poor (6 or 7) for half of the boys. Figure 1 presents the connection between the Tens Base –survey 2 and the pupils' report grades which was statistically extremely significant ($p=001$).

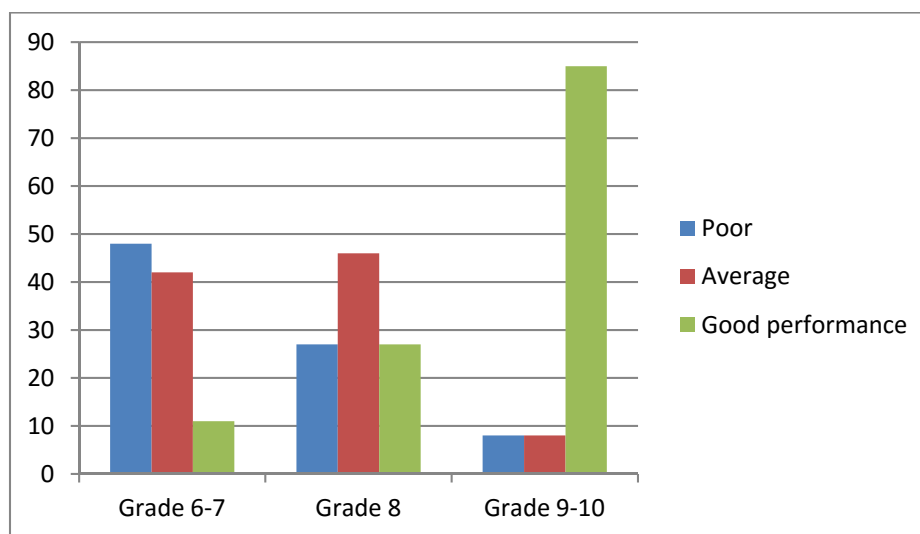


Figure 1 The connection between the Tens Base –survey 2 results and the pupils' report grades

It appears from Figure 1 one that half of the pupils who have got a poor report grade (6 or 7) performed in Tens Base –survey poorly however, 10% of the same group succeeded well. It was possible to see a parallel phenomenon also with the pupils who had got a good report grade and of whom more than 80% succeeded well in Tens Base –survey. The result that figure 1 presents is expected in regard to the fact that the pupils who had succeeded well in the survey had received excellent report grades and correspondingly those who performed poorly had received poor report grades in mathematics. The good success of the pupils who had received a poor report grade in mathematics Tens Base –survey 2 can be explained partly by the fact that the contents of the survey are basics which the pupils are expected to know and, in turn, the report grade consists of a wider content at each grade. Other elements as assessment of working are also included in the report grade given by the teacher. The validity of the report grade can be thought about from many points of view. The studies which are related to the pupil assessment show that often the report grade received by the pupil is influenced also by the pupil's temperament, the teacher's understanding of the pupil's teach ability and goal orientation (Mullola 2012.).

The pupils' interview

The interview which mapped out the basic information of the Likert-scale questionnaire was examined from the point of view of the three groups that were divided according to the results of Tens Base –survey 2. The pupils' opinions and experiences of studying mathematics, their own level of skills and their attitudes were expressed in the interview. For the pupils who had succeeded well, it had been easy to learn mathematics from the beginning of the school and correspondingly the ones which had performed poorly had experienced learning mathematics as a challenge at times. All the interviewed pupils shared the opinion that the teacher must teach mathematics in learning sessions, in other words, they must explain, in particular, the contents of new matters. In the pupils' opinion, mathematics cannot be independently learned without instruction.

Five out of six poorly performing pupils in Tens Base –survey 2 gave themselves a better grade by one than the teacher. The grades given to themselves by the pupils varied in the range of 7-8. Exactly same result appeared for the pupils who had succeeded averagely. The grades of the pupils who had succeeded averagely varied between 7 and 9. The pupils who succeeded well evaluated their own skills with the same number in line with the report grade given by the teacher. The pupils did not know how to justify the grade given by themselves or did not know how to analyze matters which they should still have a better command of. In the pupils' own evaluation the grades of the mathematics tests seemed to be significant, which leads to the conclusion that the pupils did not know the assessment criteria to reflect their skills more widely. The pupil assessment also becomes more grade based all the time for the older pupils, in which case the pupil can be left feeling unclear regarding the contents of the grade. It came forth in the interview that the pupils who had performed poorly and averagely hoped for diverse methods of work, working together, the teacher's support, diverse mathematics equipment and a peaceful working environment for the teaching of mathematics. The wishes of the pupils who had succeeded well were directed mainly at the structure of the lesson. They hoped for structured teaching where the contents are first taught and after that independent work is carried out in a peaceful environment. The pupils had a neutral attitude to studying mathematics, only one pupil who had succeeded well was particularly interested in mathematics.

The connection between mathematical self-concept and school report grade

Three main points were included in Likert-scale questionnaire about mathematical self-concept: the pupils' self-concept as learners of mathematics, the pupils' ideas of learning and teaching in mathematics and the pupils' understanding of the nature of mathematics in relation to the solution processes of the tasks in school mathematics. In light of the results of the questionnaire the pupils' self-concept as learners of mathematics was in line with the earlier research results (cf. Kupari et al. 2013; Metsämuuronen 2010). More than half of the pupils who received a poor report grade (6-7) had a low self-concept of themselves as learners of mathematics and in turn, more than 60% of the pupils who had received excellent report grade had a positive self-concept. However, 10% of the pupils with a poor report grade and about third ($p=0.05$) of the pupils with a good (8) report grade had a good self-concept. When differences in mathematical self-concept between the girls and the boys are compared, the differences are non-existent. A positive attitude was found a little bit more with the boys than the girls. This result parallels the result by Niemi (2010) and it can be partly explained by the general way of thinking, according to which the boys are better than girls in mathematics and thus the idea which is conveyed to the boys has a positive effect on their self-concept.

When asked about the matters which are related to the learning and teaching of mathematics, for half of the pupils who had received an excellent report grade and to more than 60% of the pupils who had a good report grade, teaching or learning of mathematics did not present a great significance. Instead, nearly 40% of the pupils who had a poor report grade saw the matters connected to teaching and learning of mathematics in a positive light. This result points to the fact that the teaching of mathematics is significant to the pupils with poorer skills. It showed in the interview that the weak pupils had more wishes in regard to the teaching of mathematics and the teaching they received was versatile which can partly explain their more positive attitude towards the teaching and learning of mathematics. When asked about the nature of mathematics in relation to the solution processes of the tasks in school mathematics, 30% of the pupils who had received a poor report grade had positive attitude. Only one pupil who had an excellent report grade had a positive view of the above mentioned general nature of mathematics. Half of all the pupils had a generally neutral attitude towards mathematics.

Connection between mathematical self-concept and Tens Base –survey

Mathematical self-concept was also examined in relation to the pupils' success in Tens Base –survey. As described above, the majority of the pupils receiving good marks in the survey were boys. Otherwise the pupils' success was divided evenly into three different levels: those who had performed poorly, averagely and well. The connection between the mathematical self-concept seems to be parallel both with the success in Tens Base –survey and with the good mathematics report grade. Of the pupils who had succeeded well in the Tens Base –survey as well as received a good report grade of the mathematics, nearly 70% has a positive mathematical self-concept, whereas 10% of the pupils with poor performance are positive ($p=0.01$). There are deviations in the connection between the report grades in mathematics and mathematical self-concept as well as the success in Tens Base –survey for the pupils who have performed poorly. The pupils who had performed poorly in the Tens Base –survey appeared to have less of the negative mathematical self-concept (30%) than the pupils who had received a poor report grade (50%).

30% of the pupils who had performed poorly in Tens Base –survey had a positive attitude towards teaching and learning mathematics. This result is parallel with the views of the pupils who had received a poor report grade in mathematics because 40% of the pupils who had a poor report grade had a positive attitude towards teaching and

learning of mathematics. Nearly 40% of the pupils who succeeded well had a negative attitude towards learning and teaching of mathematics which is a little more than the attitude of the pupils who have received a good report grade. The negative attitude to learning and teaching of mathematics was extremely low with the pupils who had performed poorly in Tens Base –survey (10%). It is interesting to notice that the poorly performing pupils have a more positive attitude towards learning and teaching of mathematics than the pupils who have performed well. A parallel result can be perceived in the general attitude towards mathematics of the pupils who have also performed poorly in Tens Base –survey. Nearly 40% of the pupils who had performed poorly in Tens Base –survey had a positive attitude towards mathematics whereas 14% of the ones who had performed averagely in Tens Base –survey and 20% of the ones who had succeeded well had a positive attitude towards mathematics. A quarter of the pupils who succeeded well in Tens Base –survey had negative attitude towards mathematics when asked about the pupils' ideas of the nature of mathematics, and in particular about the versatility of the solution processes of the tasks in school mathematics. There was not a great deal of difference in the attitudes of the pupils who had performed poorly and those who had succeeded well towards the solution processes of the tasks in school mathematics. 30% of the pupils who had performed poorly had a negative attitude towards the nature of mathematics especially from the point of view of the solution processes of the school mathematics tasks.

One can state as a summary that the pupils with a poor report grade and who performed poorly in Tens Base –survey have more positive attitude towards mathematics than the good pupils. The good pupils have a more positive mathematical self-concept than the weak pupils, of course, however, their attitude towards mathematics is more negative.

DISCUSSION

In this article the mathematical self-concept of the pupils of three sixth grade classes ($n=57$) was examined in relation to the pupils' skills in mathematics in Tens Base –survey 2 and to the report grades they had received. At the same time, the connection between the report grades in relation to the success in Tens Base –survey was also examined. The obtained results correlate rather well with the general image of the relationship between a mathematical self-concept and success in mathematics. The self-concept of the pupils who had performed poorly in mathematics was lower than that of those who seemed to be succeeding in mathematics on the basis of the results from Tens Base –survey and report grades. According to studies (see Metsämuuronen 2010, 2013; Kupari et al. 2013) the mathematical self-concept is connected to the success in mathematics. There were differences between the pupils' report grades and the grades they had given themselves, in particular, with the pupils who had performed poorly and averagely. These pupils gave themselves a better grade than the teacher. The evaluation has to be based on both the pupil's self-assessment and the teacher's assessment. The pupils also need to know the criteria for assessment. The assessment of mathematics indeed needs to contain versatile evaluation such as verbal-, peer-, and self-assessment and has to be directed to the learning process and to working.

It is interesting that according to the results of this study the pupils who succeed well in mathematics and who have a positive self-concept in mathematics didn't necessarily have a positive interest in mathematics. In international evaluation studies, the Finnish pupils' negative attitude towards the interesting nature of mathematics even in the lower grades has also come forth (see Kupari et al. 2012a; Kupari et al. 2012b). The fact that the pupils who had performed poorly in mathematics had a more positive attitude towards mathematics than those who had succeeded well is particularly interesting. Because about half of the pupils who had performed poorly were boys, a positive mathematical self-concept with the pupils who have performed poorly can partly be explained by the boys' more positive attitude and self-concept towards mathematics that has generally been observed in the studies. Another explanation may be found in the fact that the pupils who don't perform well experience getting more support, encouragement and positive feedback during the mathematics lessons than the pupils who are successful in mathematics. Contrary to this, the progress made by the pupils who are gifted and succeed well in mathematics is trusted and, for example, also directing the special needs education to the needs of the gifted pupils is lesser. It would be important to offer every pupil tasks that are at their own level and suitably challenging, in which case the positive attitude towards mathematics could be preserved through the experiences of the success. Tikkanen (2008) emphasizes the significance of the teacher to the pupils' mathematical self-concept. The significant factors are the feedback that has been received from the teacher, the expectations set by the teacher and the general atmosphere. The scope of the factors which are related to learning in mathematics adds to the challenging role of the teacher. For example, motivation, expanding the basic knowledge and understanding the mathematical phenomena have a positive effect on mathematical self-concept, and in the teaching attention should indeed be paid to realizing them as factors which affect the development of the self-concept.

When examining the differences between the genders in the success in Ten Base- survey, the boys succeeded better in the report grades and the mathematical self-concept than the girls in Ten Base- survey and the boys' mathematical self-concept was a little more positive than the girls' self-concept. However, the boys' report grades were poorer as over half of the boys had a report grade of either 6 or 7. According to Metsämuuronen (2013) the

change in the mathematics skills of the girls' and boys' between the grades 3-9 is a little to the boys' advantage. This is partly explained by the fact that proportion of girls among the best succeeding pupils in mathematics falls distinctly from the sixth grade onwards. It is likely that the girls' confidence in their mathematics skills is lower than the boys' and that it gets lower year by year is connected to this.

In the study, the information of the pupils' skills in mathematics was obtained on the basis of Ten Base-survey and the report grades. The report grade and Ten Base-survey tell about the skills differently. The report grade measures the command of the mathematical contents of the grade in question whereas Ten Base- survey concentrates on the command of the decimal system. Ten Base- survey 2 has been designed for surveying the pupils' skills in the decimal system and it contains tasks, calculations and measure conversions which are related to the concepts of the natural numbers and decimals. The aim of the survey is to find those pupils whose skills in the command of the decimal system had weaknesses. These weaknesses were seen in this study also in the report grades. The types of surveys such as the Ten Base- survey are one way of finding out the level of pupils' skills, and the level of the pupil's skills cannot be explained solely with the help of Ten Base- survey. Information was obtained with the help of the pupils' interviews regarding the ideas of the different level pupils in connection with mathematical self-concept as well as their skills. Likert-scale questionnaire based on the interviews brought the opinions of the wider pupil material as the subject for the examination. When a wider general view about the nature of mathematical self-concept of the sixth grade pupils of the comprehensive school is searched for, a bigger target group would increase the reliability of the study. Likert-scale questionnaire gives the pupils the opportunity to choose and also the possibility to not answer the questions to which they do not have an opinion of. The contents of the questionnaire which are related to the mathematical self-concept can have been in some part challenging for the pupils to understand and this may have affected the results obtained. However, the results of the study are mainly parallel with the results of national and international evaluation studies.

According to the longitudinal study into the learning results in mathematics of the basic education during the years 2005–2012 edited by Metsämuuronen (2013), the Finnish pupils' interest in mathematics decreases considerably during the school years. With the decrease in interest the learning results can also become lower. Adding games and playing games in the mathematics learning environments has been raised by the Ministry of Education as one of the means to increase the interest towards mathematics. Learning of mathematics is in connection to the mathematical self-concept which has been studied extensively. Gamification can be used to make learning in mathematics more motivating, to offer a lower threshold for coping with failure, to bring a more creative and more communal way for studying mathematics, when the exchange of ideas and doing together influence the pupils' mathematical self-concept. It has been noticed that gamification is activating for the pupils, inclusive and inspiring operation. Whatever the means, it would be essential to pay attention more consciously to the significance of the pupils' mathematical self-concept in the learning process and in this way have a positive effect on the learning and attitudes towards mathematics. The results of this article will be used as the information basis for the implementation of the Gamification-scheme in the spring term 2015.

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Smart Development And Educational Technology In Rural Areas: Lessons From Two Case Study Regions

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ABSTRACT

The aim of this paper is to explore the impact of smart development on education in rural areas. After a discussion of recent attempts to interpret smart development in rural areas, its connections to cooperative and collaborative learning as well as vocational training will be explored. To evaluate the impact of smart development on regional educational measures, two Austrian case study regions are analyzed on the basis of two methodological approaches: regional secondary meso-data and a field survey with selected firms located in these areas. On this basis, the paper then attempts to identify potentials for cooperative learning in rural regions in the near future.

INTRODUCTION

Education and innovation, i.e. the smart use of technology, are nowadays widely conceived as drivers also for regional development. Can a combination of both – namely educational technology – also be applied for a smart development of rural areas?

Over the past years European regional policy based on regional economic research has emphasized the notion of a “smart” regional development. Only recently this concept has also been applied specifically in the context of rural development. The idea of a “smart” development of rural areas recognizes that peripheral or non-urban areas differ with regard to economic, social and cultural characteristics. Therefore, a one-size-fits-all policy approach is obsolete and a careful analysis of the regional knowledge capabilities and research competences as part of a “bottom-up-process” must be carried out instead. Thus, a “smart” growth strategy that aims to promote growth in rural areas has to take into consideration the differences and potentials of the respective region. Furthermore, the “smart” development concept puts special emphasis on innovation, education and knowledge potential of rural regions. The policy concept has had a particular impact on European policy makers (Foray et al. 2009), making the smart development approach one of the main drivers in the EU 2020 innovation plan.

In this paper we provide a discussion of “smart” growth in the context of regional policy and explain why a “smart” development is of particular relevance for rural areas with respect to cooperative and collaborative learning as well as vocational training. In order to achieve this, two Austrian case study regions will be analysed on the basis of two methodological approaches: regional secondary meso-data and a survey with selected firms of the regions. Despite their locational disadvantages, this paper attempts to identify potentials for a “smart” development with regards to collaborative and cooperative learning in rural regions.

TERRITORIAL DIMENSIONS OF “SMART” DEVELOPMENT

Some ideas of the “smart” development concept are connected with and based on a territorial approach with emphasis on cooperative and collective learning and the importance of the local milieu (Camagni and Capello 2012). In particular, the identification of relevant sectors and industries that mark a region’s competitive advantage – in the “smartness” debate referred to as “*smart*” *specialisation* – coincides to some degree with the concept of *Constructing Regional Advantage* in the field of economic geography. Both concepts emphasize the role played by the industrial and institutional past of a region, but do not favour cherry picking policies that promote certain industries and others not. Still, both concepts try to identify and prioritise promising sectors and industries. While the CRA concept utilizes a more geographical approach, the “smart” *specialisation* concept puts the (broadly defined) entrepreneur in the focal point to identify the relevant and most promising sectors and industries.

McCann and Ortega-Argilès (2013) link the “smart” *specialisation* concept to the topics of *embeddedness*, *relatedness* and *connectivity*. Embeddedness includes the historic linkages of the respective region with certain sectors and industries, while relatedness focuses on knowledge spillovers within cognitively related areas.

Connectivity focuses on the role of mobility of human capital, infrastructure and the ever-growing importance of information and communication technology.

Furthermore, the “smart” development approach promotes knowledge transfer and knowledge diffusion through inter-sectoral and inter-regional cooperation, and tries to develop policies that facilitate innovation, knowledge, and learning in rural contexts (Camagni and Capello 2012). Following the relatedness argument above, the “smart” development approach also stresses optimal cognitive proximity between firms within the region to create growth. Variety in related economic industries is able to create growth through knowledge spillovers, but there is also increasing evidence that relatedness at individual levels (e.g. the same education or occupation of workers) within a region is at least as important as industry composition (Wixe and Andersson, 2013). It is also beneficial for knowledge-lacking regions to foster learning-linkages with more developed regions, related to the region’s existing technological fields, yet these linkages must not lead to outflows of knowledge and skill (adverse Krugman effects). Re-designing local labor training-systems or promoting regional university-industry linkages can complement this connection to developed regions.

Most innovation oriented policies are to a large extent neglecting rural areas. For long the basic concepts of regional development were based on agglomeration and urbanisation economics and thus not applicable to rural regions. The “smart” specialisation concept is hence of particular interest as it can be potentially more effective in rural and intermediate regions. In large and highly diversified urban regions a “smart” specialisation strategy “will be less relevant as almost all sectors and technological fields will be present” (McCann and Ortega-Argilés 2013). Conversely, intermediate regions with both rural and urban areas seem to be the ideal target of such a policy approach.

What strengthens the need for regionally tailored “smart” specialisation strategies even more is new evidence showing, that after 2000 rural areas have outperformed intermediate regions, which in turn have outperformed peri-urban regions in GDP per capita growth (Dijkstra et al. 2012). Since then intermediate and predominantly rural regions are playing a much more important role for EU economic growth compared to the 1990s.

EDUCATIONAL TECHNOLOGY AND COOPERATIVE LEARNING IN RURAL AREAS: A CASE STUDY APPROACH

The aim of our case study approach is to analyse how empirical findings of two Austrian case study regions – Styrian Vulkanland and Carinthian Lavanttal (Figure 1) – show tendencies towards a “smart” development of educational technology, cooperative learning and technology innovation. On this basis, we try to provide arguments regarding the usefulness of “smart” development policies in these two rural regions.

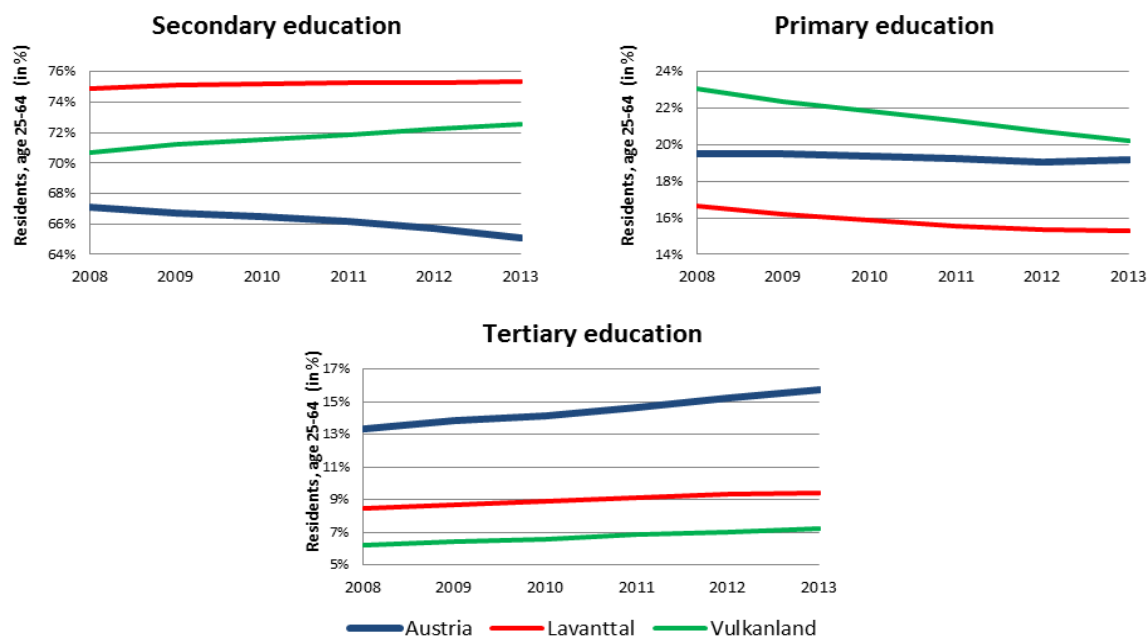


Figure 1: The two Austrian case study regions: Lavanttal and Vulkanland (Source: Statistik Austria; worldatlasbook.com)

Considering **industrial composition** given by employees in manufacturing, Vulkanland has its core manufacturing competences in the handcraft and foodstuff industry, while the building industry and metal production are the dominant sectors in Lavanttal. Both regions have the same accompanying symptoms of rural regions: lower income, greater distance to knowledge centres, lower firm foundation, sinking number of inhabitants and a negative forecasted population trend, lower entrepreneurship and innovation output (e.g. number of patents), and a lack of skilled and educated labor (brain drain) compared to peri-urban or urban regions.

Looking at **educational attainment levels** of residents between the ages 25 to 64, it is evident that both case study regions show a lack of highly educated individuals with a tertiary degree and a significantly higher share of residents with secondary education degree compared to the Austrian average (Diagram 1). In addition, the two case study regions show high shares of residents having a completed apprenticeship education as their highest educational attainment, which make up to 45-48% of all residents between the ages 25 to 64. Considering

primary education which accounts for residents with minimum compulsory schooling only, the two regions differ from each other: while Lavanttal shows a generally lower share of residents with only primary education than the Austrian average, Vulkanland lies above the Austrian average, although showing a negative trend in the timeframe '08-'13. This could be explained as Lavanttal's core competences lie in the metal processing and production industry, making an apprenticeship education (i.e. a secondary degree) the minimum requirement for working in these industries. This requirement might not be too relevant for Vulkanland's handcraft and foodstuff industries, which have more agrarian roots and largely do not require an apprenticeship education.



What is also striking and underlining the large share of **residents with apprenticeship education** are the shares of regional employers offering an apprenticeship position (Diagram 2). Again, the two case study regions are

Diagram 1: Educational attainment of residents aged 25-64 (in % of all residents aged 25-64) (Source: Statistik Austria)

well above the Austrian average. Lavanttal tops this comparison with around 19-23% of all employers offering such a position in the timeframe '08-'13. This again points to Lavanttal's core competences metal production and processing, which depend on more skilled and trained labor with a completed apprenticeship education.

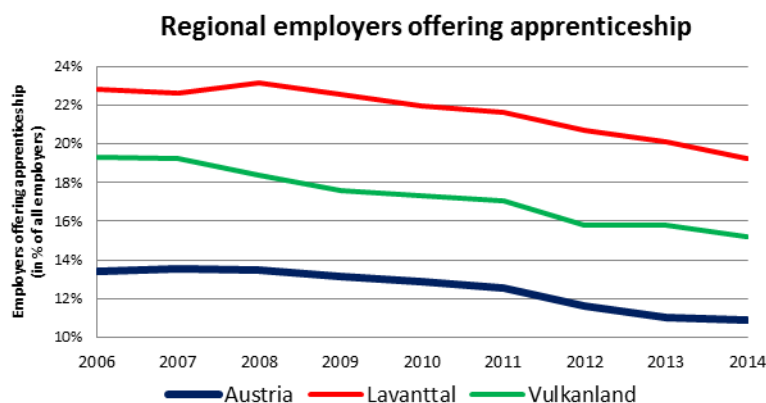


Diagram 2: Regional employers offering apprenticeship positions (in % of all employers) (Source: WIBIS Steiermark, Kärnten)

Turning now the results of a firm survey that has been conducted by means of in-depth interviews with CEOs of 15 firms each in the two Austrian case study regions, it becomes evident that most firms cooperate with suppliers of commodities and services, private clients and universities or other higher education institutions in the innovation process (Diagram 3). This connection is especially developed in Lavanttal, where 2/3 of the surveyed firms have had such **cooperation in the innovation process**, yet also very pronounced in Vulkanland. These factors point to the dimension of "connectivity" in the "smart" development concept discussed above. Firms in

these rural regions are actively searching for innovation opportunities inside and outside their region and implement new means of production or new products in the course of their day to day business.

Furthermore, 26.7% of the surveyed firms in Styrian Vulkanland and 86.7% in Carinthian Lavanttal have their own **R&D departments**. This difference might again point to the different core competencies in the two regions: metal production and processing is more dependent on the development of machinery and technology, making firm intern R&D useful and necessary.

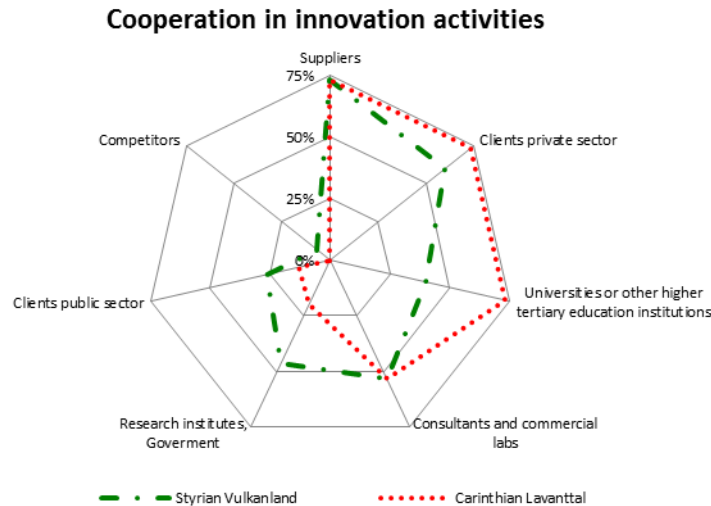


Diagram 3: Cooperative learning in innovation activities between 2012 and 2014 (in % of surveyed firms)
(Source: TASTE)

Regarding **cooperative learning**, the majority of firms in the two regions cooperated with one or another educational institution both in the region and external to the region in the timeframe '12-'14 (Diagram 4, left). This cooperation often takes the form of research collaborations, offering career opportunities for students and new means of production for firms. While cooperation with regional technical high schools were the main focus of firms in Lavanttal, regional commercial high schools and trade schools were the main cooperation partner of the surveyed firms in Vulkanland. There is lesser cooperation with educational institutions external to the region, one exception being cooperation with external universities in Lavanttal. This connection is very pronounced and again reflects the more technological and research intensive core sectors.

In 2012-2014, the majority of surveyed firms in both regions have monetarily supported the **vocational training** of their employees, often with in-house courses or trainings (Diagram 4, right). This reflects the general willingness of regional firms to invest in the skill and education of their workers. In some firms employees can even expect a wage premium when they complete trainings or courses and thus contribute to the firm's knowledge base.

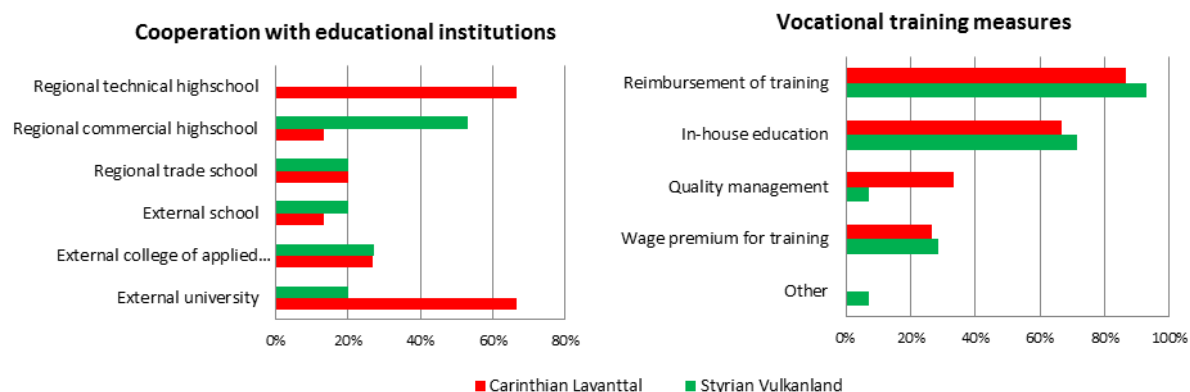


Diagram 4: Cooperation with educational institutions and vocational training measures of firms between 2012 and 2014 (in % of surveyed firms) (Source: TASTE)

ELEMENTS OF A “SMART” DEVELOPMENT STRATEGY

Preliminary conclusions from the previously discussed results are that even rural areas in relative close vicinity to each other and with similar and sometimes equal cultural, political and legal frameworks differ in various ways from each other. Both regions diversify their economic activity into manifold sectors and reveal the ability to be competitive on a very high level in niche markets.

Our survey with selected firms from two Austrian case study regions showed that the firm-internal innovation process is strongly dependent on cooperative learning with private clients, suppliers and universities or other higher education institutions. This cooperation with regional as well as external educational institution takes place in most of the firms, either as part of the innovation process through projects or trainings or as part of efforts to attract possible job candidates. Furthermore, firms in both regions rely very much on the regional labour supply, which often lacks skilled labour (especially in Vulkanland), which prompts firms to look for external alternatives.

The behaviour of regional firms to overcome deficiencies that are often associated with rural areas, exhibits strong tendencies towards a compensatory – and perhaps “smart” - development. Regional firms “borrow” size by establishing cooperation with trans-regional R&D and tertiary education institutions to some degree and by building production networks with firms.

It is worth noting that both regions managed to build up an internal as well as an external regional image and a “sense-of-belonging“, in order to direct actors towards a common goal and to expand the innovative milieu. It can be seen that many elements of a “smart” development strategy of rural areas are already getting under way which are to be supported and reinforced by the EU 2020 innovation plan.

ACKNOWLEDGEMENTS

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Social Intelligence Of Teachers And Coping With Demanding Situations In Teaching Practice

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ABSTRACT

Teaching practice is one of the areas in which occurrence of demanding situations is not rare. Coping with demanding situations in the process of education is conditioned by personality traits of teachers as well as characteristics of a demanding situation. In the context of personality traits of teachers, an important role is played by social intelligence, specified as an individual type of intelligence within the concept of existence of several types of intelligence. The presented report focuses on specification of links between the social intelligence attributes of teachers and evaluation of forms of behavior of teachers in demanding educational situations. Empirical data were acquired by means of two methodologies (CSI by Amirkhan, 1990 and MESI by Frankovský and Birknerová, 2014) from 97 respondents. The results of statistical analyses support the existence of statistically significant correlation coefficients between one social intelligence attribute and evaluation of forms of behavior in a demanding educational situation. In this context, the links between the social intelligence attribute Empathy and the forms of behavior in a demanding educational situation Conflict resolution and Social support are accentuated.

INTRODUCTION

In teaching practice we encounter various situations. In some, we are able to behave without a problem, we are usually not even conscious of their management. However, there are other situations management of which requires overcoming certain obstacles and coping efforts. This type of situations may be labeled as demanding. Demanding situations occur in various areas of life and throughout the whole life. Typical areas are family environment, school, work, sports, and leisure time. Teaching practice is one of the areas in which occurrence of demanding situations is not rare. Occurrence of demanding situations in the process of education is a natural part of pedagogical activities. From the perspective of effectiveness of the educational process it is crucial to focus on the ways of coping with demanding situations. This coping may be understood as a significant dynamic element of processes of education and upbringing. Effectiveness of coping with demanding situations in the educational process is conditioned by several factors. Generally, it is possible to identify these factors as personality traits of teachers and, on the other hand, the factors are represented by the characteristics of the particular demanding situation. In the context of personality traits of teachers, a significant place is taken by social intelligence, specified as an individual type of intelligence within the concept of considering the existence of several types of intelligence (e.g. by Gardner 1993; Kaukiainen et al. 1999; Goleman 2006, Orme and Bar-On 2002; Frankovský and Birknerová 2014; Birknerová, Frankovský and Zbihlejšová 2015 and others).

SOCIAL INTELLIGENCE

Existence of social intelligence is supported by Gardner's (1993) opinion according to which it is not possible to consider only one single type of intelligence but, quite contrarily, it is important to specify separate types of intelligence: linguistic, spatial, musical, logical-mathematical, kinesthetic, interpersonal, and intrapersonal. The provided classification makes it clear that the issue of interpersonal intelligence is very close to the one of social intelligence. Socially intelligent individuals are, in accordance with Yamagishi (2001), prone to have faith in social environments and they enter into various social interactions. Socially perceptive people are capable of distinguishing between the real and fake risks; they can detect the signals of untrustworthiness; they are attentive, providential, and able to evaluate the given situation better.

Regarding the concept of social intelligence, several authors (Lee et al. 2000 acc. to Austin and Saklofske 2007) highlight the presence of a crystalline as well as a fluid component. The crystalline component is understood as a set of declarative and procedural pieces of knowledge about the familiar social events, for example, rules of the social etiquette, social norms, and the like. The fluid components may be represented by the ability to flexibly apply one's knowledge in resolving new social problems.

An overview of the criteria utilized in literature when defining social intelligence was formulated by Ford and Tisak (1983), who confirm the terminological and semantic relationship among social intelligence, social competence and social skills, which may be accepted also in the context of teaching practice:

- Social intelligence was identified by measuring social skills.

- A narrower definition of social intelligence may be found among authors who accentuate the importance of decoding social information. Social intelligence is therefore defined by such skills as reading non-verbal marks or an ability to make assumptions based on the behavior of other people. Adequate role behavior, social perception, ability to have a certain insight into interpersonal relations, processes, reflection of experiencing and behaving of others in interpersonal situations – these all belong to the main components of social intelligence.
- Social intelligence is also defined as a behavioral flexibility or ability to change one's behavior depending on the circumstances of the situation. In terms of behavioral results, social intelligence may be also defined as an ability to allow others to behave freely.

Social intelligence is a construct with significant practical application, which enables observations of significant individual specialties (Silvera, Martinussen and Dahl, 2001). Despite the long time within which the issue of social intelligence has been studied, in order to define it precisely, one encounters certain difficulties (Silvera, Martinussen and Dahl, 2001).

In the context of teaching practice, social intelligence and its individual attributes have been studied by several authors (e.g. Ambady and Rosenthal, 1993; Bernieri, 1991; Hall and Bernieri, 2001; Rosenthal, Hall, DiMatteo, Rogers and Archer, 1979; Wilmington, 1992; Hamann, 1995; Riggio, 1986, 1989; Carney, 2003; Baker, 1991; Juchniewicz, 2008). Their research provides analyses of the issues of communication in social situations, social skills, social control, emotional expressiveness, but also issues connected to the age of teachers.

A significant area is covered by the research on analyses of links among the social intelligence attributes and the strategies of teachers' behavior in the classroom. According to Marzano et al. (2003), teachers with a higher degree of social intelligence use the supporting aspects in their behavior in classrooms more and they are also more oriented at the development of relationships among students. Significance of social intelligence in pedagogical practice is also accentuated by Albrecht (2006). Bjorkqvist, Osterman and Kaukiainen (2000) also confirm existence of the negative links between social intelligence and manifestations of aggressiveness in school classrooms. However, there are also findings which did not confirm existence of such links.

COPING WITH DEMANDING SITUATIONS

Increase in interests of the professional and lay public in the issue of coping with demanding situations may be dated back to the 1980s but this area of knowledge is focused on also today (e.g. Folkman and Lazarus, 1980; Lazarus, 1981; Lazarus and Folkman, 1984; Folkman et al., 1986; Lazarus and Folkman, 1987; Carver et al., 1989; Amirkhan, 1990; Nurmi, Toivonen, Salmela-Aro and Eronen, 1996; Folkman and Moskowitz, 2004; Frankovský et al., 2011; Frankovský et al., 2012). The presented interest is a reflection of general sharp dynamics of human life (need for mechanisms of democratic solutions to social issues; increasing number of occurrence of demanding situations in one's life; increasing interest in questions of how to resolve such situations effectively, how big is their impact on psyche, health and well-being of a person; solving the issues of quality of life; etc.), as well as particular requirements of the social practice (new approach to the educational activities; effective functioning of employees and organizations; time-induced stress; conflicts in the workplace; exhaustion; stereotypes; team building; etc.).

The issue of demanding situations attracts attention especially to resolving the problems of how to proceed and what forms of behavior to choose when coping with these situations (Frankovský and Ištvaníková, 2008). From the perspective of teachers who must cope with a demanding situation but also from the perspective of the organization in which these teachers work, the crucial step is to choose the right solving procedure. For this reason, research on coping with demanding situations and forms of behavior in these situations attracts more attention in theory and practice than characterization, specification, and taxonomy of demanding situations.

Works aimed at the issue of coping with demanding situations focus primarily on description and characterization of various procedures and strategies of coping. Differences in characterization and taxonomy of these coping procedures are caused by various theoretical backgrounds by different authors and conditions (especially the cultural ones), as well as different situational contexts and conditions in which these coping procedures are studied in literature. According to Folkman et al. (1986), mutual theoretical elements are represented by an effort to analyze procedures and strategies of coping with the given situations in the sense of regulation of internal or external pressures and tension which originate in transactions of people and environment.

As for empirical analyses, that which is mutual and dominant in the majority of approaches of individual authors is represented by efforts to reveal the essential dimensions of procedures and strategies of coping with demanding situations on the basis of deeper elaboration of long lists of behavior forms (Frankovský, 2003). It is a typical

example of applying the empirical-inductive approach to studying this issue. In this area, several concepts of identification of ways of coping with demanding situations have been elaborated (e.g. Amirkhan, 1990; Folkman and Lazarus, 1980; Lazarus and Folkman, 1987; Tobin et al., 1989; Millová et al., 2008; Callan and Dickson, 1993; Zellars et al., 2004; Endler and Parker, 1990; Carver, Scheier and Weintraub, 1989; Carver, 1997; Holahan and Moos, 1987; Lovaš et al., 1997; Výrost et al., 1995; Baumgartner and Hadušovská, 1997; Frankovský, 2001; Frankovský, Ištvaníková and Štefko, 2009; Frankovský et al., 2011; Frankovský et al., 2012).

From the perspective of behavior strategies of teachers, research conducted by Jeloudar and Yunus (2011) confirmed the existence of several links between these strategies and social intelligence. Found were the positive and linear links among four behavior strategies of teachers in classrooms (discussion, acknowledgment, participation and hinting) and negative links in relation to two strategies (punishment and aggressiveness).

From a specific point of view of effective teaching of music, social intelligence has been studied by Juchniewicz (2008). Besides other issues, his research project focused on the problem of measuring social intelligence of teachers of music and the degree to which social intelligence participates in effective teaching of music. Although influence of social intelligence was not clearly proved, the study revealed that social skills and attributes were marked more than eight times more frequently than the non-social ones when evaluating the efficient forms of teaching music.

THE STUDY

The main objective of the conducted research project was to specify the links between the social intelligence attributes of teachers and evaluation of forms of behavior of teachers in demanding educational situations. The presented analyses were carried out on the basis of characterization of differences and interconnections between the selected social intelligence attributes and the ways of coping with demanding educational situations.

RESEARCH METHODS

The analytical part of this report uses methods of empirical data collection as well as mathematical and statistical analyses of these data.

Empirical data collection was carried out by means of questionnaires. Two questionnaire methodologies were used in the research: MESI (Frankovský and Birknerová, 2014) to collect data on social intelligence of teachers and CSI (Amirkhan, 1990) to collect data on the ways of coping with demanding educational situations.

The MESI methodology (Frankovský and Birknerová, 2014) detects social intelligence as a personality trait, whereas authors of this methodology assume its trans-situational applicability and define it rather as a dispositional personality trait. Authors developed it on the basis of previous studies in which the EMESI methodology (Frankovský and Birknerová, 2013) was used. Methodologies MESI and EMESI were proposed according to the PESI methodology by Kaukiainen, Björkqvist, Osterman, Lagerspetz, and Forsblom (1995). MESI contains 21 items, which are evaluated on a 5-point Likert scale where 0 represents the response “never” and 4 represents “very often”. By means of a factor analysis, three factors were extracted (Frankovský and Birknerová, 2014) and described by authors as follows:

1. **Manipulation:** People who have higher scores in this factor are able to persuade others to do almost anything. They can use others for their own benefit and persuade them to take their side. They also take pleasure in it. They use the lies of others for their own benefits – reliability is expressed by Cronbach’s alpha of 0.854.
2. **Empathy:** Individuals with higher scores in this factor are able to recognize the intentions, feelings, and weaknesses of other people as well as reveal the way they think. They can adapt to new people, guess their wishes as well as fulfill them – reliability is expressed by Cronbach’s alpha of 0.783.
3. **Social irritability:** Persons characterized by higher scores in this factor are nervous in contact with other people. They avoid others if possible. Feelings of others baffle them, adapting to other people is a problem for them. Weaknesses and wishes of others confuse them – reliability is expressed by Cronbach’s alpha of 0.716.

The CSI methodology (Coping Strategy Indicator by Amirkhan, 1990) represents a compromise between the situational and the dispositional approach to behavior prediction. Its use is based on the particular descriptions of demanding situations the respondents experienced. In the presented research, male and female teachers described various demanding educational situations. Subsequently they evaluated the individual possibilities of solutions to these situations by means of the items formulated in a standard way. The questionnaire consists of 33 such items which describe various coping styles. Methodologically, detecting the forms of behavior in demanding situations is rather situational. The given items saturate and enable specification of three factors, which represent the separate

strategies of coping with the given situation:

1. **Problem Solving** – an instrumental strategy aimed at an immediate solution of the given situation and represented by the forms of behavior related to direct intervention in the situation. People scoring high in this factor stand for their choice of solution; they organize the conditions in order for the problem to be solved and pay maximum attention to its solution.
2. **Seeking Social Support** – this strategy is not aimed at an immediate solution of the given situation. People with high scores in this factor rather consult their options with others; they ask for help from their friends and let them give advice.
3. **Avoidance** – this strategy is not aimed at solving the situation at all. People scoring high in this factor rather avoid its solution; they focus on other activities and let themselves do other things instead.

Each questionnaire item was evaluated by teachers on a 4-point Likert scale (1 = yes, 2 = rather yes, 3 = rather no, 4 = no).

RESEARCH SAMPLE

In this research of links between the two aforementioned aspects, the sample consisted of 97 teachers, 20 of which were male (20.6%) and 77 were female (79.4%), aged between 25 and 68 years, their average age being 42.1 years (standard deviation: 10.439). Their teaching experience ranged from 0 to 45 years with the average of 17.6 years (standard deviation: 11.522). It is therefore clear that the sample contained teachers-beginners as well as those with a long-term experience.

RESEARCH RESULTS

The analysis of differences found in the levels of evaluation of the individual social intelligence attributes by teachers was conducted by means of the Friedman Test. The acquired results support the existence of statistically significant differences (at the level of 0.000) among the social intelligence attributes as evaluated by teachers.

As for the social intelligence, it was detected that the male as well as the female teachers prefer to use the attribute of Empathy. It was the only factor in which they scored over the medium value of the scale, which means that the teachers marked its related items mostly between “sometimes” and “often”. On the contrary, the attributes of Manipulation and Social Irritability were marked in the questionnaire as utilized “almost never” or “sometimes”. This analysis supports the claim that when evaluating the individual attributes of social intelligence, teachers prefer the attribute of Empathy.

The analysis of differences found in the levels of evaluation of the individual forms of coping with demanding educational situations by teachers was also conducted by means of the Friedman Test. Again, the acquired results support the existence of statistically significant differences (at the level of 0.000) among the individual forms of coping with demanding educational situations as evaluated by teachers.

Results of this analysis clearly confirm that the teachers prefer to use Problem Solving and Social Support as their favorite coping strategies. Contrarily, they refuse to use Avoidance as a form of coping with demanding educational situations.

The following analysis is aimed at verification of existence of statistically significant correlations among the selected social intelligence attributes and evaluation of the forms of behavior in demanding educational situations. Gained data were analyzed by means of the Spearman Correlation Coefficient [Table 1].

Table 1: Links between the social intelligence attributes and evaluation of forms of behavior of teachers in demanding educational situations

	Problem Solving	Social Support	Avoidance
Empathy	-.453**	-.245*	.065
Manipulation	-.043	.111	-.016
Social Irritability	.251*	.122	-.022

Note: * Statistical significance at the 5% level of significance, ** Stat. sig. at the 1% level of significance

Concerning the significant correlations among social intelligence attributes and coping strategies, the results of the analyses confirm the existence of links between the social intelligence attribute Empathy and the coping strategy Problem Solving, then between Empathy and Social Support, and also between Social Irritability and Problem Solving.

Negative correlations between Empathy and Problem Solving, and Empathy and Social Support means that the more empathetic teachers are, the more they are prone to solve a demanding educational situation by a direct intervention or with the help of other people, e.g. their acquaintances. In correlations, the negative sign is the result of reversed scales in the methodologies MESI and CSI. Contrarily, the more socially irritable teachers are, the less they are prone to solve a situation by using immediate, direct solution procedures.

CONCLUSIONS

Effective coping with demanding situations which occur in the process of education are an inevitable prerequisite for quality increase of the educational process. Successful coping with demanding situations also affects the positive work and social climate of the school environment. It has a positive impact on the mental and physical health of teachers and students as well as on broader social environments in which these teachers and students live (with the dominant part taken by the family environment).

The presented findings support the eligibility of considering a multifactor concept of social intelligence as well as of coping with demanding situations. Simultaneously, these findings confirm the correctness of considering several different types of intelligence (e.g. Thorndike, 1920; Gardner, 1993; Albrecht, 2005; Frankovský and Birknerová, 2014).

Significance of Empathy as a social intelligence attribute is highlighted also by Orosová et al. (2004) who claim that effectiveness of communication of teachers depends on the interpretation of their own behavior as well as behavior of students. Development of socially intelligent behavior of a teacher is connected to the improvement of interpretation of their behavior in the school environment.

Results of the conducted research support also the claims of Silvera, Martinussen and Dahl (2001) that social intelligence of teachers is connected to perception of internal states of mind and moods of others, to the ability to deal with other people and knowledge about social life and social norms, as well as the ability to orientate oneself in social situations.

Given findings relate also to the specification of social intelligence as a personality trait, which may be in accordance with Birknerová and Frankovský (2014) considered to be an essential social skill of the teaching profession, as well as an important precondition of its successfulness. These authors state that the important components of social intelligence are formed already during the pre-gradual preparation for the teaching profession (Várkoly, Sláviková, Lajčín and Tej, 2012) and also during adolescence.

The concept of this research confirms the significance of a teacher's personality as a key factor in the process of education (Smith, 1971). Eventually, the teacher's behavior and coping with demanding situations in the teaching practice are highly influenced by the image of the educational institution (Fedorko, Bačík and Fedorko, 2012; Štefko, Fedorko and Bačík, 2014; Rajnoha and Chromjaková, 2004).

The mentioned position of the teacher's personality is connected mainly to their ability to understand and interpret a social situation rather than to the efforts to define a generally applicable model of an effective teacher. In this context, social intelligence and the ways of coping with demanding situations play truly significant roles.

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Some Characteristics Of E-Learning Materials In Secondary Technical Education In Slovenia

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ABSTRACT

In this article we tend to present some of the didactically significant characteristics of educational materials, particularly e-materials, as recognized by teachers in secondary technical education programmes in Slovenia. In the first part of the paper, some general didactic definitions of educational materials and e-materials are analysed. We follow the thesis that didactic functionality of educational materials largely depends on their overall quality, so establishing firm criteria for their evaluation seems to be of utmost importance. In this context, *didactic principles* could represent a stable theoretical and normative framework that allows for a conception of more specific evaluation criteria within itself.

The second part of the article presents some relevant findings from the research on the characteristics of educational materials by the teachers and pupils of three programmes of secondary technical education in Slovenia. One of the key findings shows a pronouncedly marginal position of e-materials in Slovene secondary technical education: teachers and pupils only very rarely use them. This phenomena (among some others also analyzed in the paper) clearly shows that the process of an effective implementation of educational materials in education is far from being complete.

Keywords: educational materials, e-materials, secondary technical education, didactic transformation and reduction, evaluation, characteristics of e-materials

INTRODUCTION

In didactic theory educational materials are usually defined as the materials that teachers can use during teaching process as *educational means*, whereas the pupils gaining or revising knowledge can use these materials as *educational sources* (cf. Kovač et al. 2005; Štefanc 2005). In other words, the use of educational materials undoubtedly influences the quality of teaching and learning, since the transmission and gaining of knowledge significantly rely on various kinds of media, either traditional or contemporary computer-based ones.

In the first, theoretical part of the paper, some of the main characteristics of educational materials and e-materials, as well as some possible means of their evaluation shall be presented. The following questions will be briefly discussed and related issues analysed:

- (1) What makes *educational* materials (such as, e.g., textbooks or e-textbooks) different from other printed, electronic and similar materials which are not recognized as *educational* materials, and
- (2) What criteria can be used for the evaluation of the *quality* of particular educational materials?

Furthermore, some of the key characteristics of computer-based e-materials shall be presented as well. In the second part of the article, few relevant findings from the research on the characteristics of educational materials by the teachers and pupils of three programmes of secondary technical education in Slovenia will be discussed. One of the key findings shows quite a marginal position of e-materials in Slovene secondary technical education: teachers and pupils only very rarely use them. This phenomena (among some others also analyzed in the paper) clearly shows that the process of an effective implementation of educational materials in education is far from being complete.

EDUCATIONAL MATERIALS: HOW DO THEY DIFFER FROM OTHER MEDIA?

From the general didactic aspect, educational materials can be defined as the didactically adapted materials that the teacher can use during the teaching process as *teaching materials*; for the students who are acquiring or revising their knowledge with the help of the materials, these materials are *learning materials* or *learning sources* (cf. Štefanc 2005). Consequently, educational materials must be prepared in such a way that they help *the teacher* with quality planning and carrying out of the teaching process, and *students* with their independent learning, that is, gaining, revising, reflecting on, valuing and using knowledge.

The specific difference between *educational* materials and other materials is the consequence of the so-called process of the *didactic transformation and reduction*, which occurs at three levels: (1) at the level of goals and

objectives, (2) at the level of the scientific system, and (3) at the levels of educational contents (Strmčnik 1997a, pp. 334–336). At the level of goals and objectives it has to be noted that science and the educational process do not share their intentions or goals. Science is primarily oriented towards new discoveries, facts, laws, etc. (in other words, the *production* of “the truth”). The main task of the school and the educational process, however, is *transmission* of the already produced knowledge and its *use* to achieve educational goals and objectives. Therefore, it should be understood that *the didactic system is not a micro-model of the scientific system*, and *educational materials are likewise not micro-models of scientific studies*. The very transformation of the scientific system into the didactic one is the most sensitive, because it demands the so-called didactic reduction – i.e. the simplification, abridgement and selection of scientific contents, logic, terminology, methodology and suchlike. On the other hand, Strmčnik’s warning should also be heeded: “If [didactic reduction] is not done properly, there often occurs a “break” between the logical scientific structure and its psychological and pedagogic modifications. /.../ That is why there arise discontinuities, the biggest dangers being “losing the thread” and disrupting the logical axis. Not only does this make educational contents more difficult to understand in themselves, but it also reduces their formative educational power, i.e. the possibilities to develop intellectual and other cognitive abilities.” (Ibid., p. 335). In other words, in spite of the demand for the didactic reduction and transformation, it remains necessary for educational contents to be structured and for pupils to see the logic of the relationships between ideas and concepts.

The didactically reduced and transformed scientific and professional contents in educational materials therefore have to avoid both traps: on the one hand, the trap of the automatic copying of the whole corpus of scientific and professional knowledge and structures into educational materials, and on the other hand, the equally dangerous trap of inappropriate reduction, which could render educational materials as educational sources for pupils non-functional.

If we briefly summarize, educational materials are all specially prepared materials intended to be used during the processes of teaching and learning, in other words, when studying specific educational contents and achieving specific educational goals defined in syllabuses. For that reason, they are appropriately didactically adapted. Educational materials consist of books, encyclopaedias, atlases, dictionaries, textbooks, etc., that is, mostly written materials, which can be either printed or available in electronic form (on digital media or on-line). Both printed and electronic educational materials are indispensable in the teaching process, since they are – in addition to the teacher’s direct explanation and other learning activities – an important source for students.

THE ROLE AND USE OF E-MATERIALS IN SLOVENIAN VET

As a process, *e-learning* is closely connected with the implementation of ICT in education. Many reasons for that can be identified: as emphasized by Hawkrigde (1990 in Tondeur, van Braak & Valcke, 2007, p. 963), students are required to develop their ICT skills (or “digital competencies”), because they seem to be necessary for the entrance to the contemporary labour-market and because they are perceived as inevitable for the students to become “responsible and well-informed citizens”. Furthermore, it is believed that ICT can significantly support and improve teaching and learning processes and contribute to the acceleration of educational innovations (ibid.).

However, the study about the current and possible uses of ICT in iVET, carried out by Ramboll Management on behalf of the European Commission (The use of ICT..., 2005), identified a number of problems related to the implementation of ICT in VET, such as:

- (1) a lack of IT skills and training among teachers,
- (2) a low degree of e-readiness and a skeptical attitude towards e-learning among students, and
- (3) inadequate infrastructure, technical support and equipment among the institutions (ibid., p. ix).

Although we may believe that multimedia learning can by itself improve the motivation, knowledge and overall performance of students, Clark and Feldon (2005) argue that there is no firm empirical evidence supporting such presumptions: “The questionable beliefs include the expectations that multimedia instruction: 1) yields more learning than live instruction or older media; 2) is more motivating than other instructional delivery options; 3) provides animated pedagogical agents that aid learning; 4) accommodates different learning styles and so maximizes learning for more students; and 5) facilitates student managed constructivist and discovery approaches that are beneficial to learning.” (Ibid., p. 98)

Some research findings about the use of ICT and e-materials in Slovenian VET draw quite an ambivalent picture. The 2013 *ICT in Education* survey conducted by the European Commission (see Survey of Schools ... 2013) showed certain inadequacies that should be addressed by educational policy. According to this report (ibid., p. 28), 7% of 11th grade VET students in Slovenia attend schools without broadband internet connection.

This is the second highest share among all EU countries. When it comes to the number of students per internet-connected laptop computer, the ratio in Slovenia is 11 students per laptop (while the average EU ratio is as low as 8:1). To put it differently, data shows that there may be relatively high number of PC computers (either internet connected or not) available in schools, but students do not seem to use it very often during the lessons, while at the same time they do not use their own laptop computers very frequently either. Furthermore, in 11th grade there are on average 2 students per computer in vocational schools (which is more convenient comparing to the average of 3 students per PC in EU), but at the same time as much as 25% of Slovenian VET students (compared to the average of 15% at the EU level) report that they actually “never or almost never” use a computer in lessons (ibid., p. 65). Therefore, more effort and resources would need to be invested for the purpose of (i) further equipping schools with broadband Internet connections; (ii) providing students and teachers with appropriate devices (such as tablets, laptops and similar devices); (iii) providing appropriate teacher education to foster their practical knowledge in this area. Such measures would also significantly contribute to better computer and information literacy results.

EVALUATION OF EDUCATIONAL MATERIALS AND E-MATERIALS

Within the Institute of the Republic of Slovenia for Vocational Education and Training the criteria for the assessment of the quality of educational materials have been prepared. The criteria applying to the general-didactic suitability, quality and variety of educational materials are the following: the clarity and coherence of the materials’ structure, the quality of multimedia elements, the goal-oriented design of educational materials, the promotion of the development and acquisition of key competences, the use of the inductive approach, the methodical and didactic adaptation of the materials for the needs and characteristics of the target group, the inclusion of motivational elements in educational materials, the provision of stimuli for active learning, the incorporation of the activities that lead to the attainment of goals at different taxonomic levels, and the inclusion of recommendations for establishing connections with other programme units (see Table 1 below).

Table 1: Criteria for the assessment of the quality of educational materials.

<i>Criteria</i>	<i>Criteria’s descriptions</i>
The clarity and coherence of the materials’ structure	<p>Educational materials are clearly and coherently structured if, among other things:</p> <ul style="list-style-type: none"> - the title and designed use of the materials are clearly marked at the beginning (the programme, module/course, competences), - there is a clear table of contents, - the goals of each individual unit is clearly identified, - the content of the materials is logically arranged, - the conclusion provides a summary or activities for summarizing the content, and - the sources are consistently cited.
The quality of multimedia elements	Multimedia elements are suitably integrated in the materials in terms of design and didactics, their didactic (particularly illustrative) role and functionality are easily recognizable. In addition, they are technically and graphically sufficiently well done to fulfil their purpose.
The goal-oriented design of educational materials	The materials’ contents originate in educational and functional goals, not in systemic sciences or scientific disciplines or areas of expertise. The materials lead to the attainment of goals and allow their users to achieve vocational competences, both generic and occupation-specific.
The promotion of the development and acquisition of general/key competences	<p>The materials’ contents reveal the author’s consideration and integration of the possibilities of acquiring key competences for lifelong learning:</p> <ul style="list-style-type: none"> • communication in the mother tongue, • communication in foreign languages, • mathematical competence and basic competences in science and technology, • digital competence, • learning to learn,

	<ul style="list-style-type: none"> • social and civic competences, • sense of initiative and entrepreneurship, • cultural awareness and expression.
The use of the inductive approach	The materials' contents originate in practical problems, which are subsequently associated with appropriate professional-theoretical and general knowledge. Theoretical knowledge is related with practical knowledge, which makes sense of theoretical knowledge and/or illustrates it.
The methodical and didactic adaptation of the materials for the needs/characteristics of the target group	The materials are adapted to the difficulty and level of the educational programme. They are structured so as to enable the individualization and differentiation of teaching/learning the contents, and it takes into account students' different learning styles.
The inclusion of motivational elements in educational materials	The materials include the elements which strengthen motivation for learning, such as the presentation of goals in the introduction, pictures, graphical illustrations, small icons for easier orientation, interesting facts, real-life examples, life stories, links to other sources, problem-solving, etc.
The provision of stimuli for active learning	The materials encourage the user to take the active role at all times; they also expect a response to the presented contents, they offer different activities to practise, revise and test knowledge, as well as questions for thinking and suggestions for project work.
The incorporation of the activities that lead to the attainment of goals at different taxonomic levels	<p>The activities planned in the materials lead to the attainment of goals at different taxonomic levels (the revised Bloom taxonomy):</p> <ul style="list-style-type: none"> • level 1 – remembering • level 2 – understanding • level 3 – applying • level 4 – analysing • level 5 – synthesizing • level 6 – creating, generating new knowledge • level 7 – evaluating <p>The instructions for doing exercises and performing tasks are clear and allow independent work. The tasks are doable. When reasonable, the materials include keys to exercises or suggestions on how to do them.</p>
The inclusion of recommendations for establishing connections with other programme units	The so-called "cross-curricular" connections or recommendations and guidelines for them are included when/if reasonable and didactically justified by adding quality to the materials.

Based on the criteria described above and the processes of rational evaluation, it is possible to assess the quality of educational materials and their suitability for a quality implementation in the processes of teaching and learning. The presented criteria were the basis for the development of the instrument for the identification of the importance that teachers and students ascribe to the various characteristics of educational materials in the programmes of vocational education and training in Slovenia.

THE CHARACTERISTICS AND ROLE OF E-MATERIALS IN SLOVENIAN VET: THE RESULTS OF THE EMPIRICAL RESEARCH STUDY

Methodology

The descriptive and causal non-experimental method was used for the research. The data were gathered with a questionnaire, which mainly consisted of opinion scales and evaluation scales. The data are shown in frequency and structural tables. Certain variables, although ordinal in nature, were treated as interval variables, and arithmetic means were calculated for them.

Sample

The main questionnaire on the characteristics and use of educational materials and e-materials was completed by 552 pupils (50.4 % boys and 49.6 % girls) and 370 teachers (29.6 % male and 70.4 % female).

The sample consisted of teachers working in the programmes of *the mechanical technician* (37.5 % of those participating), of *health care* (32.3 %) and of *the economic technician* (30.2 %). The teachers had an average of 15.12 years of working experience; those with less than six years of experience amounted to 13.5 %, those with six to fifteen years of working experience totalled 42.1 %, and the rest had more than fifteen years of experience. In other words, the sample consisted of the majority of experienced teachers who can be assumed to be competent enough to give a reliable assessment of educational materials.

The *sample of pupils* also included the pupils from the aforementioned educational programmes (the majority, 40.8 %, attended the programme of *health care*, 32.2 % that of *the mechanical technician* and 27.0 % the programme of *the economic technician*). A third of the pupils surveyed (33.0 %) attended the third year of secondary school, 29.3 % attended the fourth year, 23.2 % the second year, and 14.5 % attended the first year of their individual educational programmes. The majority of the pupils filling in the questionnaire (62.3 %) thus attended the third and fourth years of educational programmes, which can lead us to presume that they were quite experienced as regards secondary-school educational materials.

THE USE OF E-MATERIALS: TEACHERS' AND PUPILS' OPINIONS

The first question put to the teachers and pupils of the three programmes of secondary technical education by our survey was how often they really used various educational materials (textbooks, workbooks, collections of exercises, worksheets, e-materials available on digital media and online, their own notes, etc.). The teachers described how often (on the four-point ordinal scale: *never* – *rarely* – *often* – *very often*) they used educational materials when planning and conducting classes, whereas the pupils answered the question of how often they used the materials for general education subjects, for technical subjects and for their independent learning at home.

The frequency of the use of materials is a piece of information that can help us draw not only a conclusion on the availability and accessibility of various materials on the market of educational materials, but also – at least indirectly – on their professional adequacy and quality. We do presuppose, namely, that teachers choose such materials during their preparation and teaching which they believe will substantially help them reach educational goals and knowledge standards. The same is supposedly true of the choices made by pupils for their independent learning activities.

The great majority of the teachers surveyed – i.e. over 80% – report often or very often using their own notes (85.2%), textbooks (81.7%) and worksheets/handouts prepared by themselves (80.5%). The average grade of the frequency of the use of these materials (Table 2) is over 3.0, which is relatively high for an average grade – given the scale ranges from one to four.

Table 2: The use of educational materials when planning and conducting classes

<i>During classes I use:</i>	M
My own notes	3.29
Textbooks	3.28
Worksheets/handouts prepared by myself	3.13
E-materials on digital media (e.g. CD-ROMs, memory discs)	2.44
Collections of exercises	2.41
Other	2.41
E-materials accessed online during classes	2.30
Workbooks	2.23

In line with expectations, our research shows that teachers use electronic materials (in particular e-materials accessed online) less often. 39.6 % of the respondents said they often or very often use web materials, and 34.4 % of the teachers surveyed said they often or very often use e-materials available on digital media (CD-ROMs,

memory disks, etc.). The lower frequency of the use is not really surprising here, and there are a couple of reasons that can explain it: e-materials are still not widely available (despite all the efforts channelled into them in recent years), but most of all the problem lies in insufficient technical equipment – not only all classrooms, but also most of (if not all) the desks in them should be properly equipped. If teachers were to be encouraged to use e-materials more frequently during classes, pupils should also have access to them, just as is the case with printed materials. This would increase the materials' didactic functionality and usefulness during classes. Since IT equipment in the classrooms of most schools does not make the use of e-materials possible both for teachers and all pupils, it is uncertain what the teachers (a good 40 %) who said they "very often" or "often" use e-materials actually had in mind. It seems perfectly possible that what they were thinking about was the e-materials they use when planning their classes or the e-materials they use when conducting classes without their pupils using them as well (e.g. the widespread use of PowerPoint presentations).

It is perhaps a bit more surprising that a relatively high share of the students think it is only slightly or even not at all important if printed materials are supplemented with e-materials – the share almost reaches half of the students (48.8%), whereas the share of the teachers is significantly lower (12.9%; see Table 3).

Table 3: The importance of including e-materials. Comparison between students and teachers.

Students/ Teachers	<i>The importance of including e-materials</i>								Total	
	Very important		Important		Slightly important		Completely unimportant			
	f	f%	f	f%	f	f%	f	f%	f	f%
Students	107	19.6	173	31.7	210	38.5	56	10.3	546	100.0
Teachers	112	30.6	207	56.6	46	12.6	1	0.3	366	100.0
Total	219	24.0	380	41.7	256	28.1	57	6.2	912	100.0

This is open to more than one interpretation: on the one hand, the data reveal that the use of e-materials is not yet common enough among the students for them to attach any considerable significance to them¹ and, on the other hand, they show that e-materials still do not function in a complementary fashion in relation to the more widespread printed sources. On the assumption that in the future the conditions for the use of e-materials during instruction will become more favourable and that materials in electronic form (e.g. with the use of modern, reasonably priced, but most of all functional e-readers) will become an increasingly more frequent part of the educational process, students will probably attach higher values to them as well.

The pupils surveyed were asked a couple of questions about:

- how often they use specific educational materials for general education subjects (i.e. the subjects that are by and large the same for all educational programmes and are not related to the specifics of the various professions or occupations they are being educated for; these include mathematics, Slovene, foreign languages, etc.),
- how often they use specific educational materials for technical subjects or modules (specific to the educational programmes they attend), and
- how often they use specific educational materials for independent learning at home.

Like teachers, pupils also used the four-point ordinal scale to answer the questions. Their answers are shown in Tables 6, 7 and 8.

Table 6: The use of educational materials for general education subjects (pupils' answers)

¹ This can, furthermore, be concluded from the responses they gave on the frequency of the use of e-materials during school instruction and individual learning, the question that was asked in the second part of the same research study. As many as 73.2% of the students thus said they only rarely (32.2%) or never (41.0%) use e-materials during technical subject classes, with similar answers provided when asked about the frequency of the use of e-materials when learning independently at home: as many as 58.5% of the students never use e-materials at home, and 28.6% of them claimed they only rarely use them. In the context of the otherwise widespread availability and use of computers, the Internet and IT technology in general, these percentages seem extremely high. Yet, they are logical as well: since schools are not equipped with ICT well enough to allow a functional use of e-materials during instruction, students consequently turn to them less often when learning independently at home, too.

For general education subjects we use:	<i>for all subjects</i>		<i>for most subjects</i>		<i>for rare subjects</i>		<i>for no subject</i>		Total	
	f	f%	f	f%	f	f%	f	f%	f	f%
Our own notes	313	57.1	123	22.4	76	13.9	36	6.6	548	100,0
Worksheets/handouts prepared by teachers	156	28.5	280	51.2	98	17.9	13	2.4	547	100,0
Textbooks	47	8.6	236	43.1	245	44.8	19	3.5	547	100,0
Collections of exercises	22	4.1	92	17.1	252	46.8	172	32.0	538	100,0
E-materials on digital media (e.g. CD-ROMs, memory discs)	17	3.1	103	18.9	227	41.6	199	36.4	546	100,0
E-materials accessed online during classes	13	2.4	52	9.6	242	44.6	236	43.5	543	100,0
Workbooks	12	2.2	89	16.2	306	55.8	141	25.7	548	100,0
Other	7	4.4	29	18.4	43	27.2	79	50.0	158	100,0

Table 7: The use of educational materials for technical subjects (pupils' answers)

For technical subjects we use:	<i>for all subjects</i>		<i>for most subjects</i>		<i>for rare subjects</i>		<i>for no subject</i>		Total	
	f	f%	f	f%	f	f%	f	f%	f	f%
Our own notes	298	54.7	129	23.7	77	14.1	41	7.5	545	100,0
Worksheets/handouts prepared by teachers	144	26.3	214	39.1	145	26.5	44	8.0	547	100,0
Textbooks	93	17.0	199	36.4	198	36.3	56	10.3	546	100,0
Collections of exercises	37	6.9	100	18.6	228	42.3	174	32.3	539	100,0
E-materials on digital media (e.g. CD-ROMs, memory discs)	31	5.7	115	21.1	176	32.2	224	41.0	546	100,0
E-materials accessed online during classes	26	4.8	74	13.5	214	39.1	233	42.6	547	100,0
Workbooks	14	2.6	78	14.3	230	42.3	222	40.8	544	100,0
Other	11	7.0	29	18.4	41	25.9	77	48.7	158	100,0

Table 8: The use of educational materials for independent learning at home (pupils' answers)

For independent learning at home I use:	very often		often		rarely		never		Total	
	f	f%	f	f%	f	f%	f	f%	f	f%
My own notes	394	71.9	83	15.1	50	9.1	21	3.8	548	100,0
Worksheets/handouts prepared by teachers	171	31.1	231	42.1	108	19.7	39	7.1	549	100,0
Textbooks	78	14.2	153	27.9	231	42.1	87	15.8	549	100,0
Collections of exercises	64	11.8	145	26.7	176	32.4	158	29.1	543	100,0
E-materials accessed online during classes	53	9.7	108	19.7	170	31.0	217	39.6	548	100,0
E-materials on digital media (e.g. CD-ROMs, memory discs)	18	3.3	53	9.7	157	28.6	321	58.5	549	100,0
Other	18	11.1	28	17.3	29	17.9	87	53.7	162	100,0
Workbooks	14	2.6	64	11.7	238	43.4	232	42.3	548	100,0

Pupils use e-materials just as rarely as workbooks – the share of those reporting often or very often using these materials for most or all subjects is – as a rule – around 20 %, only exceptionally is the share bigger.

Finally, we should point to an indicative – albeit expected – trend related to the use of e-materials: when pupils were asked about the frequency of the use of e-materials on digital media and those available online during classes in general education and technical subjects, we found out that it is more common to use e-materials on digital media during classes – approximately one quarter of pupils claim using such materials for most or all technical or general education subjects. In opposition, only 12 % of pupils report the same use of e-materials accessible online for general education subjects, and 18.6 % report such use for technical subjects. The percentages are relatively low, especially since considerable efforts have gone into the so-called “informatisation” of schools in Slovenia since the mid-1990s. Moreover, the figures show that access to the internet (at least with regard to the use of online materials) is not as well exploited as computer technology is in general. The reasons for this state of affairs should be considered – is the problem in the teachers’ assessment that online materials lack quality, appropriateness and thus usefulness for classroom use? Or is the problem simply technological in nature (e.g. bad internet connections, slow loading of webpages, etc.)? Because when pupils are asked what e-materials they use more often when learning independently at home, the data demonstrate a reverse picture: almost one third say they often or very often use materials that can be accessed online, whereas only 13.0 % report the same regarding e-materials on digital media. In other words, pupils rely much more on online materials when learning independently, and they do not use preloaded applications on memory disks as much. A similar question to the one above could be asked – is the reason in the lack of their critical opinion about the quality and suitability of online materials or is it merely a question of them having easier, faster, and more reliable access to the internet at home?

CONCLUSION

This article presents some general didactic definitions of educational materials. It stresses that the contents of educational materials undergo appropriate didactic transformation and reduction. In relation to the teachers planning and conducting classes educational materials are educational means, in relation to pupils they are educational sources. When evaluating educational materials from the aspect of general didactics, it is helpful to fall back on the so-called *didactic principles*, which represent a stable theoretical and normative framework that allows for a conception of more specific evaluation criteria within itself.

The second part of the article presents some preliminary findings from the research on the use of educational materials by the teachers and pupils of three programmes of secondary technical education in Slovenia. Although the sample is somewhat specific (and does not sanction making generalisations about all Slovene teachers and pupils), the data do point to some clear trends that cannot remain unnoticed. One of the key findings shows a pronouncedly marginal position of workbooks in Slovene secondary technical education: teachers and pupils only very rarely use them. The fact that teachers rarely or never use workbooks during classes has an important influence on pupils’ use of them during independent learning at home – their use is just as limited as their teachers’. The use of e-materials is similarly limited, even though the reasons for it differ from those regarding workbooks. Both phenomena clearly show that the process of an effective implementation of educational materials in education is far from finished. At the systemic and professional levels, the enquiries into how to contribute to a better quality of pupils’ knowledge through high-quality educational materials remain as relevant and necessary as ever.

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Student Perception Of Technology Use In Maritime Education

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ABSTRACT

The use of technology in education has spread across professions and disciplines. Past research described maritime education being delivered apprentice-styled using practical learning approaches. Therefore, this study seeks to explore the use of technology in maritime education today from students' perspectives. Data was collected through six focus groups discussions in an institution of higher learning in Malaysia. A purposive sampling procedure was employed. A total of 120 students who enrolled in maritime courses from each year of study participated in this study. The study found that the students were actively engaged with technology use inside and outside of the classroom. The students perceived educational technology as an enabler for lifelong education, simulator for the application of scientific knowledge, and growth driver for advancing their knowledge and skills.

INTRODUCTION

The delivery of education today is incomplete without the use of technology. Technology has become a fundamental component in learning (Huffman & Huffman, 2012). Universities and regulatory bodies today have made technology an integral part curriculum delivery. Technology is used to deliver information to learners (Lee, Hsieh, & Chen, 2013) and used an effective tool in education (Sharma & Chandel, 2013). Using technology has been found to improve the quality of teaching and learning (Bhuasiri, Xaymoungkhoun, Zo, Rho & Ciganek, 2012). E-learning is in the early stages of adoption in developing countries (Shahid, Rodina, Iftikhar, Muhammad, Shahaboddin & Muhammad, 2015) compared to the adoption in advanced countries. Furthermore, the challenges that developing countries are faced with are from those faced by advanced economies such as resources, infrastructure and access (Bhuasiri, et al., 2012).

Technology has been incorporated in the maritime profession decades ago to assist with the ship operations and navigation (Yapici & Koldemir, 2015). It is important for maritime institutions to implement technology in their instruction because of the ever-changing landscape in the shipping and maritime industries (Hieu, 2015). Therefore, using computers in maritime education is inevitable. Cadets in the institution undergo computer-based training for this purpose. Also, an internal knowledge management system within the organization with e-learning applications such as online courses is helpful to provide maritime education and training existing employees (Hieu, 2015). In fact, it was found in the same study that a well-developed knowledge management system would enable the sharing of information, expertise and artifacts by the training providers, partners and other stakeholders to enhance professional training courses accessible to all (Hieu, 2015).

Like other professions and industries, maritime training institutions and educators are also faced with the challenge to balance theory with practice (Hieu, 2015). E-learning systems enables real-world processes to be incorporated into training programmes and course contents (Hieu, 2015). Furthermore, a past study found that the use of technology in the teaching of technical drawing in maritime education has been found to reduce costs (Yapici & Koldemir, 2015). This is consistent with findings from another study that the use of technology in education generally reduces costs and increases revenues for universities (Shahid et al, 2015). Therefore, the use of technology in training and education could contribute to shaping work-ready graduates in the maritime industry who are relevant to the current industry needs.

A review of past research revealed that there are limited studies done on student perspectives in maritime education, and fewer in Malaysia. An past study examined the impact and implications of technology use in maritime education and training from an overall perspective (Muirhead, 2004). The study concluded that technology use is beneficial to the industry and training institutions with structured planning and sustainable growth (Muirhead, 2004). However, this paper did not examine the perspectives of students in the use of technology in maritime education. More recently, Lau & Ng (2015) studied the motivations and expectations of students enrolled in maritime courses in Hong Kong. The study focused on the undergraduate and postgraduate students' profiles, motivations and reasons for course selection. The study also examined the students' expectations from their program of study, career paths upon graduation and personal development. Therefore, the knowledge gap exists on how students pursuing maritime education perceive the use of technology in teaching and learning. The findings offer education providers and regulators useful insights that may be useful

for planning and policy-making. The findings also contribute to current debate towards advancement of research and development of maritime education.

THEORETICAL FRAMEWORK

This study draws upon the work of Mata, Lazar & Lazar (2016) who theorized four basic components of student attitudes towards the use of interactive white boards based on Technology Acceptance Model (TAM) and a number of previous studies conducted. The TAM has been validated and widely used to understand student perception and adoption of technology in education. The categories of students' attitude towards technology use are pedagogical, psychological, group interaction and availability to use the technologies.

The students' attitude towards the *pedagogical* use of technology includes having the opportunity to learn new things, improving learning results, learning difficult topics and increasing understanding. From the *psychological* aspect, the factors include facilitating student involvement, enhancing motivation, comfort of use and attention development. In terms of *group interaction*, it covers the rate of student participation, facilitating group interaction and communication, and encouraging movement. Lastly, the *availability to use technology* include ease of use, comfort of use, desire of use, ability to use and appreciation of use.

A series of semi-structured questions were designed to facilitate focus group discussions:

1. Do you use computers and the internet in your studies? How?
2. When do you use computers or any other information and communication technology in your learning?
3. What is your opinion on the use of technology in learning and teaching?
4. What do you feel when you use technology in your learning?
5. How do you conduct group tasks? Where do you go to look for information to complete your coursework and assignments?
6. How do you manage the information in your group tasks? How do you present the information?
7. What are the technological facilities available to you on campus? Where can you find them?
8. What do you achieve with the use of technology in your learning?
9. Do your lecturers use technology in class? How?

THE STUDY

The purpose of this qualitative inquiry is to explore the perspectives of students pursuing maritime education in Malaysia on the use of technology in maritime education. This study is intended to provide some insights to the students' perspectives and not meant for generalization. This paper was derived from a six month study including three site visits for data collection.

Data was collected from an institution of higher learning offering professional courses in maritime education in Malaysia. The institution comprises local and international students and teaching staff. They provide professional training courses to cadets and refresher and skill-upgrading courses professionals in the industry. Set against a culturally and linguistically diverse backdrop, this institution trains graduates who are work-ready to provide the maritime industry with professionals and seafarers who are able to sail across borders and work on ships in any country in the world. They comply strictly to regulations issued by the International Maritime Organization, the Malaysian Qualifications Agency, Ministry of Education and the Malaysian Marine Department.

Permission was sought from the management of the institution to conduct the study. Ethical approval was obtained from the institutional review board (IRB) in the researchers' university before respondents were invited to participate in this study. A purposive sampling procedure was employed with the aim to gather responses from diverse groups of respondents with regards to the course and year of study in the institution. Data was collected through six focus groups discussions. A total of 120 students who enrolled in maritime courses from each year of study participated in this study. The participants were between 18 and 22 years old. Focus group discussions were conducted in the students' classrooms. Each group was facilitated by one researcher and one assistant. The researcher facilitated the discussion, asked questions and probed, while the assistant kept time and managed the audio recording. Each group discussion lasted between 30 and 50 minutes.

The data was analyzed by two coders using thematic analysis (Braun & Clarke, 2006) and discrepancies were discussed to arrive at a conclusion. Finally, the overarching themes and sub-themes that emerged from the data were identified (Braun & Clarke, 2006). The results were discussed by the two facilitators and two assistants, and the data was scrutinized to ensure that no new themes emerged.

FINDINGS

All focus groups respondents agree that lecturers in the institution use technology classroom instruction. Lectures are delivered using PowerPoint slides which are distributed in print to the students at the beginning of each course. Some courses are computer-based such as simulations, safety training and others.

Enabler for lifelong education

Maritime education inevitably advances with the advancement of engineering and navigational technologies and systems onboard ships. Using technology in education was perceived to be an enabler for lifelong learning among respondents. The technology skills acquired in campus enables the students to pursue knowledge and skills beyond graduation. Lifelong learning involves learning voluntarily among professionals in pursuit of knowledge (Myers & Greenson, 2012).

Respondents expressed they were trained formally and informally to use technology to pursue skills required to learn continuously. One task was a project assigned to them requiring them to gather primary and secondary data. Skills required to complete this task were information search, structuring their own research projects and sourcing for information outside the classroom.

One respondent commented,

“Sometimes we interview the other students who come here for courses. Our lecturers will also help us find people to interview if we need to conduct interviews with people from the industry.

(Focus group 6)

Another respondent commented,

“This projects exposes us to issues and topics related to our study but may not be covered in the syllabus. We can search for information in the database and the Internet in the library...or we can go online using our own laptops. We need to discuss in our groups how we want to carry out this project. Our trainer usually guides us...and he will help us if we need to contact people for interviews.”

(Focus group 6)

Lifelong learning has been associated with good academic performance (Gijbels, Raemdonck, Vervecken, & Van Herck, 2012). The research projects mentioned in the focus group required students to plan, manage and take charge of their own learning (Dyan, Cate & Rhee, 2008) would be a good platform to cultivate the skills required to facilitate and encourage lifelong learning. A past study also found that lifelong learning skills are positively related to good performance in the workplace (Gijbels, Raemdonck, Vervecken, & Van Herck, 2012). The technology enabled learning environment on campus and academic activities facilitates the students practice and acquisition of lifelong learning skills.

Simulator for the application of scientific knowledge

Respondents perceived that the use of videos in the lecturers is effective as they help them envision the application of the scientific knowledge

“Sometimes we feel sleepy in class and watching YouTube videos makes it interesting. We can also see the situation on board in the videos. Sometimes we don’t understand why we need to learn the thing, such as safety but after watching the videos we understand better because we will see how the knowledge is useful in a certain situation. Then we understand how the real situation is. It is also interesting to watch videos.”

(Focus group 2)

Using technology in the classroom has been found to improve student engagement (Pemberton et al., 2006) and understanding of the knowledge they learn in class. Student engagement is an important element in the classroom because students who are engaged in learning tend to perform better academically (Kelly, 2008).

“Most of the time our lecturers teach what is in the slides. If we want to know more, we ask questions. So it depends on us also. Then they share their experiences on the ship with us. Sometimes they show us things from the internet and videos on YouTube to help us understand how we can apply the theory in real-life situations. The subjects are very technical, so it is difficult for us to imagine if we have not been to sea or if we are not familiar with the system in the ship.”

(Focus group 2)

Growth driver for advancing their knowledge and skills

Apart from the contents in the prescribed course syllabus that is delivered by the lecturer using Powerpoint slides, students are required to present new information that is beyond the syllabus in class when the need arises. One pre-sea student commented,

“When we are having a class and some of us have doubts regarding a topic, our lecturer will assign us to do an assignment that is not covered in the course. Most of the time, it is something small. A small issue or minor things in our topic that is not in the syllabus. Then the lecturer will ask us to go back and look for information from the internet to answer that question. Then we present in class and the lecturer will correct us if we get it wrong. But we seldom do this. There is a database that we have access to from the library intranet to look for journals. Hopefully from what we have heard from our seniors, the advanced courses require us to use the internet more. For us in the pre-sea semester, most of the content is covered in the lectures, slides and textbook. (Focus group 1)

Another student in the same focus group said,

“The quizzes and assignments given to engage us and makes us think about whatever that is not in the book. It requires us to solve problems. Then we prepare the presentation slides and present it to the class. This is good for us because it helps you think out of the box and it gets you prepared for the next thing. We look for information in Google and You Tube to do our assignments. We also refer to books in the library.” (Focus group 1)

This adapted flipped role where the students become the teachers involve higher order thinking skills of Bloom's taxonomy (Krathwohl, 2002). Technology is a tool for students to advance their knowledge. The learning environment and activities are fundamental elements in facilitating reflective learning. Reflective thinking is necessary in technology based learning (Chang & Lin, 2014) such as in the case of maritime education that involves the use of online resources and computer systems. An e-learning environment encourages reflective learning (Yilmaz & Keser, 2016) and enables students to take charge of their own learning.

DISCUSSION

Findings from this study indicate that students perceive technology as an enabler for lifelong education, simulator for the application of scientific knowledge, and growth driver for advancing their knowledge and skills. From the *pedagogical* aspect, the students were able to learn new things beyond the prescribed course content and explore other related topics to their course with the ability to search and source for supplementary information to help them understand the content better. Technology has also enabled students and teachers to relate and apply theoretical and scientific content in real life situations at sea and onboard ships. From the *psychological* aspect, technology improved student engagement and interest in the classroom. Apart from enhancing their academic engagement in establishing greater understanding of the content, the students' roles were flipped when lecturers assign them the responsibility of creating knowledge for presentation in class. This had also facilitated *group interaction* in completing group tasks and research projects. The students had to take on the responsibility to produce content and structuring knowledge from their data collection and fieldwork in the research projects. Students utilize campus facilities and resources such as the networks and online database to look for information. They are familiar with online information search via Google and journal database. They also possess the ability *to use technology* and appreciate technology as a tool for knowledge construction and advancement.

We conclude that using technology in education affects the students' academic performance (Huffman & Huffman, 2012). The blended approach of online instruction and classroom learning and greater satisfaction among students (Chang, 2013) compared to traditional chalk and talk in isolation. The use of technology is instrumental in the advancement of maritime education and training and eventually in producing work-ready graduates. Understanding the perception of students on technology use could greatly enhance ongoing debates and contribute to the stakeholders in the maritime and maritime education industries.

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Students' Perception Of Computer Assisted Instruction In Hong Kong Higher Education

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ABSTRACT

Technological advancement today has impacted many aspects of life and led to new and innovative ways of learning. Technological developments continue to offer new experiences in both theory and practice of learning, teaching and growing for those in higher education. The way education is being provided in Hong Kong has been changed significantly. Whenever new technologies and services is presented, it needs to be adopted by its users. The acceptance and use of computer-assisted instruction can be influenced by different factors. The objective of this survey is to examine the factors that have an impact on students' perceptions about the use and acceptance of computer-assisted instruction, including the teaching learning process through CAI alone and the using CAI as a supplement to the conventional instruction. Survey will be conducted and the samples will be collected from students at universities in Hong Kong. The samples include students with varying personal characteristics such as gender, age, grade level, mode of study, as well as previous experience in using technology for learning. Owing to various backgrounds of students, their perception in the use of technology will be different and their motivation in the use of technology will also be different. Therefore, the comparison will be made between students based on various demographic characteristics. Moreover, a modified Technology Acceptance Model (TAM) would be used to estimate students' perceived ease of use, usefulness and the acceptance of students (Venkatesh, Morris, Davis, & Davis, 2000). This study would take a glance at the educational technology using habit of students in order to know in what extent CAI would be accepted.

INTRODUCTION

Education is one of the most essential and indispensable part of our lives, especially for the first twenty years of life when we normally can spend almost all the times to study. The students under higher education at this time are the first bench of students who can benefit from the convenient of technology in our study since we are in our early stage of education. The way education is being provided in Hong Kong has been changed significantly. During our educational period, we will encounter different educational technologies, such as educational software, course management software, the Internet and video, as a learning tool. These technologies provide an effective learning environment for students.

Davis (1989) mentioned that behavioral intention have extensive influence on human's behavior. Human's intention would be affected by his/her attitude toward the task, and perceived ease of use and perceived usefulness are the main factors that could change one's attitude. The perception of human would build up based on the external factors in their situation. It is worth to investigate those factors. There are several extensive studies related to students' perception on CAI and technology acceptance (Al-Momani, 2014; Pituch & Lee, 2006; DeLone & McLean, 2003; Saade, Nebbe & Tan, 2007; McFarland, 2001 and Moon & Kim, 2001). However, there is lack of research on undergraduates' perception on computer-assisted instruction. Also, the definition of computer assisted instruction and the function can be performed by technology nowadays is different form a decade ago, therefore, it is needed to conduct a study about computer-assisted instruction in higher education nowadays.

A combined model based on the technology acceptance model (TAM) (Davis 1989) and Information System Success Model (DeLone & McLean, 2003) has been developed to investigate students' perception of computer-assisted instruction in higher education. These scales can help university and educator know more about university students' attitudes toward computer-assisted instruction and also help them to identify which factors that have significant impact on students' intention to use the technology in CAI. The research questions to be addressed are:

1. Do demographic differences and personal characteristics such as gender, age, grade levels, mode of study access to computers and prior experience affect students' perception of computer-assisted instruction in higher education?
2. What is the relationship between the TAM factors and students' perception on computer-assisted instruction?
3. Do university students have positive attitude and behavioral intention toward computer-assisted instruction?

THE STUDY

What is CAI?

With the rapid development of information, communication and technologies, a growing number of academic parties have begun using computer-assisted instruction. Some proposed that CAI is the use of a computer to provide instruction, as the name computer-assisted instruction suggests (Ward, 2001). In The Database of Medical Subject Headings (MeSH) (2002), it is also described as “[a] self-learning technique, usually offline or online, involving interaction of the student with programmed instructional materials”. During the instruction a combination of text, graphics, sound and video would be used to improve the quality of learning process.

The idea of using a computer to assist teaching and learning was first started in the early 1960s mainly in USA, introduced by some pioneers: Suppes from Stanford University; Kemeny and Kurtz (1968, 1985) who invented Beginner's All-purpose Symbolic Instruction Code (BASIC) in 1960s and Bitzer from University of Illinois who designed Programmed Logic for Automatic Teaching Operations (PLATO) (Hart, 1981, 1995). The early CAI programs were the initial version of today's CAI technologies which mainly provide text-based interfaces. In 1980s, the idea of using graphics and sound to present the information was first introduced by Bitzer (Hart, 1981). Originally, CAI programs was simply developed to teach a particular topic without a basis on any particular educational philosophy. For example, the Time-Shared Interactive Computer Controlled Information Television (TICCIT) (Merrill, 1983, 1988) used at the Brigham Young University based on a specific instructional framework that dictated the actual hardware. Meanwhile, the Logo project, the first CAI system that was based on a specific learning approach (i.e. the experimental and discovery learning approach in this case) (Papert, 1980, 1993) was introduced. Then, more sophisticated CAI systems are designed, such as, Computer-Assisted Language Learning (CALL) (History, 2000; Levy, 1997).

Technologies of CAI Used in University

Computer-assisted instruction requires joint efforts of various persons in the matter of wise handling of men and material resources. Normally, three types of technologies, namely hardware, software, and courseware are required in order to facilitate the instruction. (Mangal S. K., Mangal U., 2009) There are many educational technologies commonly used in university in Hong Kong aiming at improving students' learning effectiveness. This section is to discuss the educational technologies in each areas that students under higher education may come across in their university life.

1. Hardware

Initially, computer-assisted instruction needed a computer as a hardware. In CAI, we certainly need an appropriate computer to suit our teaching learning situations. Since the technology is more advance now, not only computers are used to facilitate the teaching process, other devices, such as, mobile devices. Besides, it will require the services of an expert or technician for its maintenance and an operator. For example, desktop, laptop and mobile phone.

2. Software

The computer alone can do for imparting instruction to the students unless it is fed with suitable software. The programmes containing instruction to the computer in a language that can understand are called software. These programmes are developed by the experts called programmers. The software used in CAI is of two kinds: application software and system software. The system software provides an environment to run application software and controls the computer as well as the applications installed on the machine. The application software includes instruction to the computer for carrying out a total function required by the user. In most of the cases, various application programs have the ability to interact with each other which make it very handy for users. Typical types of software used for study in high education are: library databases, discussion board, email, and the internet, mainly for communication and research.

3. Courseware

Courseware technology is the base of the instruction that is imparted to the learner by CAI. Courseware is the combination of the words 'course' and 'software'. It was originally used to describe an additional educational material which intended as a set of tools for teachers or as tutorials for students, usually used with a computer. However, the meaning of the term has expanded to describe the entire course with all the additional materials used, such as an online classroom, but not only the supplemental materials. The courseware itself can be in different formats, some can be downloaded in pdf files or other types of document files, while others are only available online in HTML webpages. Many forms of educational technology are now being blended with courseware. In this way these three technologies and the persons operating them are jointly responsible for the preparation of the instructional activities conducted in CAI (Moonen J. & Plomp T., 1987). Using courseware to deliver knowledge can increase effectiveness and is more flexible. Also, students' performance can be improved (Kim, Liu & Curtis, 2005).

The Status Quo: CAI in Hong Kong

The last two decades, technological advancements and a meteoric growth in the use of mobile devices have become the dominating issue globally. These have had a significant impact on all walks of life. In most of the developed economies, initiatives have been implemented to integrate computer and educational technologies in education. In order to maintain the competitiveness Hong Kong students, Hong Kong is transforming itself into an information society (So & Swatman, 2006). According to the report of the Education Bureau (2014), in order to stay on the same page with the global trend of using IT to facilitate learning and teaching, over nine billions has been invested since 1998 on IT in Education (ITE) and other e-learning initiatives. All the strategies have been in line with our education reform that aims to promote life-long learning and the whole-person development of all students.

Until now, the Hong Kong government has already released three Information Technology strategic plans which are mainly for primary and secondary schools, and the fourth plan is under consultation. The first plan released in 1998 was aimed at providing a solid infra-structural foundation for subsequent Information and Communications Technology innovations, meanwhile, all schools would consist of computers and Internet connections. In July 2004, the second Information Technology strategic plan which focused on the changes of pedagogy, the promotion of e-learning, the use of wireless technology, and the new roles of both parents and students in the life-long learning environment (Education Bureau, 2004). To successfully implement e-learning in schools, all teachers must have a best readiness of using technology. According to a research conducted by So & Swatman (2006), teachers in primary and secondary schools are not very ready for the use of e-learning technology in teaching and learning. The third plan developed in 2007, which is still undertaking, put more focus on the human factor affecting the integration of IT into education and the suitable user behavior. (Education Bureau, 2014) Support services are provided for schools to cultivate students' information literacy so that they have the ability to make effective, ethical and legal use of information.

On the other hand, all of the universities have harnessed educational technology in teaching and learning. For example, most universities have implemented online course management systems system which provides a learning platform for students and teachers to exchange information and expressing ideas, and creates a complacent learning environment for students. Some teachers report that e-learning environment can motivate students in learning. Hence, most students use this technology tool for learning, including viewing and downloading course materials, submitting project or assignment, doing online test, and discussing questions with teachers and classmates online. Education technology becomes part of their learning in university and it can motivate students to learn (Synnove and Giovanni, 2002).

Apart from the Information Technology strategic plans, the Hong Kong government has launched a series of initiatives to facilitate computer-assisted education, including a \$2.5 billion Composite Information Technology Grant (CITG) which was given to schools have been provided with since the 2004 school year as an operational fund for the promotion of technology in school. (Education Bureau, 2004) Meanwhile, \$90 million have been spent on organizing professional development activities to enhance educational professionals' knowledge and skills. Since 2010 a serious of e-learning initiatives have been implemented. It first started with a three-year Pilot Scheme on integrating computer technology into teaching which granted schools with a commitment of \$68 million so as to boost the computer utilization rate. Since 2012, a commitment of \$50 million had been given to implement the E-Textbook Market Development Scheme (EMADS), aimed at facilitating the development of

e-textbooks and those e-textbooks would be used starting from this school year. Recently, another \$50 million fund has been granted to improve the IT infrastructure and set up WiFi access in schools so as to provide a suitable environment for using e-textbooks and e-learning resources.

The above evidences show that the government has gradually increase their enforcement on implementing CAI. From infrastructure and expertise training to human factors, the government has put a great afford on the implementation of CAI. After the two decades of preparation and adoption, the university students has been encountered CAI in their earlier education. It would be easier for them to adopt this learning mode. It is believed that now is the time for integrating more computer technology into the teaching and learning process.

DEVELOPMENT OF HYPOTHESIS

Students' perception of CAI in higher education may be influenced by several variables. Keller and Cernerud (2002) have identified variables such as age, gender, previous experience of computers, technology acceptance and individual learning styles as major predictive factors when discussing acceptance of technology by students. There are various theories of technology acceptance used to appreciate the perceptions of students. One of such models is the technology acceptance model (TAM) developed by Davis (1989 cited in Saade, Nebbe and Tan, 2007; McFarland, 2001 and Pituch and Lee, 2006). As TAM has been developed and used for over two decades and has been cited in a wide range of surveys (Keller and Cernerud, 2002) for gauging how people perceive a new technology, it is convinced that the model can be used to examine students' perception on CAI.

On this basis, it was decided in this research study to adopt the broader and integrative approach (i.e. focusing on both technical and student views) including Student Factors (SF) and Technology Factors (TF) into the model as two of the external factors. These elements and their antecedents were adopted from Li and Kirkup's study (2007) and Al-Momani's study (2014). The following defines and explains these elements.

A. External Variables

Davis and his fellow coworkers (1989, p. 985) observed that a number of external variables should be added in order to enhance the ability of TAM to dictate people's acceptance of a technology. The selection of additional factors should depend on the characteristics of the target technology, main users and context (Moon and Kim, 2001). Wang et al. (2003) noted that variables relating to individual differences play a vital role in the implementation of technology. Thus, the independent variables, such as gender, access to computers, computer skills, prior experience, study mode, and that may affect the determination of perceived usefulness and perceived ease of use of CAI in higher education. These variables have been described by most writers on TAM as external variables.

Gender Difference and Perceived Ease of Use (PEU)

There are characteristic differences between male and female such as biological and social difference. Researches about the role of gender differences in using technology for learning have been done extensively. Various exciting studies found that men tend to have positive attitudes towards technology (Comber and Colley, 1997; Kadijevich, 2000; Li & Kirkup, 2007; Hwang, Suk, Fisher, & Vrongistinos, 2009). Students are easily affected by the gender stereotypes in the society, thus, girls who excelled in technology, a male dominant activity, may depreciate their achievement and feign clumsiness so as to retain a feminine image (Measor, 1984). In addition, even though girls perceived themselves have the right to be part of computer culture as boys, boys still dominated in using computer (Comber and Colley, 1997). Therefore, there are gender differences in students' perception on CAI.

Li and Kirkup (2007) reported that females are less likely to be attracted to technology related course. A previous study pointed out that male students under higher education have more positive attitude towards the use of computer during instruction and have more perceived personal ability in using technology for learning as well (Comber & Colley 1997, Kahveci 2010). As males are more confident in using computer than females, females tend to loss their perceived self-efficacy in the use of technology (Keller, 2010). Some researchers also suggested that computer self-efficacy has a significant positive effect on perceived ease of use of the computer technologies used in CAI (Compeau & Higgins, 1995; Compeau, Higgins, & Huff, 1999). Thus, students' precieved ease of use of CAI would be various between gender.

H1: Male students rating of Perceived Ease of Use (PEU) of CAI will be higher than female students

Gender Difference and Perceived Usefulness (PU)

As defined by Davis (1989), perceived usefulness is the degree of beliefs that using a particular technology would enhance one's performance on a task. Previous research in Hong Kong and other countries on the gender differences in perceived usefulness of computer technologies, revealed that male undergraduates evaluated higher usefulness than female (Raman, 2011; Yau & Cheung, 2010; Koohang & Durante, 2003; Shashaani, 1997). Moreover, users are usually encouraged by the good performance of a technology, because it may bring promotions, bonuses and other rewards within an organization. Similarly, when students study with the educational technologies in CAI, and get a good result or perform well in their assignments and projects, their intention to use would be reinforced. This implies that technologies in CAI which can let a user believes that there is a positive user-performance relationship would be the one with a higher level of perceived usefulness.

H2: Male students rating of Perceived Usefulness (PU) of CAI will be higher than female students

Age Difference and Perceived Ease of Use (PEU)

Age difference in using computer to assist learning process has been reported in some research. Distance education become popular for people to enhance their knowledge in area of interest due to the time and other restrictions of life, especially for adults who cannot continue traditional face-to-face classroom education. However, he reveals that older students tend to prefer traditional face-to-face class in university than online education. They have some difficulties on the non-verbal communication and are incompetent to use technology. Also, Davis (2001) pointed out that older learners are lack of encouragement at home, fear of new technologies and lack of up-to-date equipment at home. Due to the rapid change of technology, older students may not be able to adapt to the changes and this may lower their perceived ease of use on CAI.

H3: Older students have lower Perceived Ease of Use (PEU) on CAI than younger students

Access to Computers and Perceived Ease of Use (PEU)

Access to computer is defined as the degree of ease to access to computer experienced by a user. Perceived accessibility is convinced to be an indispensable variable in the repeat usage of information sources and technologies (O'Reilly, 1982) and the selection of specific information channels (Hardy, 1982). Hence, it is assumed a positive relationship between the access to computer and the perceived ease of use in CAI.

H4: Access to computers have a positive effect on the Perceived Ease of Use (PEU) of CAI

Prior Experience and Perceived Ease of Use (PEU)

Previous experience is related to students' familiarity of the use of technology and is determined by students' responses to the relevant survey item (Kahveci, 2010). Previous study pointed out that university students have more positive attitude towards the use of technology for learning and they are more confidence in technology related tasks (Comber & Colley, 1997). Moreover, students with more experience on using technology have more confidence and more interest in using technology. Similarly, students who have more experience on educational technology are far more confident in learning technology than students who have less experience. They have high level of engagement in the use of technology for learning. Hence, less experienced students may have less perceived ease of use of CAI.

H5: Prior computer experience of students have a positive effect on the Perceived Ease of Use (PEU) of CAI

Student Factors (SF)

Student Factors (SF) denotes how students perceive their prior technology experience, eagerness on using the technologies, and their satisfaction. Mobility has three different elements including convenience, expediency and immediacy. People's perception on their prior technology experience is proved to be an important factor in the prediction of people's attitude toward technology. A number of studies suggest that individual behavior toward a new technology is shaped by the overall experiences with it (Hartwick & Barki, 1994; Igbaria, Guimaraes & Davis, 1995; Igbaria & Tan, 1997; Igbaria, Zinatelli, Cragg, et al, 1997; Webster & Ho, 1997). These addressed and captured experiences with

technology as external variables. Besides, one's eagerness on using the technologies may include more positive attitudes toward target behavior and greater exploratory use of the technology. The eagerness variables represent a form of intrinsic motivation. In other words, eagerness can make a user perform a behavior for itself to gain pleasure and satisfaction from the activity (Deci & Ryan, 1985; Vallerand, 1997). Satisfaction is also an important student factor that helps in investigating students' perceived usefulness on CAI. User satisfaction is defined as the evaluation with service users and interpreted as a sense of positive or negative interest. User satisfaction of computer technology deals with user attitudes to computer systems that he/she used before in the context of their environments. Satisfaction have positive effects on students' perceived usefulness. Which means if students perform the challenging and meaningful task successfully, their feeling of satisfaction will be relatively high. Oliver & Reeves (1996) report that satisfaction is one of the key elements to develop a useful instructional system so as to motivate students.

In order to understand the influence of students' thought on their perception on CAI, we applied the conceptual construct of student factors as an external variable to the TAM.

H6: Student Factors (SF) have a positive effect on the Perceived Ease of Use (PEU) of the CAI

H7: Student Factors (SF) have a positive effect on the Perceived Usefulness (PU) of the CAI

Technology Factors (TF)

The technology factors studied in this report are mainly the system quality, information quality and service quality of the technologies which the students have come across in computer-assisted instruction. The three elements in Technology Factors are concerned about CAI. Quality is, in general, a term related to the characteristics of a particular product or service that can reflect how well it fulfills consumer or user requirement. (Negash, Ryan & Igbaria, 2003). However, assessing the service quality is considered elusory and complicated. It is difficult to find consensual quality factors notwithstanding many exciting researches studied in the domain of user factors such as users' satisfaction and users' motivation and its impact on their intention to use a system or a computer technology (Song & Keller, 2001; Keller & Suzuki, 2004).

System quality represents the quality of information system processing used in CAI (Chen, 2010). In this research, the quality of CAI can be measured using educational technology interface design and interactivity. System design represents the extent to which students' perceive the friendliness of the technology. Interactivity represents the extent to which a user participates in an interactive multimedia-based environment. In other words, it can indicate students' perception on the performance of the technology they used in CAI.

Information quality represents users' perceived value of the output of the system, which means how students perceive the value of the output information provided by the computer technologies used in CAI (DeLone & McLean, 1992). Informative-ness and reliability of the technologies are the qualities invested in this sector. Informative-ness represents a system's ability to inform students about the service alternatives. Reliability indicates how much the student believes in the information provided by the system.

Service quality represents whether the educational technology is able to facilitate learning efficiently and effectively. Service quality is increasingly recognized as an important factor that influencing users' intentions to use. Service quality can be measured through responsiveness, trust and empathy. Responsiveness means the extent to which students perceive the service provided on the interface is the latest, helpful and responsive to their query. Empathy represents the care that is provided by the system to users. For instance, whether the system can give promptly respond all the time.

Technology factors are significant indicator that used to describe computer use for instruction. It is expected to exhibit a positive influence through its dimensions. That is to say, if the quality of an educational technology is high, students would perceive higher ease of use and higher usefulness. If the students think that the quality of CAI is good in all dimension, for example, the interface of the system is ease to control and the information provided is useful, their Perceived Ease of Use (PEU) and Perceived Usefulness (PU) would be higher.

H8: Technology Factors (TF) have a positive effect on the Perceived Ease of Use (PEU) of the CAI

H9: Technology Factors (TF) have a positive effect on the Perceived Usefulness (PU) of the CAI

B. TAM Variables

TAM was used as the baseline model. TAM described the relationships between the students Attitude to CAI (ATT), Perceived Ease of Use (PEU), Perceived Usefulness (PU) and Behavioral Intentions to Use (BI) in CAI. The brief definition of the variables used in this study are as follow.

PU: the extent to which a student believed that using CAI would enhance his/her academic performance (Davis, 1989).

PEU: the extent of students' belief on the easiness of handling the tools and technologies in CAI.

ATT: attitude toward using CAI; whether the students think that CAI is a good idea.

BI: intention to actually use the technology.

Perceived Ease of Use (PEU) and Perceived Usefulness (PU)

Studies using TAM have suggested that perceived ease of use influences perceived usefulness (Venkatesh & Davis, 1996). This relationship would also be investigated and I hypothesized that students who perceived the system easier to use would also perceive it be more useful as suggested by the finding from previous work (Venkatesh & Davis, 2000; Gelderman, 1998; Szajna, 1996; Mathieson, 1991; Gattiker, 1984). As stated in TAM, the two beliefs constructed in turn influence the intention to use CAI. In previous studies, PEU was found to influence intention to use directly and indirectly via perceived usefulness.

H10: There is a positive relationship between Perceived Ease of Use (PEU) and Perceived Usefulness (PU) in CAI.

Perceived Ease of Use (PEU) and Attitude (ATT)

On the other hand, studies about the importance of perceived usefulness and perceived ease to use in forecasting human behavior can be found in various journals (Tornatzky & Klein, 1982; Bandura, 1982). The studies both proved the importance of considering both perceived usefulness and perceived ease to use in predicting a person's behavior. In this study, the perceived ease of use means the extent of students' belief on the easiness of handling the tools and technologies in CAI. It is believed that if a student think that the tools in CAI are easy to use and they do not have to put much effort on learning how to use as well as controlling it to fulfill the tasks, he/she may tend to have a positive attitude to CAI.

H11: There is a positive relationship between Perceived Ease of Use (PEU) and Attitude toward Using (ATT) in CAI

Perceived Usefulness (PU) and Attitude (ATT)

In this study, PU is how a student believed on the usefulness of CAI. We could hypothesize that if a student feel that their effectiveness in learning would be higher and perform better in courses, he/she would be more eager to study in CAI and have a positive attitude toward CAI. Also, it is believed that when a technologies made it easier for you to complete a task, people tend to have better impression on it. The same phenomenon happened on CAI, when students perceived that it easier to do their coursework and can accomplish tasks more quickly with the assistance of computer technology, they would have generally favorable attitude to it.

H12: There is a positive relationship between Perceived Usefulness (PU) and Attitude toward Using (ATT) in CAI

Perceived Usefulness (PU) and Behavioral Intentions to Use (BI)

According to previous studies of perception on technology with TAM (Saade & Bahli, 2005), besides the indirect relationship (PU related to ATT, then indirectly related to BI), a direct relationship between PU and BI is hypothesized. It is expected that students would have a use-performance relationship with CAI, which means, believing that if they study in CAI, their performance in the course would improve. If they perceived CAI as highly useful, it would directly affect their actual use of the computer technology for learning and they would prefer a greater extend of computer assistance in their study.

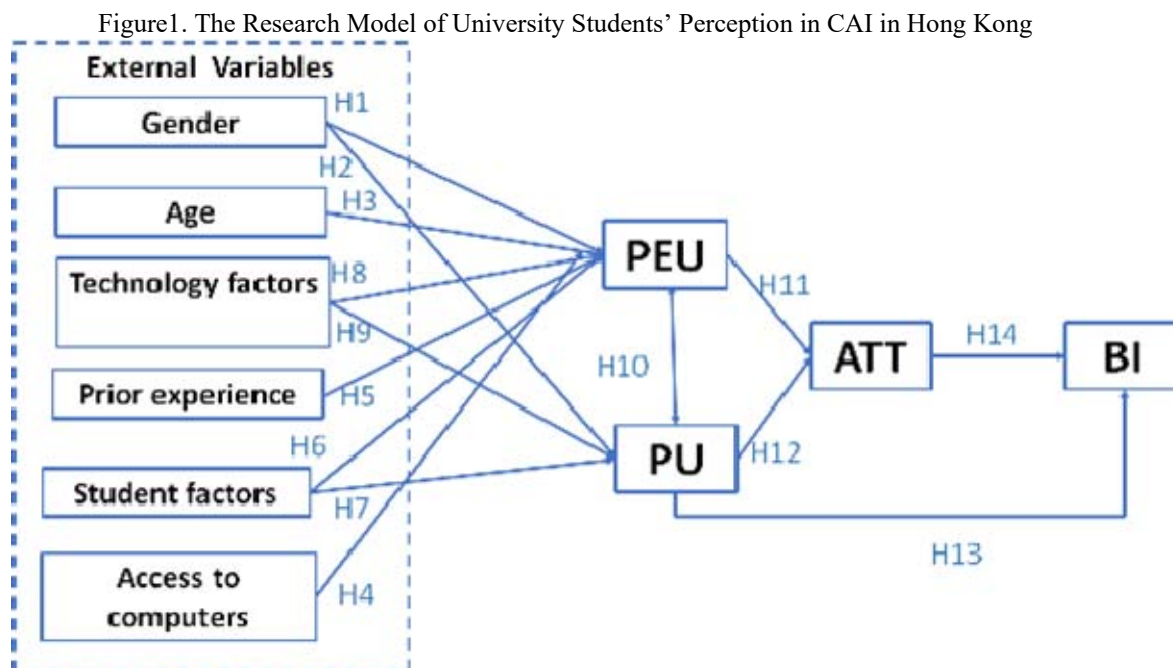
H13: There is a positive relationship between Perceived Usefulness (PU) and Behavioral Intentions to Use (BI) in CAI

Attitude (ATT) and Behavioral Intentions to Use (BI)

Ever since the development of the first modified version of TAM (Davis, Bagozzi & Warshaw, 1989),

most of the models indicated a strong correlation between BI and ATT. That is to say, if students have a generally favorable attitude toward CAI and like the idea of CAI, they would like to use more and support the implementation of CAI. The reason of this hypothesis is that, when someone enjoy doing one particular activity, he/she would not be bored even if they have to do it repeatedly. It is expected that students would have a use-performance relationship with CAI, which means, believing that if they study in CAI, their performance in the course would improve. If they perceived CAI as highly useful, it would directly affect their actual use of the computer technology for learning and they would prefer a greater extend of computer assistance in their study.

H14: There is a positive relationship between Attitude toward Using (ATT) and Behavioral Intentions to Use (BI) in CAI



FINDINGS

In this study, a questionnaire survey has been conducted to collect the data in order to evaluate Hong Kong students' perception of computer-assisted instruction in higher education. The target group of this survey was the university students in Hong Kong. Previous studies have also used questionnaire survey to collect users' perception on technology with different scales, which were found to be effective (Wintre et al 2008; Cutrona & Russell 1987), whereas the measurement scale used in this study has been adopted in previous research to measure students perception on CAI and the related education technology (Al-Momani 2014 & Tagoe 2012).

A. Population and Sample

As the target group of this survey was the university students were an easy-approach group of people, through the distribution of questionnaires in different universities, relevant data and information could be collected. Population and Sample 320 questionnaires were distributed and 273 copies were returned and only 220 contained all the necessary information. Table 1 shows the demographic information of the participants.

Table 1. Demographic Characteristics of the Participants

Individual Variables	Frequency
<i>Students Gender Distribution</i>	
Male	49.1%
Female	50.9%
<i>Students Age Distribution</i>	
<18 years old	0.9%
10-22 years old	73.7%
23-27 years old	18.2%
28-31 years old	4.5%
>31 years old	3.6%
<i>Students Access to Computer</i>	
Desktop	10.5%
Laptop	59.1%
Tablet	0.9%
Desktop & Laptop	6.8%
Laptop & Tablet	10.0%
All	12.7%
<i>Students Prior Experience</i>	
Less experience	59.1%
More experience	40.9%

B. Data Collection Method & Analysis

The questionnaire used in this survey has been designed base on the modified Technology Acceptance Model (TAM) (Venkatesh, Morris, Davis, & Davis, 2003), which is used to estimate students' perceived ease of use, usefulness and their attitude toward a particular technology. Moreover, following the Information System Success Model (DeLone & McLean, 2003), two groups of external factors, namely technology factors and student factors, are set as in the model. Since people's opinion to an issue would be affected by their experience, prior experience in using computer, which is one of the personal characteristics of this study.

The questionnaire was divided into three parts. Part 1 included the questions inquiring the personal information of the respondents. Part 2 were 7 questions inquiring the previous experience of using technology for learning of the respondents. Part 3 contained 43 questions inquiring university students' perceptions to Computer-Assisted Instruction. The questionnaires were distributed during the short breaks of lectures and in canteens during lunch time. The frequencies were computed and evaluated, and they were presented in the regarding tables.

C. Data Analysis & Findings

Table 4.11 shown below is the descriptive statistics which gave a summary of the information about the investigated items used in this survey. The items are shown on the left of the table and the acronyms are on the right. About the abbreviations in the table, N represents frequency, M represents mean, s represents standard deviation, and SESK represents standard error of skewness. All of the items in this table (item 15- item 58) were scaled by the 5-point Likert-scale (1=strongly disagree to 5=strongly agree). Also, the scoring of the items with negative statements were reversed (item 58). This action would not affect the overall findings, the aim is to avoid negative factor loadings of the items in the same category (Kahveci, 2010).

Table 2. Items in questionnaire

Question no.	Items	Mean	STD. Deviation
	Technology Factors		
15.	Steps to complete a task using the E-learning system is sensible.	3.50	0.762
16.	Performing an operation in the E-learning system always leads to a predicted result	3.44	0.783
17.	The organization of information on the E-learning system screens is clear.	3.55	0.729
18.	The E-learning system has natural and predictable screen changes.	3.47	0.841
19.	The E-learning system responds quickly during the busiest hours of the day	3.07	1.053
20.	The E-learning system provides relevant information for my course.	3.54	0.813
21.	The E-learning system presents the information in an appropriate format.	3.54	0.73
22.	The information content in the E-learning system is very good.	3.44	0.747
23.	The information from the E-learning system is up-to-date enough for my purposes.	3.53	0.813
24.	The reliability of output information from E-learning system is high.	3.60	0.809
25.	The E-learning system provides the information I need in time.	3.57	0.827
26.	The E-learning system has a modern looking interface.	3.46	0.856
27.	The E-learning system has visually appealing materials.	3.18	1.002
28.	The E-learning system provides the right solution to my request.	3.33	0.784
29.	The E-learning system gives me prompt service.	3.52	0.873
30.	E-learning system has a good interface to communicate my needs.	3.39	0.887
	Student Factors		
33.	Time flies when I am using educational technologies.	3.78	0.912
35.	While using educational technologies, I am absorbed in what I am doing.	3.37	0.944
36.	I have fun interacting with educational technologies.	3.37	1.006
37.	I enjoy using educational technologies.	3.42	0.964
38.	I am satisfied with the performance of educational technologies.	3.38	0.838
39.	I am pleased with the experience of using educational technologies.	3.45	0.882
40.	My decision to use educational technologies was a wise one.	3.60	0.796
	Perceived Usefulness		
41.	CAI enhanced my effectiveness in learning.	3.58	0.875
42.	CAI improved my course performance	3.36	0.808
43.	CAI made it easier to do my coursework.	3.48	0.846
44.	CAI enabled me to accomplish tasks more quickly.	3.54	0.772
45.	I found CAI useful.	3.57	0.849
	Perceived Ease of Use		
46.	Overall, I found CAI easy to use.	3.61	0.966
47.	Learning to use the technologies in CAI was easy for me.	3.72	0.965
48.	The technologies in CAI were user friendly.	3.71	0.837
49.	It was easy for me to become skillful at using the technologies in CAI.	3.68	0.965
50.	I found CAI to be flexible to interact with.	3.46	0.835
	Attitude		

51.	I have a generally favorable attitude toward CAI.	3.66	0.859
52.	I believe it is a good idea to use CAI to assist my coursework.	3.70	0.801
53.	I like the idea of CAI.	3.57	0.865
54.	CAI provided me with a lot of enjoyment.	3.36	0.967
55.	Overall, I enjoyed study in CAI.	3.51	0.863
	Behavioral Intention		
56.	I will prefer fully online to face-to-face instruction.	3.60	0.829
57.	I will prefer a combination of some aspects of CAI with face-to-face.	4.01	0.872
58.	I think the institution should continue to offer face-to-face and not bother about computer-assisted education.	3.75	0.784

The collected data was examined before the analysis to ensure its validation and reliability. Factor analysis was conducted to establish construct validity. Results of factor analysis can be used to ensure that questionnaires used in this study are valid. Factor loading is used to analyze the validity of measurement scales (with general value of acceptance as 0.3)21. The variable of technology factors includes 16 items, factor loadings ranged from 0.553 to 0.747. The variable of student factors includes 6 items. Factor loadings ranged from 0.616 to 0.894. The variable of perceived usefulness includes 5 items. Factor loadings ranged from 0.682 to 0.756 in the factor analysis. The variable of perceived ease of use includes 5 items. Factor loadings ranged from 0.645 to 0.800. The variable of attitude includes 5 items. Factor loadings ranged from 0.673 to 0.792. Finally, the variable of behavioral intention includes 3 items. Factor loadings ranged from 0.650 to 0.759. Hence, this scale is retained.

Apart from this, the reliability of the scales then evaluated by the Cronbach's alpha which is a measure of internal consistency indicated how close do the items related to each other (Nunnally, 1978). The Cronbach alpha values (Table 2) of the six factors are 0.919, 0.894, 0.849, 0.887, 0.892 and 0.774, which were all higher than the acceptable value 0.7 (Nunnally). Thus, all of the variables can be perceived as acceptable.

As a result, it can be concluded that the measurement scale is valid and reliable.

Hypothesis Testing

This study is to evaluate Hong Kong students' perception of computer-assisted instruction in higher education. By conducting questionnaire and analyzing the collected information, the impact of different TAM components, personal characteristics and other external variable on the students' perception on CAI can be found. The result would show the different personal characteristics which influence one another as well as the TAM factors would be presented in section, and the relationship among the student factors, technology factors and the TAM components would be discussed in section. Data analysis includes independent simple t-test which tests (H1 to H3), One-way ANOVA (H4 and H5) and Pearson Correlation among Components (H6 to H14).

The hypotheses are tested by the Statistical Package for Social Sciences (SPSS) software. Independent simple t-test find out whether there is statistically difference between 2 groups

H1: Male students rating of Perceived Ease of Use (PEU) of CAI will be higher than female students.

Table 3
Test of hypothesis (1)

Sig F	F	Sig t	t
0.628	0.235	0.973	0.023

Based on the result of independent t-Test ($p=0.023<0.05$), there was statistically significant gender difference about students' Perceived Ease of Use (PEU) of CAI in higher education. The mean value for male students was 3.4900 while the mean value for females was 3.2454, which means males perceived using the technology in CAI easier than females did.

H2: Male students rating of Perceived Usefulness (PU) of CAI will be higher than female students.

Table 4
Test of hypothesis (2)

Sig F	F	Sig t	t
0.368	0.813	0.012	0.455

The mean value for males was 3.5278 while the mean value for females was 3.1123, which means male students agreed more in terms of their perceived usefulness in CAI when compared with females. Based on the result of independent t-Test ($p=0.028<0.05$), there was significant gender difference about students' perceived usefulness in CAI.

H3: Older students have lower Perceived Ease of Use (PEU) on CAI than younger students.

Table 5
Test of hypothesis (3)

Sig F	F	Sig t	t
0.462	0.543	0.046	1.391

The mean value for more experienced students was 3.6954 while the mean value for less experienced students was 3.5511. It implied that more experienced students perceived CAI is more easy to use than less experienced students. Based on the above results ($p=0.000<0.05$), there was significant difference between more experienced students and less experienced students in perceived ease of use of computer technologies in CAI.

One-way ANOVA is used to test H4 to H5, to find out whether there are any significant differences between the means of two or more independent groups.

H4: Access to computers have a positive effect on the Perceived Ease of Use (PEU) of CAI.

Table 6
Multiple Comparisons between Age Groups in PEU

Sig.	<18	18-22	23-27	28-31	>31
<18		.283	.752	.926	.011
18-22	.283		.884	.012	.003
23-27	.752	.884		.011	.000
28-31	.926	.011	.012		.216
>31	.011	.000	.003	.216	

*. The mean difference is significant at the 0.05 level.

The significance level under ANOVA was 0.000 ($F=6.297$, $p<0.05$). This indicated that the age groups had significant difference in perceived ease of use (PEU) of using technology for learning. it showed the mean values for four age groups, which were 3.8300 for aged 18-22, 3.5750 for aged 23-27, and 1.8000 for aged >31. The mean values decreased while the age increased. It implied that younger students perceived using technology in CAI easier than older students did.

H5: Prior computer experience of students have a positive effect on the Perceived Ease of Use (PEU) of CAI.

Table 7
Descriptives of Access to Computers with PEU

Sig.	Desktop	Laptop	Tablet	Desktop & Laptop	Desktop & Tablet	All
Desktop		.984	.685	.858	.1000	1.000
Laptop	.984		.783	.365	.951	.985
Tablet	.685	.783		.377	.644	.690
Desktop & Laptop	.858	.365	.377		.919	.817
Desktop & Tablet	1.000	.951	.644	.919		1.000
All	.1000	.985	.690	.817	1.000	

*. The mean difference is significant at the 0.05 level.

The significance level under ANOVA was 0.261 ($F=1.308$, $p>0.05$). This indicated that the grade levels had no significant effect on satisfaction of using technology for learning. Moreover, all of the significance levels between means of grade levels under a post-hoc test were greater than 0.05, which indicated that there was no significant mean difference between accesses to computers in PEU.

Pearson Correlation measures the strength of the relationship between two variables as well as the direction of the relationship between two variables which are positive correlation and negative correlation.

H6: Student Factors (SF) have a positive effect on the Perceived Ease of Use (PEU) of the CAI.

Table 8
Correlations between SF and PEU

Pearson Correlation	Sig. (2-tailed)	N
0.649	0.000	220

**. Correlation is significant at the 0.01 level (2-tailed).

Pearson correlation coefficient was 0.649 ($p=0.000<0.01$) and the impact of SF on PEU was positive and significant as predicted. The value of r ranging above 0.5 would be classified as a strong correlation [Cohen (1988)], hence, there was a strong positive correlation between SF and PEU.

H7: Student Factors (SF) have a positive effect on the Perceived Usefulness (PU) of the CAI.

Table 9
Correlations between SF and PU

Pearson Correlation	Sig. (2-tailed)	N
0.587	0.000	220

**. Correlation is significant at the 0.01 level (2-tailed).

Pearson correlation coefficient was 0.587 ($p=0.000<0.01$) and the impact of SF on PU was positive and significant as predicted. The value of r ranging above 0.5 would be classified as a strong correlation which means there was a strong positive correlation between SF and PU.

H8: Technology Factors (TF) have a positive effect on the Perceived Ease of Use (PEU) of the CAI.

Table 9
Correlations between SF and PU

Pearson Correlation	Sig. (2-tailed)	N
0.501	0.000	220

**. Correlation is significant at the 0.01 level (2-tailed).

Pearson correlation coefficient was 0.501 ($p=0.000<0.01$) and the impact of TF on PEU was positive and significant as predicted.

H9: Technology Factors (TF) have a positive effect on the Perceived Usefulness (PU) of the CAI.

Table 10
Correlations between TF and PU

Pearson Correlation	Sig. (2-tailed)	N
0.652	0.000	220

**. Correlation is significant at the 0.01 level (2-tailed).

Pearson correlation coefficient was 0.652 ($p=0.000<0.01$) and the impact of TF on PU was positive and significant as predicted. The value would be classified as a strong correlation which means there was a strong positive correlation between TF and PU.

H10: There is a positive relationship between Perceived Ease of Use (PEU) and Perceived Usefulness (PU) in CAI.

Table 11
Correlations between TF and PEU

Pearson Correlation	Sig. (2-tailed)	N
0.677	0.000	220

**. Correlation is significant at the 0.01 level (2-tailed).

Pearson correlation coefficient was 0.677 ($p=0.000<0.01$) and the impact of PEU on PU was positive and significant as predicted. The value of r ranging above 0.5 would be classified as a strong correlation, thus, there was a strong positive correlation between PEU and PU.

H11: There is a positive relationship between Perceived Ease of Use (PEU) and Attitude toward Using (ATT) in CAI.

Table 12
Correlations among PEU and ATT

Pearson Correlation	Sig. (2-tailed)	N
0.600	0.000	220

**. Correlation is significant at the 0.01 level (2-tailed).

Pearson correlation coefficient was 0.600 ($p=0.000<0.01$) and the impact of PEU on ATT was positive and significant as predicted. The value of r ranging above 0.5 would be classified as a strong correlation. Thus, there was a strong positive correlation between PEU and ATT.

H12: There is a positive relationship between Perceived Usefulness (PU) and Attitude toward Using (ATT) in CAI.

Table 13
Correlations among PU and ATT

Pearson Correlation	Sig. (2-tailed)	N
0.649	0.000	220

**. Correlation is significant at the 0.01 level (2-tailed).

Pearson correlation coefficient was 0.649 ($p=0.000<0.01$) and the impact of PU on ATT was positive and significant as predicted. The value of r ranging above 0.5 would be classified as a strong correlation. Thus, there was a strong positive correlation between PU and ATT.

H13: There is a positive relationship between Perceived Usefulness (PU) and Behavioral Intentions to Use (BI) in CAI.

Table 14
Correlations among PU and BI

Pearson Correlation	Sig. (2-tailed)	N
0.520	0.000	220

**. Correlation is significant at the 0.01 level (2-tailed).

Pearson correlation coefficient was 0.520 ($p=0.000<0.01$) and the impact of perceived usefulness (PU) on behavioral intentions to use (BI) was positive and significant as predicted. The relationship between them was positive and significant. Hence H15, There is a positive relationship between Perceived Usefulness (PU) and Behavioral Intentions to Use (BI) in CAI, is supported.

H14: There is a positive relationship between Attitude toward Using (ATT) and Behavioral Intentions to Use (BI) in CAI.

Table 15
Correlations among ATT and BI

Pearson Correlation	Sig. (2-tailed)	N
0.580	0.000	220

**. Correlation is significant at the 0.01 level (2-tailed).

It showed that the mean value for male students was 3.4900 while the mean value for females was 3.2454, which means males perceived using the technology in CAI easier than females did. Males are more enjoy using computer and have positive perception towards the use of computer during instruction.

DISSION AND CONCLUSION

This report has examined Hong Kong Students' Perception of Computer-Assisted Instruction in Higher Education. By using the modified Technology Acceptance Model (TAM) which is combined with the Information System Success Model, the effects of technology factors, student factors, perceived usefulness, and perceived ease of use on students' attitude towards Computer-Assisted Instruction in Higher Education was measured. The results of the analysis provide strong support for most of the hypothesis. In addition, this study has found that the influence of technology factors (including system quality, service quality and information quality) on perceived usefulness, and the influence of student factors (including technology experience, keen and satisfaction) on perceived ease of use were strong. Moreover, there were significant differences in the perception on Computer-Assisted Instruction in

Higher Education between males and females; age groups; more experienced students and less experienced students. The relationship between TAM components was existed in this study of Hong Kong Students' Perception of Computer-Assisted Instruction in Higher Education.

The survey result supported the hypotheses H1 to H3, H5 to H14, but it rejected the hypotheses H4. It indicated that students under higher education were motivated to use technology in CAI because the system, the information and service provided in CAI are of high quality. For example, if the systems used in CAI were well-functioned and can provide clear and predictable result, students would more satisfied and perceived that CAI is good idea. Besides that, how the students perceive the quality of their previous experience is another factor. If a system can give the users a pleasant experience, they may absorbed in their tasks and found it interesting. When people keen on doing something they may found it easier to be done and found that the tool or medium which helped them to fulfill the task is useful. Both the technology factors and student factors affecting students' perception on the usefulness and the ease of use of technologies in CAI. This explanation is supported by DeLone & McLean (2003), Al-Momani (2014), Igbaria, Guimaraes & Davis (1995) and Igbaria & Tan (1997). Students' perception about the system that they had been used during computer-assisted instruction would affect their attitude toward the idea of using CAI and finally lead to the change of intention to use technologies in CAI.

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Students Understanding Of Mathematics Using From Prototypical Examples: Analyze In Linear Algebra

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ABSTRACT

Mathematical objects are ‘natural objects’ for the practical mind. Definitions and theories can only describe them, not create or construct them. A mathematical term is interpreted through its denotation as representing a collection of particular objects for the theoretical mind. So, theoretical and practical modes of thinking differ in the manner in which they constitute the meanings of words.

Thinking in terms of prototypical examples, rather than definitions, became an obstacle to our students’ understanding the notion of linear transformation. In the course, linear transformations were defined as transformations of vector spaces which conserve linear combinations. The obstacle was revealed in the students’ attempts ‘linear extension problem’: given a transformation of a basis, to construct a linear transformation with those values on the basis.

In the experimental course, the problem was not formulated in such general terms. It was restricted to two dimensions, and the students were not asked to ‘linearly extend a transformation from a basis to the whole plane’ but to assume the existence of such an extension and find some missing information about it. In this study we are discussing students understanding of mathematical concepts by means of linear transformation in linear algebra.

Key words: understanding of mathematical concept, linear algebra, linear transformation

INTRODUCTION

It is a general view students tend to think in practical rather than theoretical ways, and several research conducted how this tendency affected their reasoning in linear algebra (Dorier, Robert, Robinet & Rogalski, 2000). Students’ understanding of the theoretical mathematics different from the practical thinking turned out to be inspired by the Vygotskian distinction between everyday concepts and scientific concepts (Vygotsky, 1987,). Sierpinska (1992) assume that theoretical thinking is characterized by a conscious reflection on the semiotic means of representation of knowledge and by systems of concepts. She also declared that, in theoretical thinking, reasoning is based on logical and semantic connections between concepts within a system. In this connections, concepts are made on the basis of their relations to more general concepts of which they are special cases rather than on experimental associations (Vinner, 1983). The relations between concepts and objects are organized by relations of the concepts (Sfard, 1987). Comparisons between concepts and their differentiation are constructed on the basis of the relations of these concepts to more general concepts (Rogalski, 1996).

A common belief among mathematicians is that in order to teach mathematics well, all that is necessary is to know the subject well (Hamilton, 1837). The teaching of linear algebra provides a striking profile. Linear algebra teachers know the course personally very well .yet the students do not understand (Carlson, 1993). Theoretical and practical thinking in mathematics is not absolutely different from each other. In both cases we use from theories, formulas, definitions and ideas of mathematics (Sierpinska, 1997). The main difference between these two thinking modes: mathematical relations are conducted or organized by recognized definitions and theories, and are not used to construct new mathematical models (Sierpinska, Trgalová, Hillel & Dreyfus, 1999). In our linear algebra lectures, it is a main understanding problem of abstract concepts of the course that students have a tendency to do their mathematical studies in term of prototypical or familiar models rather than focusing on general concepts of the subject (Dorier, Robert, Robinet, & Rogalski, 1994).

Mathematical thinking works by reasoning from prototypical examples or mental model (Johnson-Laird and Byrne, 1991). Some mathematical elements are more important in reasoning or more prototypical than others. The mental manipulation of prototypical images helps students to construct their mathematical models (Thurston, 1990). From the students' perspective, a mathematical definition could be a description to introduce the concept, but couldn't be a something to manipulate in reasoning. Of course, it is possible that students sometimes produce mental arguments based on prototypical solutions without understanding, or those which can easily be mistaken in examination marking an attempt at a formal solution (Freyd, 1983a-b).

ANALYZING OF STUDENTS' APPROACHES

In our lectures, linear Transformations of vector spaces were represented by

$$L: V \rightarrow U$$

$$L(c_1v_1 + c_2v_2) = c_1L(v_1) + c_2L(v_2)$$

where V and U are vector spaces, u_1 and u_2 are vectors in V , c_1 and c_2 are scalars. One of the main difficulty of the students encountered at this subject was to create a linear transformation from a given base. In the experimental course, they tried to formulate of a linear transformation from a basis to the whole vector space. Linear transformation problem and students' answers are listed below:

Let be the vectors $L(v_1)$ and $L(v_2)$ are images of the vectors v_1 and v_2 , respectively, under some linear transformation L . Try to create following models:

- I. $L(v_1 + v_2)$
- II. $L(3v)$
- III. $L(-2v_1 + 2v_2)$
- IV. $L(v)$

- I. $L(v_1+v_2)$ is the same meaning the sum of $L(v_1)$ and $L(v_2)$, using the linearity of the function of L (vector addition character of the function of L).
- II. $L(2v)$ is the same meaning the scalar multiplication of the scalar 2 and the vector $L(v)$, using the linearity of the function of L (scalar multiplication character of the function of L).
- III. $L(-2v_1 + 2v_2)$ is the same meaning of the sum of scalar multiplication vector $-2L(v_1)$ and scalar multiplication vector $2L(v_2)$, using the linearity of the function of L (linear combination character of the function L).
- IV. $L(v)$ is the same meaning of the representation of general form of vector v , using the linearity of the function L to construct a linear combination $c_1v_1 + c_2v_2$ with c_1, c_2 represented by the two independent variable scalars on the number lines.

Students' answers could be divided into two main types:

- a. the 'Prototypical' solution
- b. the 'theoretical' solution

a. The students in this group worked on the equation $L(c_1v_1 + c_2v_2) = c_1L(v_1) + c_2L(v_2)$. They were trying to find some conditions on the variables and vectors, for which the left hand side of the linear equation was identical with the right side in the all questions. For the first three question, they were able to find such conditions, and their answer to the questions was 'these questions are easy and we could solve them'. They explain that using from the equation $L(c_1v_1 + c_2v_2) = c_1L(v_1) + c_2L(v_2)$, we select $c_1 = c_2 = 1$, then we obtain $L(v_1 + v_2) = L(v_1) + L(v_2)$. By the same manner, if we select $c_1 = c_2 = 1$ and $v_1 = v_2 = v$, then we obtain that $L(v + v) = L(v) + L(v)$, so that $L(2v) = 2L(v)$. For the last question of the problem, their answer was 'this question is not easy and not we couldn't find to general formula of the linear transformation'.

b. The students in this group solved the questions in the manner expected. They used the number lines for the scalars, and then showed that by moving the points on the number lines the scalars could be made variable.

It is possible that, in the above activity, some students had difficulty because the equality $L(c_1v_1 + c_2v_2) = c_1L(v_1) + c_2L(v_2)$ was dependent on the scalars of c_1 and c_2 . In question iv the students could not give any concrete values or conditions on the variables. A student's prototypical solution is also is a presentation of a thinking way of the

student who prefer to learn a course by producing written and visual expressions formally similar to the expressions by the teacher. If we analyze the above exercise in this perspective, the equation $L(c_1v_1 + c_2v_2) = c_1 L(v_1) + c_2 L(v_2)$ has the same meaning with the concept of linear transformation, and is in a simple position to create the typical expressions that can be performed in the lecture.

Prototypical solution type is a solution way that better reflect the understanding of mathematical concepts in terms of prototype examples. According to this type, understanding of linear transformations can be organized as follow: Linear transformations in the R^2 -plane have some actions called rotations, projections, shears, and their combinations. For the linear equation $L(c_1v_1 + c_2v_2) = c_1 L(v_1) + c_2 L(v_2)$, students easily created vectors $L(v_1 + v_2)$, $L(3v)$, $L(-2v_1 + 2v_2)$ in questions i), ii), iii) and iv) the 'Linear rotation by an angle, a reflection, shears or possibly some combination of these vectors. In the question (d), the image of an arbitrary vector v was to be constructed. Students tried to figure out if L is not one of the known linear transformations, a rotation, a reflection, or a shear, or possibly some combination of these action, by trying to find the relations between the vectors.

RESULTS

Prototypical solutions of the linear extension problem is a certain level understanding of linear transformation. The students are expected to learn the matrix representation of a linear transformation. Understanding of matrix representation determines this transformation uniquely with respect to a basis, have the same meaning with understanding the Linear Extension Problem. It is easy for students to learn the definition of the matrix representation and apply it exercises following its definitions. The knowledge does not stay a long time in their mind to reorganize the conceptual relations with their other knowledge about linear transformations.

The distinction between theoretical and practical thinking is a methodological and pedagogical distinction. Scientific knowledge is theoretical but scientists do not always think in the theoretical way. Learning mathematics with prototypical examples can be regarded as a necessity from an epistemological point of view if we assume that theoretical way is about something other than itself.

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Study On Developing The Assisting Program For Customized Housing Design For The Elderly

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ABSTRACT

This study aims to develop an assistance program for the customized housing design for the elderly, which is based on the rapid growth of the elderly and the increasing needs for better residential environment aroused by economic development and growth in income level.

Today we are facing various problems resulted from rapid increase in worldwide the elderly. In 2026, Korea will enter a super-aged society, which means 20% of population will be the elderly. Aging phenomenon affects various industries quite . It is also making big change in the elderly housing market too. The elderly are not simply weak and in financial need any more. Now they have high marketability and new value. The elderly users tend to participate actively in designing the house.

In designing housing, bidirectional communication between users and architect is essential. For this, users must have certain amount of knowledge in architecture and need to express their requirements clearly. However, there are communication problems resulted from the lack of architectural knowledge.

Therefore, this study sets its goal to develop the assisting program for customized housing design for the elderly through harmonious communication with the elderly, the future key users in the industry. For this, literature review related to the elderly, interview, and user survey were conducted. Additionally, in-depth interview targeting the elderly and architects was conducted to compensate the defect.

Based on this research, for the basic knowledge of architecture of the elderly users, a learning model needs to be developed considering physical, psychological, and social characteristics of the elderly, and a learning model suitable to the characteristics of the groups needs to be proceeded. Also, the methods of participation and communication need to be developed through proper combination of “design” and “selection for menu and option”. In conclusion, this study suggests the direction of future research for developing assisting program by the combination of the way of learning and communication.

Through this study, it is possible to increase the quality of the elderly housing. Also harmonious communication with architects through the assisting program will raise the user satisfaction. In the future, the assisting program proposed in this study will be developed to be applied to real users.

Keywords: the elderly, assisting program, customized housing, education, communication

INTRODUCTION

Our society is facing diverse problems in varying degrees owing to rapid increase in the elderly. Problems deriving from such demographic change had constantly been placed at the center of discussion since the 20th century, and Korea is no exception, with the elderly taking up 13.1% of the national population in 2015. This figure directly implies that Korean society has entered Aging society; being the 2nd fastest pace towards such tendency in the world. At this rate, Korean society will have stepped into what we call ‘super-aging society’, with the elderly rate rising to 20% of the entire demographic (Asia-Pacific economic status report-adapting to the changing world). This social phenomenon is presenting itself with a huge influence in various industries, which can be most observed in developed countries. It is influencing growth in health, education, finance, real-estate loan, leisure, telecommunication, and petroleum chemistry industry. Thus, it is required to change the conventional views on the elderly as weak and helpless, and adopt a new perspective to consider them as social group with remarkable marketability, and new values. With such change in aspect, various studies about the elderly have been conducted.

According to Lee and Lee (2015), changes in behavioral/life pattern has been observed since Korea’s entrance into aging society, and the elderly presents themselves with more economic/physical independency with stronger sense of autonomy. Another study by Lee and all (2001), with continuous economic development and growth in

income level, the desire for improvement of living quality has increased, and the users select the sites actively and participate in housing design to realize their desires. The elderly, however, in architectural design, requires more attention due to their unique psychological, physical, and social characteristics when designing their living spaces. In planning a living space that would precisely meet the user's needs, mutual communication is imperative method that is not sufficiently met with the elderly due to their lack of knowledge in architecture and physical difficulties. Therefore, for residential design for the elderly, it is required that the users themselves to be equipped with certain degree of architectural knowledge and education in order to deliver their needs to the architects.

SCOPE AND METHODS

This study intends to develop an assistance program for customized housing design for the elderly, which will be done by attaining an in-depth understanding of particularities of physical, psychological, social characteristics of the elderly by reviewing advanced researches regarding the elderly, selecting pedagogical & communicational methods that would best serve in developing architectural knowledge for the elderly, and reinforcing theoretical background by interviews with both architects and the elderly.

Designing a customized housing for the elderly requires adequate communication tools and methods between the residents and the architect, and a learning model through reviewing the characteristics of the elderly.

The detailed procedure of the study is as follows:

First, through literature review, selection of learning method & communication method based on the analysis of the characteristics of the elderly is conducted.

Second, preferred communication method and learning method is analyzed through user survey and interview with the elderly and the architects.

Third, adequate architectural learning model and communications method and tools are selected by classifying the characteristics of the elderly based on literary review, interview and survey.

Forth, a direction for an assistance program for customized housing design for the elderly are suggested based on the results above.

LITERATURE REVIEW

Defining the elderly and analysis of its pedagogical characteristics

Kang(1990) defines the elderly by 'those individuals who are comparatively incapable of leading a normal life due to apparent aging in both psychological and physical aspects, though the degree might differ amongst individuals'. Also, advanced studies state that they do present a set of distinguished characteristics that separates them from other demographical groups in terms of physical, psychological and social perspective; all of which are generally perceived as to be 'inferior'. Physical wise, they have limitations of movement, longtime education due to their declining height, weight, bones, muscle, intestines and respiratory capacity. Psychology wise, they suffer from loss of urge for learning new things, declined active problem solving capacity, loss of confidence and passion, and depression due to sentiment, attachment, reminiscence, dependency, emotional rigidity and introverted personality. Also, in social aspect, their changes in social status and roles, declined economic and intellectual capacity, change in lifestyle, relocation of habitat, they face related outcomes such as decreased chance of information acquisition, declined radius of activity and increased leisure time, and changes in interacting social classes.

Shin(2007) claims that it is not enough that we base the education of our the elderly on demographical statistics and socioeconomic traits, and will have to take into account their value, consumption, leisure and other in-depth understanding of their subjective and cultural tastes, along with a pedagogical method that differs from other demographical groups. In Korea, education for the elderly are conducted at class for the elderly, the elderly welfare center, life-long educational centers with university affiliation and religious centers; however, current status is hard to get a grasp with not even accurate statistics regarding the issue is provided(Lee, 2015)

There exists however a social bias that is represented simply by the phrase 'old dogs can't learn new tricks', saying that the elderlies are incapable of learning or adopting new skills or knowledge. Such bias derives from other set of prejudices that in the process of aging they are thought to lose their creativity, learning capacity and intelligence; however, such prejudices have proven time and again by advanced studies to have been a socially constructed bias.

Hwang(2009) suggests that increase of the elderly with high educational background means that we could assume that the elderlies now possess capacities to develop professional knowledge in diverse fields. This implies that the elderly could attain professional knowledge on architecture. The growing level of educational attainment of the elderlies along with the rise of income level stated by Lee ad all(2001), and changes in behavioral patterns to a rather more active and autonomous one pointed out by Lee(2015)-all these changes leads to the elderly's tendency to actively trying to improve the quality of their living condition.

Studies regarding the learning capacity of the elderly mostly reach to an agreement at one point; that the interpretation of conclusion of respective studies are to be carefully done, for it requires great level of sophistication to attribute one's learning capacity to one's age. Here it is important that we distinguish 'learning capacity' from 'academic achievement'. Single most important factor in the education of the elderly is time, since it requires a certain amount of time for them to effectively absorb the materials and concepts they have learned, rather than short time memorization-and-exercise. Though the elderly might do poorly in terms of academic achievement when put to learning at latter situation, their outcome (information recall) is shown to be far better when given a rather long length of time. Thus, we could observe that in discussing the learning capacity of the elderly, the point is not whether they have successfully stored the information, but the condition of recalling the already stored information. Time has great impact on successful call-back of information, and for the elderly, it is absolutely vital that they are given enough time to fully search, regenerate, replay, react to the information they had just stored; when this is done, education for the elderly would face less difficulties. Thus we must recognize that changing the educational conditions and environment is the vital task that lies ahead of us, and that we should provide other types of teaching methods or environments than we do to students from other demographic backgrounds. Also, we must encourage the elderly students to form their own educational environment and conditions.

Analysis of communication model for designing customized detached residences

A construction project is usually order-made, which begins with order from user or proprietor, and involves participation of user, resident, designer, constructor, in varying degrees (Cho and all, 2006).

In case of detached residences, contrary to the supplier-oriented, multi-unit residences, the resident takes part in the designing process with great enthusiasm in order to fulfill his/her needs and desires (Lee and all, 1999). Therefore, in this case, the resident's role and his/her architectural knowledge are important, and the communication with the architect has greater impacts.

Joost van Andel(1997) emphasizes the importance of user-oriented designs for a new building or remodeling of the crucial parts. This means that during the design process by an architect, it is vital that the future residents, the users, express their demands as detailed as possible. In addition, Kim(2006) also points out that the users should fulfill their role to ensure the project to end successfully. It is general, however, that the users face difficulties in playing their part due to the lack of architectural knowledge.

Designing a detached residence is usually composed of composition/width/deployment of chambers, section and level component (Heo, 2015); the user is not necessarily required to be aware of all these procedures to a professional level, and would suffice to be equipped with adequate level of knowledge that would be required for a smooth communication with the architect. Also, the architect needs to understand the user's characteristics and reflect it to the design in order to design a residential space (ibid). For accomplishing such task, the architect utilizes his/her own knowledge to interpret the general characteristics of the user to design space, or reflect the demands and needs of the user through interview or letter.

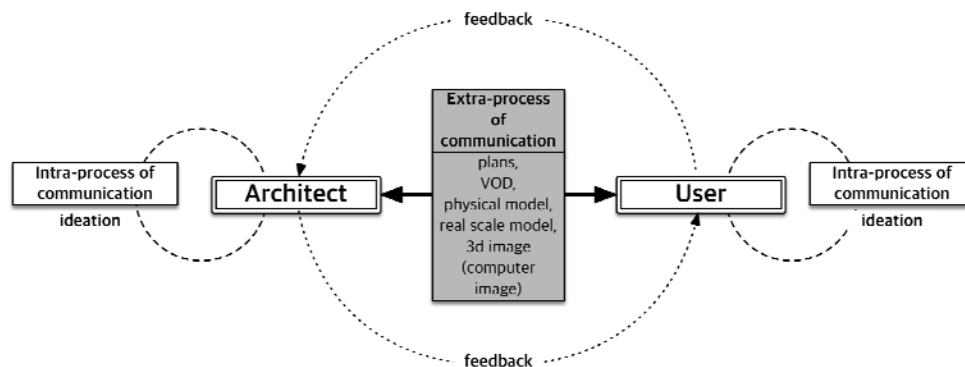


Figure 1. Communication(User-Architect)

Kalay(2004) defined 'communication' as the process by which the provider of the information transmits the information to the receiver. She distinguished the types of communications into intra-process of communication and extra-process of communication.

Intra-process of communication(IPC), also known as "ideation", refers to the process by which the architect makes descriptions through media(ex: sketch), based on which the design will be developed.

Extra-process of communication(EPC) refers to the process where the idea is shared with the user via media(plan, model, 3D image), where opinions are adjusted. In the case of EPC, it is the other party who interprets the results expressed through the media. Therefore, it is common that the result is misled, or not be

interpreted at all. Design communication is even more limited when the end-result is expressed through a more simplified form (Hong and Yoo, 2014).

Cuff(1996) suggested that most of the users or users fail to fully comprehend the architect's sketch or model, and arbitrarily interprets the suggested media descriptions based on their experiences or knowledge. Hong and Yoo(2014) also pointed out that in a cooperation design between different professional parties, use of rendering images or blueprints have apparent limitations in delivering user's complex actions that takes place in 3 dimensional space, and that design ideas can successfully developed only through active mutual communications<figure 1>.

FINDINGS

Learning based on characteristics of the elderly

According to the aforementioned analysis, the elderly has some distinguishing characteristics that separate them from other demographic groups. This study have classified those characteristics into physical, psychological, social characteristics, and analyzed their impact on learning capabilities.

Physical characteristics change as height/weight and BSA declines, and as respiratory system, kidney, blood circulation, digestion system, and nervous system starts to fail, with changes in postures as well. Also, decrease in learning capacity and cognitive ability is observed in nervous system that has to greatest impact on learning capability. Therefore, alternative method of learning is demanded for education for the elderly, such as online-education or visiting-education that does not require the elderlies to leave their residence due to their limitations in movement, or short-time learning composition due to limitations in course duration time caused by decreased cognitive ability & learning capability

In psychological aspect, changes in their emotions show loss of passion and liveliness, confidence. Depression commonly takes place as well. Attachments to familiar object increase, while refusing new lifestyle patterns, which again leads to dependency and introverted personality. Therefore, individual goals for leaning are important for continuous progress and advancement. In the case of online-education however, it is rejected by the elderlies who are born usually around '50-'60, who has difficulties adapting themselves to smartphones and computers.

Socially, they are usually met with loss of social status, decreased role in the family hood, changes in the social classes they interact with, loss of spouse. Loss of economic capacity, decrease in range of activity, increased leisure time, migration due to decrease of family member is also common; of which changes in interacting social classes, increase of leisure time and weakened economic capacity would have impact on the learning aspect. Therefore, online-education that is economically less-burdening could be selected as the adequate education method. There is however a study that suggests a classic-learning method would turn out to be more adequate in case when they devote much of his/her time for aged-communities; thus it is important that we select learning model that would fit individual traits<table 1>.

Table 1. The elderly classification results

Type	Item & Factor scores	Cronbach's α
pursuit of happiness through self-development	4-0.888, 24-0.853, 17-0.853, 11-0.809, 8-0.715, 21-0.676, 15-0.668, 29-0.625, 28-0.606, 26-0.511	0.943
future oriented lifestyle	10-0.850, 23-0.771, 27-0.669, 30-0.666, 16-0.645, 3-0.582	0.847
anachronistic	5-9.829, 25-0.825, 12-0.770, 2-0.513, 32-0.401	0.768
knowledge pursuing	14-0.841, 31-0.732, 13-0.632, 1-0.598	0.743
socially active	7-0.752, 19-0.602, 6-0.550, 9-0.481	0.642

In conclusion, a survey had been conducted in order to classify the elderly into different groups in accordance to their specific traits; a modified version of VALS test was put to use as a way to classify the characteristics of the elderly. VALS stands for Value and LifeStyle, is a model developed at SRI International, California for defining co-relationships between consumer characteristics in the 70' U.S. Using this model provides the researchers with consumer types and traits, by assessment of demographical characteristics and the result of the survey, which takes place before the assessment procedure. This study had modified the VALS model in accordance to particularities observed in Korea, and conducted with 32 questions.

Distribution of the survey was done via a web-service called the Survey Monkey, and had surveyed the

elderlies over 60; 85 questionnaire had been used for analysis, which were randomly distributed through email and internet communities with high average age. Coding was conducted after verifying the adequateness of the collected data, which was done using SPSS for Window 18.0. Factor Analysis was used for the analysis method, which lead to 5 groups and factor loading.<table 1>.

Group 1 turned out to prefer trying out something new, challenging, pursuing exotic and new things, and to have high desire to lead a happy life. Also, the cronbach's α is 0.943, explaining 21% of the entire variance. Hence in this study we will name them as 'pursuit of happiness through self-development' type. This group had high desire for learning in general, preferred a conventional type of learning to an online lecture, and was willing to actively reflect their opinions and voices in designing their residence.

In the case of group 2, we were able to observe that they enjoy making things for themselves, and are interested in hardware and machines. The cronbach's α is 0.847, which explains 10% of the variance. Hence in the study we shall name them as 'future oriented lifestyle' group. This group is capable of using computers, prefers online lecture, and is willing to actively engage in residence designing as did group 1.

Group 3 are particularly religious, and think that the television these days have too much sexual contents. Cronbach's α is 0.768, explaining 9% of the entire variance. The study will classify them as 'anachronistic' group. This group had less interest in education, and showed far less engagement when designing their residence.

Group 4 is intellectually active, who are interested in theoretical discussions and consider themselves as to be intellectual. Cronbach's α was 0.743, which explained 7% of the entire variance. The study have classified them as 'knowledge pursuing' group. This group had the highest desire for education. But their preference between two types of classes were hard to distinguish, and were passive in making plans for their resident.

Group 5 liked being the head of a group, and had tendency to trying to lead others. Cronbach's α was 0.642, which explained 5% of the entire variance. This study named group 5 as 'socially active' group. They showed similar patterns regarding education with group 1, but preferred conventional method of education to its online counterpart.

Communication for designing a customized housing

There would be various ways for describing a space, but the point is that they are for communication regarding spatial information. Especially, in communication process that arises between an architect and a user, space description realizes in concrete form what only exists in the architect's imagination through conceptual and cognitive ways. There exist many preventive methods that aim to minimize the loss of information during the process. Text, plan, section, concept, diagram, table, charts are methods that belongs to conceptual description, whereas model, real-scale-model, computer image, VOD(video on display) belongs to cognitive description method.

During the interview with the elderly and architects, the elderly had low level of space comprehension with conceptual description methods; whereas with real-scale-model showed the highest level of understanding, followed by VOD. We could also observe how the elderly have tendency to describe a space in accordance to their experiences, and requires comparison with already-existing experience to fully comprehend a new space.

The following chart shows the pros and cons of respective participation methods.<table 2>.

Table 2. respective participation methods

Methods	strengths	weaknesses
Design method	Customized designing enabled in accordance to the characteristics and traits of the resident	Communication between the architect and the user is vital, which requires the user to be equipped with certain degree of architectural knowledge
Selection method for menu and option	Residential space that would correspond to the characteristics of the resident could be selected based on statistics and architectural planning	Less customizable compared to design method, and has limitations in selection due to limited number of options
DIY method	The space could be designed fully for the resident due to his/her active participation in design process	Requires high-level of architectural knowledge and skills, with high rate of faults due to construction by un-skilled labor
Variable module method	The space is open to modification due to its initial openness to variables	Cannot fully reflect the residents needs in detail due to limitation in modification

User participation in residence design aims to reflect the main demands of the users to designing procedure. There are several ways by which this is done; Cooperative method where the user takes part in every procedure of the design and construction, from planning to management, Design method where the structure is designed by the architect whereas the interior is mainly designed by or cooperation of the user, Selection method for menu and option where the user selects from several blueprints, or selects composition, finish or part of the facility,

DIY method where the user takes over from the construction phase, and the Variable module method where the user takes part in a certain degree in construction and utilization phase.

Unlike other demographic groups, in designing detached residence, the elderly have difficulties actual participation due to their characteristics which are usually limitations of various sorts. Therefore, the participation method for the elderly in designing a customized detached residence for the elderly, will have to be composed of design method, Selection for menu and option and variable module method.

Therefore, in selecting the necessary communication method for developing a user participation method that is aforementioned, we have conducted an interview of 5 the elderly and 3 architects. The former, are composed of those who are willing to construct a detached residential space for preparing their later-life. The interview was oriented in a way that it would give us an idea if they are aware of how they would deliver their requirements to the architects or if they have any architectural knowledge at all. The latter party are experienced group of architects who have accomplished numerous building projects and are still active (Seongjin-Baek, Mija-Lee, Jinkyu-Park). We have asked in detail of the communication method between the user and the architect, means used for communication, and their emphasis when they design a customized detached residence for the elderly.

The result of the interview revealed the following: the elderly prefer design method, but selected Selection method for menu and option considering their economic and timely aspect. Also, in the process of communication, they had tendency to make a spatial description in based on their experience when they visibly confirm a space, and had low understanding of sketch, 3D rendering image and blueprints.

As for the architects, they assume that the selection for menu and option would be much more convenient for both the user and themselves, and that design method comparatively requires more time and economic resources. They stated however, that through design method they would be able to reflect the characteristics of the users more than any other methods, and that the end-result would be closer to what we would call 'customized'. In cases when the user lacks in architectural knowledge, the communication between both parties are more apt to suffer difficulties, which would result in unclear delivery of the requirements of the users to the architect and to dissatisfaction on the end-result.

Furthermore, it is difficult for an architect to understand the user's demands when smooth communication fails. Therefore, architects usually explain the project with their portfolios, and depend on their intuitions to understand the characteristics and requirements of their users.

In conclusion, we have induced the following during the process of our interview: the communication method for customized detached residence for the elderly is to allow indirect experience of space-composition of the residence via video or scaled-down models, by combining design method, selection for menu and option. Also, grasping the characteristics of the user should be supported by a more quantitative frame or a program, instead of current practice of relying on the architects intuitions.

CONCLUSIONS

This study aims to develop an assistance program for the design of the customized residential for the elderly, which is based on the rapid growth of the elderly, and the increasing needs for better residential environment aroused by economic development and growth in income level.

This study found that the elderly require special methods of communication and education in comparison to other demographic groups. Also, according to the survey and interviews with the elderly and the architects, the more trouble with the communication between the two parties, the lesser the user satisfaction turned out to be. This results from the lack of architectural knowledge of the users, and of the efficient means of communication.

This study was conducted through the literature review, user survey, and interviews. Then, the elderly were classified into 5 groups in accordance to their physical, psychological, and social characteristics, and the educational models corresponding to each group were illustrated. Also, the communication method and tool for residential design for the elderly were selected. Therefore, the assistance program for designing customized housing for the elderly would employ the following procedure & components<figure 2>.

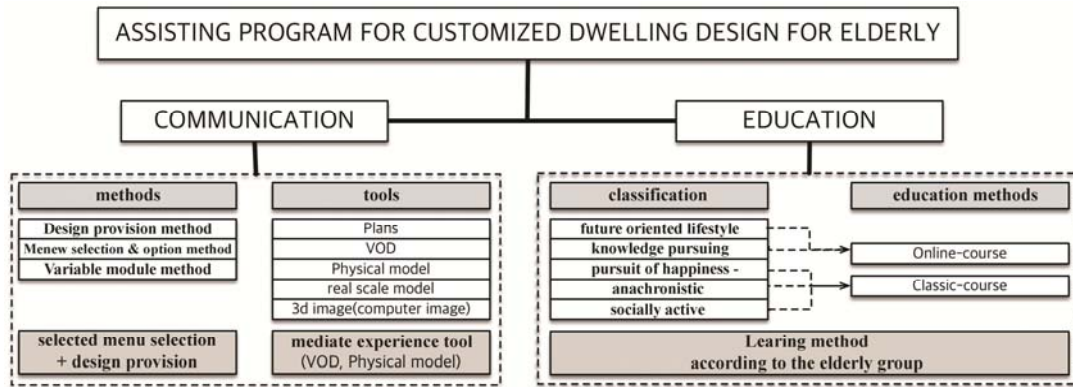


Figure 2. Construction of assisting program for customized housing design for the elderly

Lastly, the following conclusion can be drawn out to develop an assistance program for the customized housing design for the elderly.

- 1) Communication method is to be formed by the combination of design method and selection method for menu and option. First, the user should be able to choose the designed residential space via selection for menu and option, and it should be provided after re-design by the architect.
- 2) Communication tool is to maximize the utilization of the VOD in order to provide indirect experience of the residential space. It has been shown that elderlies are incapable of sufficiently recognizing and understanding a space with mere 2D images. Therefore, use of VOD is necessary to ensure that they have a rich understanding of the space via indirect experience; using physical model alongside with the VOD would make the whole process even more efficient.
- 3) In composing a learning method for the elderly, it is vital that we have understanding of individual characteristics of the elderlies, and select the corresponding learning method. Therefore, this study classified the elder people into 5 groups, and assigned them with online-course/classic-course.
- 4) Lastly, for a customized residence design for the elderly, it is imperative that the user's needs be reflected in the project by quantifying their requirements. Therefore, a program that is able to grasp one's characteristics in statistical, psychological aspect should be used, and user's requirements are to be able to be chosen or composed by the program as well.

The following <figure. 3> shows the overall results of the above, which configures the assisting program as the flow chart..

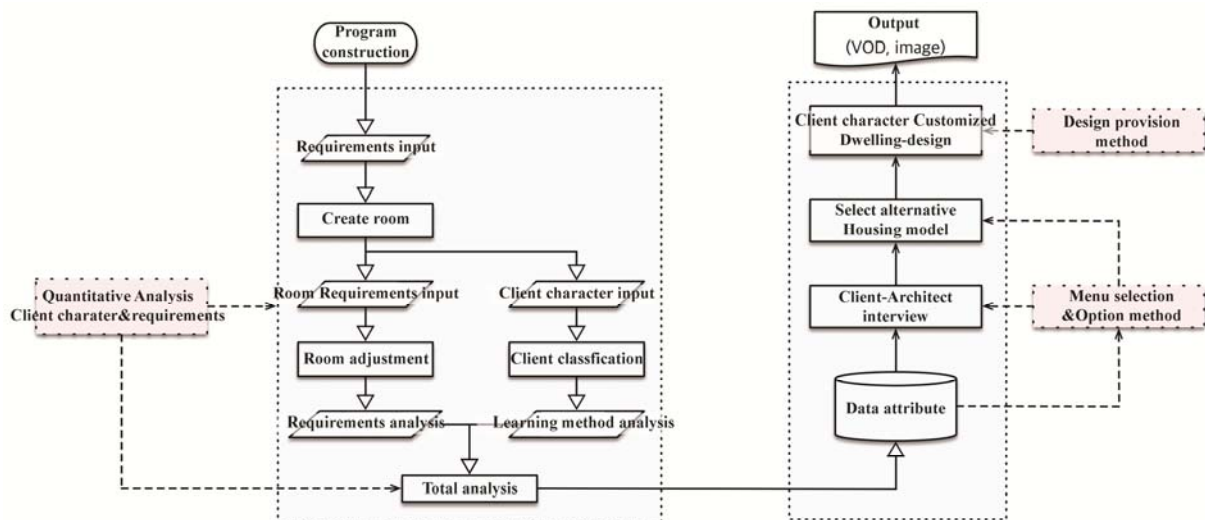


Figure 2. Assisting program flow chart for customized housing design for the elderly

It is expected that such a research process would be able to support a smooth communication between the users and the architect in development of the customized housing for the elderly. Also, the user satisfaction of the residential space would be improved drastically if the user themselves acquire a certain degree of architectural knowledge and actively engage in the designing process.

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Syllabus or Silly-Bus?

A Suggested Technology, EQ And Performance-Based Non-Native ELT/EFL Teacher Training Syllabus (TTS)

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ABSTRACT

This paper covers a ground search for implementing theoretically and practically a suggested technology, EQ (Emotional Intelligence) and performance-based non-native ELT (English Language Teaching)/EFL (English as a Foreign Language) Teacher Training Syllabus (TTS) design. The so-called syllabus design components were determined through a questionnaire conducted among the non-native teachers of English. All the qualitative data were fed into computer and analyzed in *IBM SPSS Statistics Program version 22*. The results of data analysis are studied in the research section of this study and a suggested syllabus design is presented with all the components related to TTS. Besides, EQ principles, multimedia factors, the five Ps (Programming, Pointing out, Pupils, Pre-training and Post-practice) effect on EQ-based syllabus design and the role of EQ competence (Goleman, 1995, 1998) issues in designing up-to-date TTS are covered. A pilot syllabus and program schedule with some objectives and syllabus content that could be implemented in ELT pre or in-service teacher training based on four stages such as technology in FLL (Foreign Language Learning)/ELT; EQ and ELT/EFL teachers; performance and practice; case study, act-out and role-play and together with pinpoints, contents, objectives, achievable goals & expected outcomes and specifications are fundamental issues this study is also based on. The analysis and the results of a survey are studied as a supporting basis for suggested syllabus design, and the drawbacks and problems encountered are covered in terms of designing such pre or in-service teacher training syllabus and the conclusion drawn out of the data analysis and overall study guides us towards a new insight in TTS quite distinctive from a traditional ELT/EFL course syllabus.

INTRODUCTION

There have been numerous studies over the past thirty years on the use of technology and EQ competence issues along with Multiple Intelligences (MI) (Gardner, 2010) in teacher training programs as well as teacher training syllabuses to train both native and non-native teachers of ELT/EFL.

Teacher training and syllabus design have been the hottest issue ever since foreign language teaching has been taken into account. In this study, non-native ELT/EFL teachers, teaching environment, technology to be implemented in language teaching and EQ competence issues in terms of training non-native teachers are covered and a new TTS design is studied. Non-native teacher (Medgyes, 1994) training syllabus and a general English Language learning/teaching syllabus design needs to be extensively explained and studied in terms of presenting distinctive features of both types. Almost more than thirty years ago the types of syllabus were discussed (Stern in Brumfit, 1984:7-11) and various views on syllabus types and some experts' opinions (Candlin and Breen, Widdowson and Brumfit, Yalden, and Allen in Brumfit, 1984) in the field were shared to some extent.

Various institutions and foreign language teacher training certification programs offered many courses on primarily non-native teacher training in ELT/EFL. All these efforts have been done to increase non-native teachers' qualifications teaching to any groups ranging from young learners to adults for such purposes as general English or ESP (English for Specific Purposes). The target group of teachers' profile may vary from student teachers to experienced/inexperienced teachers of ELT/EFL. The pre- or in-service teacher training has been significantly important for both student teachers and teachers of ELT/EFL; that is why this study investigates how teachers can be trained through a formative syllabus covering technology and EQ competence issues. So, "the effectiveness of in-service ELT professional development training is affected by trainers' understanding of the process of change that professional development actually involves for teachers" (Barduhn and Neher, 2012: 219). However the integration of changes of teachers' teaching style and the learners' consideration are strictly based on 'cultural and institutional philosophies of learning and teaching' (ibid.) In this context, the issue is two-fold: first the ELT/EFL teachers' mentality change of foreign language teaching and their in-class attitudes toward learners and the latter is the institutional consideration of these changes brought into non-native teaching environment/classroom by teachers.

ELT/EFL teachers are expected to assume various roles such as "controller", "organizer", "assessor", "prompter", "participant", "resource", "tutor" and "observer" (Harmer, 2003:58-62). These are a few of the teachers' roles they have to assume as a teacher in non-native teaching environment, and they have to carry out

language teaching business even though there have, from time to time, been many problems some of which depend on teachers' and learners' attitudes while teaching and learning takes place. So, this paper seeks a solution to teachers' and learners' unexpected emotional reactions during teaching and teacher-learner-teacher interaction. In addition, teachers, no matter experienced or inexperienced, might be expected to assume more roles in ELT/EFL as professionals while actively involved into teaching as "needs analyst", "curriculum developer", "materials developer", "counselor", "mentor", "team member", "researcher" and "professional" (Richards & Lockhard (1994: 97-112). Consciously or unconsciously we all assume some of these roles at different times while teaching a foreign language because teachers are said to be "all performers in the classroom at some level" (Harmer, 2003:63). Whatever the role the teachers assume in teaching, it is quite clear that they have to interact with learners and pay attention to learners' attitudes towards foreign language learning. So, while learning takes place, there is always an emotional acting or behavior between teachers and learners; and implementing the teacher training becomes inevitable either in pre- or in-service teacher training curricula.

A Suggested Technology, EQ and Performance-based non-native ELT/EFL Teacher Training Syllabus (TTS) is not designed to train ELT/EFL teachers on how to teach a foreign language with the content given in the syllabus of a coursebook. This specifically aims at enabling non-native foreign language teachers to gain skills on implementing EQ principles and multimedia technology into EFL teaching practice or improve some foreign language teaching abilities through practicing problem solving, conflict management and error correction and various issues with all age groups and at any level in formal instructional environment. Although foreign language teachers have various backgrounds and teaching abilities, they might be trained through such a syllabus particularly based on emotional intelligence, recent technological developments, such as social media, smart phones and the internet sources etc. to instruct foreign language components in multimedia-oriented classes as non-native ELT/EFL teachers.

A syllabus is expected to be a guide, plan or a road map that Widdowson (1984: 25 in Brumfit) states it as a convenient map for teaching certain components. However Yalden (1984: 14 in Brumfit) claimed that it should also produce "pragmatic and pedagogical efficiency" which is definitely based on learners' acquisition/learning of a foreign language. What constitutes our suggested syllabus, which is rather different from a teaching syllabus as a guide, is the non-native teachers' managerial skills and in- class interaction, implementation of recent technology and teachers using drama skills in language teaching. TTS to be covered in this study will have some diversities from FLT syllabus to be implemented by native or non-native teachers. Nevertheless, Candlin (1984: 32 in Brumfit) emphasizes that idea as "if the syllabus is sensitive to this disparity, then it can allow for formative experiment and evaluation and consequent changes in both content and direction. If it is insensitive, then both teachers and learners become alienated and incapacitated servants of a set of requirements at odds with their individuality and with the realities of the classroom." Non-native teachers in TTS are trained to a certain extent as how skillfully they might be able to manage the class and guide them towards learning in parallel with language teaching syllabus designed in advance for the purpose of educating foreign language learners.

A syllabus may clearly specifies learning content but as it was explained by Brumfit (1984: 80) "it may not be able to specify teachers' classroom procedural choices without limiting them so much that they are unable to respond to the immediate personal and interactional needs of individuals or groups in the class." That is what we expect to identify in this study and to find a clear cut solution through training ELT/EFL teachers on not how to teach a foreign language but how to carry out language teaching instructions with learners through solving problems beyond language teaching in a non-native teaching environment. The foreign language teachers are expected to be learners' partners in a non-native learning environment. They should not assume roles of a teacher who teaches the foreign language in a very formal environment without any interaction and strictly following the teaching syllabus and what is in the book; that is to say, they are not there for passive teaching but actively involving in Foreign Language Teaching (FLT) itself. So for the sake of this purpose, learner motivation, clear cut interaction principles, strictly applying EQ competence issues specifically empathy while teaching/learning takes place are to be mentioned a few. Teachers, experienced or inexperienced, may held themselves responsible to share in-class teaching activities with learners and are not apt to consider FL learners as captive audience. Besides, roleplay activities may give them an opportunity to make their classrooms as a teachable and learnable place, because as defined by Eslami, et.al. (2010: 228) role play activity in FLT "... an interactive and enjoyable way to practice professional language use is role-playing. Suitable for both native and non-native English speaking students," However, this may also help them to reflect their abilities while teaching in a non-native environment and in this context "the benefits of role-playing activities in the course of teacher preparation are manifold. They increase trainees' independence, improve their analytical abilities, help to apply academic knowledge to real life situations, and provide an opportunity for reflective practice" (Malderez & Bodóczy, 1999).

PROBLEM DEFINED

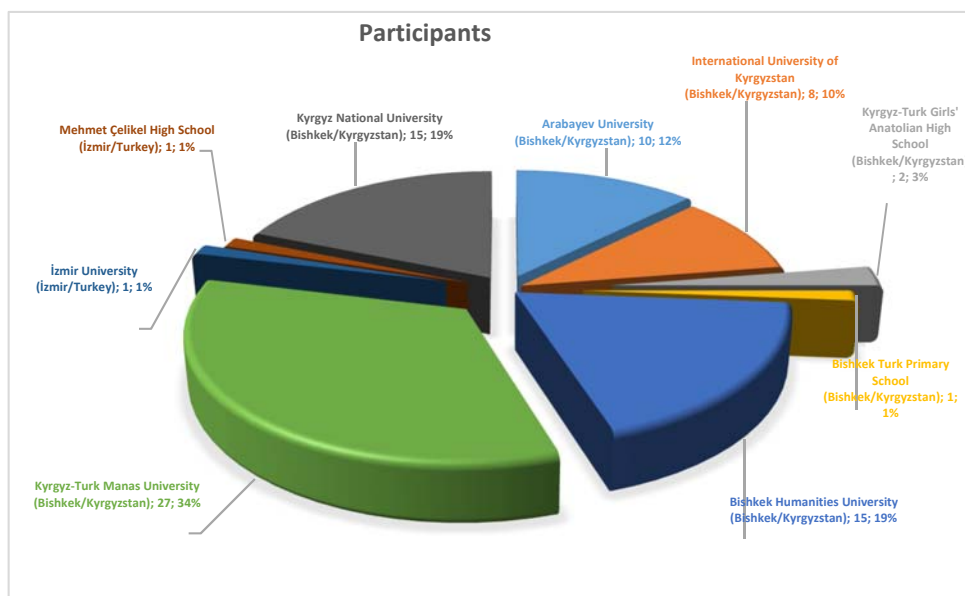
Even though learners of a foreign language, non-native teaching/learning environment, teaching materials, mixed ability groups, learners' FLL ability, large-size classes, using modern technology and the purpose of foreign language teaching are considered to be rather significant in FLT, the non-native teachers' attitudes towards FLL/ELT, their educational background and their ability to teach a foreign language, emotional intelligence based on problem solving, class management, learner-teacher-learner interaction while teaching, teacher's tolerance, organization ability, showing empathy to learners especially who have got individual learning problems or slow pacers, etc. seem to be more important in teaching ELT/EFL in a non-native teaching environment.

So the coursebooks using multimedia, such as the internet, facebook, smartphones, notebooks, messaging all the way possible through present technology, learners' use of all technology and multimedia-based equipment and resources are considered to be supplementary components for implementing ELT/EFL in a non-native teaching environment. However, non-native teachers' presence in the teaching/learning environment is thought to be a key factor in order to establish a best way of teaching a foreign language to non-native learners. Thus, to create a better teaching atmosphere and environment, to establish a very comprehensible learner-learner-teacher-learner interaction, a best way of problem solving in FLL and to create emotionally safe non-native learning environment and comprehensible, sharing and caring type of interaction non-native ELT/FLT teachers should be trained with pre or in-service teacher training courses based on specifically technology, EQ and performance in the TT course content. In other terms, non-native teachers of a foreign language are those "who aim to develop learners instead of teaching them, who help their pupils to become independent (learning to learn), who provide students with motivation and interest for life-long learning and urge them to become autonomous learners, is essential in the education of the future" (Szucs, 2009).

METHOD

This study aims at non-native ELT/EFL teachers', experienced or inexperienced, perceptions, reflections and experiences on designing a task and content based non-native teacher training syllabus based on technology, EQ and teachers' individual performance in a non-native teaching environment. A total of 81 teachers (table 1) from different and various teaching institutions participated in this study. Most of the participants are university instructors (96%), while 4% are high school teachers and 1% is a teacher from primary school. 77 participants out of 81 in total are at tertiary level instructors teaching EFL. Their viewpoints had very strong impact on our research whether designing such a non-native teacher training syllabus covering above components is or maybe somewhat useful as for training the EFL/ELT teachers for the sake of improving learners' learning/acquisition of a foreign language and teachers own professional development as well. The questionnaire participants are comprised of four countries (Kyrgyzstan, Turkey, USA and Russia) so their consideration of TTS enforces our view designing such a syllabus solely based on teachers training that is significantly distinct from a regular foreign language teaching syllabus.

Table 1: Cumulative Distribution of the Participants' Institutions and Countries



RESEARCH QUESTIONS

The study covered the following demographic and research questions which had significant basis for investigation into ELT/EFL teachers' perception of designing such a syllabus based on various tasks and components different from syllabuses implemented in a curriculum by institutions. The research questions implemented, discussed and processed in this study are as follows:

1. Non-native teachers of English may benefit from the EQ-based ELT/EFL Teacher Training very much as a pre- or in-service training where they practice some teaching, student and classroom issues.
2. The pre- or in-service teacher training based on EQ principles may lead teachers to have a very high level of empathy in regard to overcoming students' EFL learning difficulties.
3. Not only EQ but also technology and performance-based pre- or in-service teacher training may help non-native EFL/ELT teachers to teach the Target Language better.
4. "All learning has an emotional base" said Plato; if we increase the EQ-emotional intelligence of language teachers, we can lead them to have better interaction with students and it may also help them to have a very good learning outcome.
5. Non-native ELT/EFL teachers' in-class interaction with students plays a very important role on learners' success in learning TL, so the implementation of such a pre- or in-service teacher training may increase their awareness of in-class teacher-learner interaction.
6. Even though the technology (internet, social media and technology-oriented language education) has increased rapidly for the last 20 years, EFL/ELT teachers' education through pre- or in-service teacher training based on technology, EQ and performance will help them to keep up with the recent developments in ELT/EFL and technology implemented.
7. "Error correction" is an important issue in foreign language teaching; so, as a non-native ELT/EFL teacher to participate in such a teacher training may help us to be more tolerant and lenient about correcting the learners' mistakes.
8. Foreign Language Learning requires to have a stress-free classroom atmosphere in order to get a better learning outcomes; so pre- or in-service teacher training based on EQ, performance and technology use for a short time may help teachers to realize the learners' fear, inhibition, reluctance and reasons of their demotivation while teaching the TL better.
9. Such pre- or in service trainings increasing teachers' and learners' awareness of teaching and learning problems related to technology, EQ, teachers and learners' attitudes towards TL and both learners' and teachers' in-class personal and social interaction may help build up a better teacher-learner partnership.
10. The pre- or in-service teacher training syllabus on Technology, EQ and Performance-based non-native ELT/EFL Teacher Training may be most helpful/useful for teachers teaching following group:

INSTRUMENT

In this study three-section survey (demographic questions, research questions and comment section) was used for data collection to be processed prior to design a suggested non-native teacher training syllabus from the respondents all of whom were teachers/instructors of ELT/EFL. The first section covered demographic questions (DQ) investigating subjects' background and were about the participants' (DQ01) nationality, (DQ02) experience of teaching in ELT, (DQ03) their participation in any teacher training in ELT at least 2 weeks and whether they believe or not (DQ04) that their participation in TT activities based on EQ, technology, student-teacher interaction and performance for at least two weeks can be useful in their professional development which had to be answered "yes", "no", "maybe", "not sure". The second section was made up of 10 research questions (RQ) in which respondents were requested to choose a number from 1 to 5 using the criteria, based on a five-point Likert-type scale (McLeod, 2008) "strongly disagree", "disagree", "undecided", "agree", and "strongly agree". The items in the research section of the questionnaire were based more likely on the respondents' individual ideas as follows:

- benefit from such a suggested syllabus,
- EQ principles to be implemented the syllabus, EQ, technology and performance based syllabus,
- Having high level of empathy for overcoming student's learning difficulties,
- the higher their EQ is, the better they teach,
- increasing their awareness of in-class teacher-learner interaction,
- help them keep up with the recent developments in ELT/EFL and technology implemented,
- expecting them to be more lenient and tolerant about correcting the learners' errors after such TT,
- help the realize the learners' fear, inhibition, reluctance, demotivation while teaching the TL better,
- learners' and teachers' in-class personal and social interaction may help build up a better teacher-learner partnership,
- (RQ10) asks about their ideas concerning such a suggested syllabus may be most helpful/useful for teachers with/for certain teaching groups (children, very young learners, young learners, young adults, or adults).

PROCEDURE

A suggested pre- or in-service technology, EQ and performance-based non-native ELT/EFL teacher training syllabus (TTS) was designed along with the results and comments given by the participants and the components of the syllabus were not completely discussed with the participants in the process of survey study. Yet this is thought to be a pre- or in-service syllabus suggestion, all the details to be implemented in the syllabus were not included in the survey items but the main concepts such as EQ, performance, technology and the activities were included to find out about the participants' point of view. The details of the suggested syllabus this study completely based on are as follows: the time and duration of the syllabus is four weeks and 52 hours in total. The syllabus has four stages; first stage is about technology in FLL/ELT; second stage covers EQ and ELT/EFL teachers; third stage is based on teachers' performance and practice; case study, act-out and role-play is the last stage. The pinpoints, contents, objectives, achievable goals and expected outcomes, and finally specifications to be considered (unpredictable drawbacks and problems) with detailed explanations for each stage are given in a suggested syllabus design as follows (table 2):

Table 2: A suggested pre- or in-service Technology, EQ and Performance-based non-native ELT/EFL Teacher Training Syllabus

Time & Duration			
Week 1 (10 hours)	Week 2 (12 hours)	Week 3 (14 hours)	Week 4 (16 hours)
Stages & Pinpoints			
Technology in FLL/ELT Stage: Recent Technology (multimedia equipment, smartphones, social networks, the internet, facebook, tweeter and etc.) used during teaching in non-native teaching environment	EQ and ELT/EFL Teachers Stage: Emotional Intelligence (EQ) & selected constructs to be utilized in teaching	Performance and Practice Stage: Practice with <ul style="list-style-type: none"> • Leadership in the classroom • Class management • Problem solving • Teacher-learner-learner - teacher interaction • Icebreaking • Helping decrease learner inhibition • Individual FLL problems and solutions • Difficulties teaching to mixed ability groups • Autonomous learning in ELT 	Case study, act-out and role-play Stage: Group activities, acting out, case studies and role-play <ul style="list-style-type: none"> • Individual Teacher's in-class experiences to be discussed • Role-play activities to find solutions to problems encountered while teaching • Differences and difficulties teachers distinguished as an experience • Case studies determined by teachers and finding solutions
Objectives			
At this stage, the trainee teachers will be helped to be familiar with using multimedia technology in FLL classroom and sharing their own experience they had in their teaching with other trainees. They will also experience as for how to use social networks, smartphones and its different functions, the internet to	At this stage, the trainee teachers will all be equipped with basic EQ principles and competence issues that might be implemented while teaching a foreign language in a non-native environment. This may also help them to find out their strengths and weaknesses in teaching and teach them the way how they might overcome	This stage seems to be the most important part of this training. What have been taught and shown at the first two stages will be practiced by trainee teachers with the help of the trainer(s). Peer group discussions, interactions and sharing experience among the trainee teachers will be encouraged. Specifically how to use technology, EQ competence issues basically showing empathy, organizing	At this final stage of the training, the trainee teachers may have the opportunity to share their own experiences, way of teaching a foreign language, individual differences, and specific considerations of ELT through act-out, role-play, and peer group discussions. This stage may enable them to show their week and strong sides in their teaching a foreign language as well as to realize learners' individual problems in FLL. Trainee teachers may also have time to practice what they have mastered so far in this

increase the technology awareness among them for only increasing learner motivation in ELT.	them. Each EQ competence issue may point out a new insight in ELT.	ability, management skills, etc. and applying the multimedia, the using of internet resources, how the smartphones (messaging, using whatsapp (and the like) applications may be used in ELT/FLL taking into consideration today's learners to be definitely proficient users of such technologies as citizens of digital technology at present.	training and may also show their ability how they may increase their teaching skills better. The main objective at this stage is to show the trainee teachers how they have improved their ELT skills with the help of technology, multimedia, individual practice/performance and mainly EQ competence issues might be implemented in ELT/FLL.
Achievable goals & expected outcomes			
Using technology as supplementary medium in ELT/FLL. Trainee Teachers are expected to implement technology and multimedia in teaching to help learners have better results	Practice EQ competence issues to be more skillful foreign language teacher and make local FLL environment friendlier by humanizing ELT. The expected outcome at this stage is that trainee teachers will achieve awareness of their EQ skills to be utilized in ELT. They will also be able to establish emotionally safe environment	At this stage, the trainee teachers will be able to apply EQ constructs and perform sample teaching instances and share personal or group experiences through their own performance and practice. The expected outcome may be their implementation of what they have practice in actual non-native teaching situations.	Goals: finding solutions to problems in ELT/FLL by way of acting out sample situations, practicing actual case studies and role-play activities as part of showing empathy to learners. As for the expected outcomes, the trainee teachers will be able to act out their teaching practice in various situations, role-play may help them to improve their empathy to learners and colleagues and case studies may help them mirror their own strengths and weaknesses in ELT as professional foreign language teachers.
Specifications to be considered (unpredictable drawbacks and problems)			
<ul style="list-style-type: none"> • Technophobia some trainee teachers might have. • Lack of technological equipment. • Being against using technology in-class foreign language teaching. • Keeping up with recent technology and developments in ELT/EFL 	<ul style="list-style-type: none"> • Being against having EQ skills to be improved. • Not believing that EQ might help increase the level of teachers' teaching skills. • Due to lack of background knowledge of EQ, some teachers might consider it difficult to be implemented in ELT. • Some may find it difficult to master EQ competence issues after a certain age. 	<ul style="list-style-type: none"> • Individual preferences and teaching differences in practice. • Lack of self- motivation and foreign language teaching skill. • Inexperienced and experienced teachers' perception of ELT/FLL and its practice. • Cultural issues to be effective in teaching a foreign language in local conditions and lack of performance and practice in regard to teacher training. • Differences in previous professional education. 	<ul style="list-style-type: none"> • Lack of ability to act-out and role-play. • Not to volunteer to share own professional experiences in ELT. • Case studies might not help to all trainee teachers as expected due to cultural, social and conceptual differences. • Not to desire to reveal problems experienced while teaching • Lack of peer group interaction previously • Local and cultural considerations of ELT/FLL might be accepted as unpredictable drawbacks and problems.

DATA ANALYSIS

First of all the data was sorted and the variables were summarized into qualitative data which made them easy to analyze for further discussions. The collected data from actively involved experienced and inexperienced teachers from various institutions was directly fed into *IBM SPSS Statistics version 22* program prior to being

subjected to statistical analysis for computation of descriptive statistics. The data from the demographic section of the survey were also analyzed by this statistics program to have a reliable qualitative data analysis. However the firsts section (DQs) and the last (comment section) parts collected through the survey specifically based on general framework of this study and comments were all related to the general application of the suggested syllabus designed. The teachers' negative and positive reactions to design such a suggested syllabus different from a familiar ELT/EFL syllabuses designed so far in the professional field were aimed to searching prior to design such a suggested syllabus. All data collected were subjected to content analysis which is a useful model to explain the basic process of qualitative data analysis. The main part (second section) of the survey was based on individual teacher's personal opinions and experiences related to their professional ELT in a non-native environment. However, the model, interlinked and cyclical, consists of three parts: Noticing (observation), Collecting, and thinking about related things in advance. The data received was coded as "strongly disagree" 1, "disagree"2, "undecided"3, "agree"4 and "strongly agree"5. After the data collection process, means, frequencies, median, reliability analysis and percentages were calculated and put in graphics for each item in this section. The data written into charts produced by the SPSS 22 program are studied and given in the results section below.

RESULTS

The results from the survey research questions (RQ01-RQ10) are processed and presented within the framework that will establish a concrete basis for designing a suggested syllabus based on given components in the syllabus body above. Research findings from this section of the survey are given with some graphics related to the study and some cross tabulations present a few items from DQs section with all items in RQs. Unfortunately there were only a few comments in the survey (last section) and they will also be presented in the body of the study. The survey searched for an answer from non-native ELT/EFL teachers to a preliminary question:

"Do you agree or disagree whether a suggested pre- or in-service Technology, EQ and Performance-based non-native ELT/EFL Teacher Training Syllabus (TTS) might be helpful/useful in foreign language teaching (FLT) in a non-native environment?"

And it also searches for answers to such a question:

"To what degree do you agree that pre- or in-service teacher training rather than training on how to teach a foreign language (methodology and training on coursebook syllabus) but based on paralinguistic features of FLT can sure be more educational, practical and performative?"

The survey results set up a very comprehensible basis for designing such a TTS and led us to search for other related paralinguistic components such as *teachers' personalities/teaching abilities, class management, problem solving skills, conflict management, increasing learner autonomy, developing empathy towards target teaching group, increasing learner-teacher interaction etc.*

The reliability of the survey RQs (01-09) was measured by Cronbach's Alpha and it was found out as ,843 for nine items. The RQ 10 was not included because it was somewhat different from the first nine questions expecting the participants' preference rather than their ideas. In table 3, the following *one sample T-test* acknowledges that the RQ (01-10) were reliable and over 4 as shown in the means section. There were some missing answers (RQ04 and RQ10) and they were not included in the statistics below.

Table 3: T-Test: One-Sample Statistics

	N	Mean	Std. Deviation	Std. Error Mean
RQ01	81	4,09	,596	,066
RQ02	81	4,00	,689	,077
RQ03	81	4,12	,678	,075
RQ04	80	4,19	,597	,067
RQ05	81	4,00	,632	,070
RQ06	81	4,12	,678	,075
RQ07	81	4,00	,652	,072
RQ08	81	4,25	,643	,071
RQ09	81	4,09	,656	,073
RQ10	67	4,06	,868	,106

In Table 4, the descriptive statistics display means, frequencies and percentages with regard to how and to what extent non-native teachers agreed or disagreed about *benefits of EQ-based TTS, empathy, teaching TL better, EQ and higher learning outcome, awareness of in-class teacher-learner interaction, keep up with recent developments and technology, help them be more lenient and tolerant about error correction, help teachers to realize the learners' fear, inhibition, reluctance and reasons of their demotivation and help build up a better teacher-learner partnership*. RQ ten is based on which *group of teachers this TTS may be the most helpful when implemented*. When processed in general terms, the survey results shed light upon asserting non-native teachers beliefs as to whether such a pre- or in-service non-native TTS may be very practical, performative and helpful if implemented specifically and distinctively for training teachers before commencing teaching business in a non-native environment. However, there are a few missing values and there are some respondents who are not sure about their decisions if such syllabus design might be helpful for non-native teacher or not; so, if table 4 investigated closely (RQ01 13,6 %, RQ02 16 %, RQ03 13,6 %, RQ04 9,9 %, RQ05 16 %, RQ06 9,9 %, RQ07 17,3 %, RQ08 7,4 %, RQ09 9,9 %) almost 10 percent of non-native teachers in average were undecided about the implementation of such syllabus. This may have various reasons depending on their cultural background and professional education. Nevertheless, this descriptive statistics of the survey reveal that a non-native TTS that specifications and details given above (table 2) may thought to be a prerequisite for experienced or inexperienced non-native teachers' to gain and improve teaching skills and paralinguistic aspects of ELT.

Table 4: Frequencies of survey results related to non-native ELT/EFL Teacher Training Syllabus

Research Questions (RQ)	Scale	Frequency	Percent	Valid Percent	Cumulative Percent
RQ01: benefit from the EQ-based ELT/EFL Teacher Training	U	11	13,6	13,6	13,6
	A	52	64,2	64,2	77,8
	SA	18	22,2	22,2	100,0
	Total	81	100,0	100,0	
RQ02: empathy in regard to overcoming students' EFL learning difficulties	D	2	2,5	2,5	2,5
	U	13	16,0	16,0	18,5
	A	49	60,5	60,5	79,0
	SA	17	21,0	21,0	100,0
	Total	81	100,0	100,0	
RQ03: pre- or in-service teacher training may help non-native EFL/ELT teachers to teach the Target Language better.	D	1	1,2	1,2	1,2
	U	11	13,6	13,6	14,8
	A	46	56,8	56,8	71,6
	SA	23	28,4	28,4	100,0
	Total	81	100,0	100,0	
RQ04: if we increase the EQ-emotional intelligence of language teachers, have better interaction & a very good learning outcome	U	8	9,9	10,0	10,0
	A	49	60,5	61,3	71,3
	SA	23	28,4	28,7	100,0
	Total	80	98,8	100,0	
	Missing System	1	1,2		
RQ05: pre- or in-service teacher training may increase their awareness of in-class teacher-learner interaction.	Total	81	100,0		
	D	1	1,2	1,2	1,2
	U	13	16,0	16,0	17,3
	A	52	64,2	64,2	81,5
	SA	15	18,5	18,5	100,0
RQ06: pre- or in-service teacher training based on technology, EQ and performance will help them to keep up with the recent developments in ELT/EFL and technology implemented	Total	81	100,0	100,0	
	SD	1	1,2	1,2	1,2
	U	8	9,9	9,9	11,1
	A	51	63,0	63,0	74,1
	SA	21	25,9	25,9	100,0
RQ07: non-native ELT/EFL teacher to participate in such a teacher training may help us to be more tolerant and lenient about correcting the learners' mistakes.	Total	81	100,0	100,0	
	D	1	1,2	1,2	1,2
	U	14	17,3	17,3	18,5
	A	50	61,7	61,7	80,2
	SA	16	19,8	19,8	100,0
RQ08: pre- or in-service teacher training based on EQ, performance and technology	Total	81	100,0	100,0	
	D	1	1,2	1,2	1,2
	U	6	7,4	7,4	8,6

use for a short time may help teachers to realize the learners' fear, inhibition, reluctance and reasons of their demotivation while teaching the TL better	A	46	56,8	56,8	65,4
	SA	28	34,6	34,6	100,0
	Total	81	100,0	100,0	
RQ09: teachers and learners' attitudes towards TL and both learners' and teachers' in-class personal and social interaction may help build up a better teacher-learner partnership.	SD	1	1,2	1,2	1,2
	U	8	9,9	9,9	11,1
	A	54	66,7	66,7	77,8
	SA	18	22,2	22,2	100,0
	Total	81	100,0	100,0	
	VYL(4)	3	3,7	4,5	4,5
RQ10: may be most helpful/useful for teachers teaching following group	YL (3)	14	17,3	20,9	25,4
	YA (1)	26	32,1	38,8	64,2
	A (2)	24	29,6	35,8	100,0
	Total	67	82,7	100,0	
	Missing				
	System	14	17,3		
	Total	81	100,0		

Key: (for RQ 01-09) SD: strongly disagree; D: disagree; U: undecided; A: agree; SA: strongly agree. (For RQ 10) VYL: very young learners; YL: young learners; YA: young adults; A: adults

Research findings of the survey cover a general statement of the participants' decision on being trained in a non-native TTS to develop teachers' skills and increase in-class awareness. Item nine (*RQ9: teachers and learners' attitudes towards TL and both learners' and teachers' in-class personal and social interaction may help build up a better teacher-learner partnership*) received the highest response (agree, 66,7 percent ; strongly agree, 22,2 percent) which emphasizes learner-teacher partnership in learning extremely needed in ELT classes specifically in non-native environment.

The survey results cover quite a few analysis related to our research on syllabus design. We had various crosstabulations between the items from demographic and research question sections. However, we found it useful to support our argument and strengthen the idea of syllabus design, a crosstabulation table (table 5) analyzing the correlation between DQ04 “*Do you believe that your participation in teacher training activities based on EQ, technology, student-teacher interaction and performance for at least two weeks can be useful in your professional development?*” based on “yes”, “no”, “maybe”, or “not sure” scale and RQ09 “*Such pre- or in service trainings increasing teachers' and learners' awareness of teaching and learning problems related to technology, EQ, teachers and learners' attitudes towards TL and both learners' and teachers' in-class personal and social interaction may help build up a better teacher-learner partnership*” were given below:

Table 5: DQ04 * RQ09 Crosstabulation Analysis

			RQ09				
			SD	U	A	SA	Total
DQ04	Yes	Count	1	7	39	16	63
		% within DQ04	1,6%	11,1%	61,9%	25,4%	100,0%
	No	Count	0	0	1	0	1
		% within DQ04	0,0%	0,0%	100,0%	0,0%	100,0%
	Maybe	Count	0	1	12	2	15
		% within DQ04	0,0%	6,7%	80,0%	13,3%	100,0%
	Not sure	Count	0	0	2	0	2
		% within DQ04	0,0%	0,0%	100,0%	0,0%	100,0%
	Total	Count	1	8	54	18	81
		% within DQ04	1,2%	9,9%	66,7%	22,2%	100,0%

What we infer from this crosstabulation analysis is that the participants responding the DQ04 item “yes” in majority also marked “agree”(61,9%) and “strongly agree” (25,4%) scale for the item RQ09 reveals that the idea was accepted and supported in terms of designing such a non-native TTS. This strengthens and encourages us to

prepare and implement such preliminary syllabus design to train non-native teachers based principally on such paralinguistic components as follows:

- EQ competence issues (both personal and social) (mostly leadership, empathy and motivation)
- case studies experienced and related to in-class teaching,
- implementing and using recent technology and multimedia in ELT/EFL classes,
- teachers' performance, role-play, act-out,
- specifically problem solving, crisis management, class management and
- training activities increasing learner-teacher partnership in learning.

DISCUSSION OF THE COMMENTS GIVEN

Unfortunately we received only a few favorable or unfavorable comments in the survey as follows:

1. *"Some questions are only focused on non-native teachers. In my opinion, these questions are valid for native teachers as well."* (a high school teacher, Turkey)
2. (about RQ8) *"To learn a language or something else needs low anxiety which may stimulate motivation in my opinion so a stress-free or too much relaxed classroom environments may cause unmotivated students especially in the early ages. In other words a bit disturbing environment may be good for the process."*
- 2.1 (about RQ10) *"I think, the younger the students/learners are the more motivational they are, so to be emphatic and to care about emotions are much more helpful or useful for training younger learners."* (a Turkish high school teacher, Kyrgyzstan)
3. (about RQ10) *"The last No 10 can be also useful for any group indicated under point 10."* (a Kyrgyz university teacher, Kyrgyzstan)

The study may also have covered the native ELT/EFL teachers as mentioned in the comments above (1), yet we had to narrow down the scope of the study to non-native ELT/EFL teachers to collecting data and get access to the participants easily; however, this is a very preliminary study and some other studies covering native teachers might possible be done with some limitations. As for the second comment (2 and 2.1) about RQ08, the participants comment supports the idea we presented in the survey to decrease learner inhibitions, create low anxiety class atmosphere and a safe learning environment. The participant claims in this comment on RQ10 (2.1) that motivation is closely related to the learner's age, but we have young adult and adult students as well. In this study we strongly emphasize empathy and care for learners' emotions while learning takes place are what all learners at all ages need. EQ competence issues in this TTS are presented to train teachers teaching various age groups at different levels. The last comment is about RQ10 asking participants' opinion about such TTS might be the most useful for teachers teaching at which group. In fact, this TTS might be implemented for any group of teachers no matter to what age group they teach, but in order to design the syllabus components and contents we preferred to find out about our target group of teachers teaching to certain age groups. Nevertheless, as seen above (table 4) responses to RQ10 were distributed almost equally among the scales (YL: 17,3 %; YA: 32,1 %; A: 29,6 %); and very young learners received the least response (3,7%).

PEDAGOGICAL IMPLICATIONS AND DRAWBACKS

As mentioned earlier ELT/EFL teachers have to assume so many roles (Harmer, 2001; Richards & Lockhard, 1984; Titone, 1995) while teaching a foreign language and implementing teaching syllabus in the classrooms for different age groups of learners. Martin (2011) defines a taxonomy of an effective EFL teacher's specifications in 42 items most of which require paralinguistic features rather than teacher's teaching skill and language proficiency. A few randomly chosen examples may make this idea clearer in terms of EFL teachers' duties and roles they have to carry out throughout teaching business as a profession as follows:

"Learn your students' names, turn regular activities into games or competition, motivate your students with variety, don't teach linguistics. Language and culture are inseparable, don't leave the learners in the dark, be enthusiastic! don't do it just for the money, show interest in the students as individuals, allow opportunities to communicate directly with students, allow time for free communication, use humor to liven up the class, circulate, move about the classroom, don't talk too much, be sensitive to your students, don't be a psychiatrist, respect both "slow" and "fast" learners, don't lose your cool, be frank, be a coach, don't overcorrect, laugh at yourself sometimes." (Martin 2011)

All these aspects expected from an EFL teacher are closely related to the behavior, skill, class management, learner-teacher interaction and teacher's attitude towards learners. These skills and behaviors may be presented

within a non-native TTS and the hands-on experience with such components in pre- or in-service teacher training provides an opportunity for teacher trainees, experienced or inexperienced, to apply teaching principles to real-life situations, build confidence in their skill and pedagogical style, gain exposure to various learning styles and classroom situations, and acquire valuable teaching experience. Practicing these components will assist a teacher in feeling more prepared as well.

Such trainings aimed at improving teachers' various skills and behaviors in professional teaching business should be done as microteaching for macro teaching. Microteaching (Remesh, 2013; Allen & Wang, 2002; Wilkinson, 1996; McGarvey and Swallow, 1986; Turney, et al., 1973) was invented first by Dwright W. Allen, Robert Bush, and Kim Romney (1950) at the Stanford University and since that time as a scaled-down, simulated teaching encounter designed for the training of either pre- or in-service teachers. Even though microteaching provides teachers with the opportunity for the safe practice of an enlarged cluster of teaching skills while learning how to develop simple, single-concept lessons in any teaching subject, in this study microteaching was conceptually considered for training non-native EFL teachers to practice certain paralinguistic aspects of ELT/EFL. This training aims at a preliminary microteaching to train teachers with a specifically designed TTS to help trainee teachers practice certain skills to improve because "many NNEs are known to experience anxiety and fairly low self-esteem associated with their non-native status" (Kamhi-Stein 1999, Samimy & Brutt-Griffler 1999 in Eslami, 2010:228). Yet teacher development is more involved with in-service teacher education, it relies more on teachers' personal experiences and background knowledge as the basis of the input content, and its typical teacher development activities include as cited in the suggested TTS such as EQ practices, study groups on various topics, teacher-suggested case studies and self-development and evaluation activities.

What pedagogical implications and unexpected drawbacks that could probably be received out of the study can randomly be outlined as follows:

Pedagogic implications

- overcoming teaching difficulties to mixed ability groups,
- having experience through case studies related to actual class situations,
- increasing and developing EQ competence issues such as empathy, leadership, self- confidence, conflict management, etc.
- gaining ability about managing classes and increasing problem solving skills,
- practicing the five Ps (Programming, Pointing out, Pupils, Pre-training and Post-practice)
- peer teaching group activities shared during group activities,
- self-implementing of role-paly activities, case study act-outs and practice prospective problems,
- learning how to defeat learner's inhibition, anxiety, demotivation, reluctance etc. through being trained in microteaching and convey them into macroteaching, that is to say, actual ELT classroom where most theoretical/formal learning and teaching take place.

Drawbacks

- trainee teachers' different background education,
- reaction to such paralinguistic features to be trained,
- experienced teachers' acquired classroom teaching habits,
- not to be able to overcome non-native status in teaching,
- no to be able to create a safe-learning environment,
- considering such TTS useless and not helpful to increase learners' learning,
- formal bachelor education in ELT and the individual differences it causes,
- not being able to overcome low self-esteem related to professional experience and language proficiency level.

CONCLUSION AND RECOMMENDATIONS

ELT/EFL teacher education and pre- or in-service teacher training have recently changed very significantly and new technologies such as multimedia, social networks and besides, new concepts have been discussed for a long time. Ever since its emergence in the 1960s into teacher training, microteaching application has gained popularity as a practical training tool in pre-service teacher education programs. Remesh (2013) emphasizes that "Microteaching is a teacher training technique for learning teaching skills. It employs real teaching situation for developing skills and helps to get deeper knowledge regarding the art of teaching."

So, the major goal of a successful teacher-training program implementation as a preliminary training for prospective or active teachers is to expose them to effective teaching strategies, competences and experiences. From that date on, the practice of microteaching has rapidly expanded to other teacher education programs.

Recently, many pre-service teacher education programs have introduced the microteaching component in order to orient prospective teachers and provide them with practical teaching experiences (Fernandez, 2010; Bell, 2007; Amobi, 2005).

This study mainly searched for the probability/possibility of implementing a non-native TTS into ELT/EFL teachers training curriculum as a microteaching prior to macroteaching. It mainly focused on the salient concepts that emerged as a result of investigating ELT/EFL teachers' weak points and lack of teaching experiences. A mixture of quantitative and qualitative approaches was utilized to collect relevant data from ELT/EFL teachers having various teaching backgrounds and experiences in non-native teaching environment. The overall results of this study demonstrated that the inclusion of such TTS into the curriculum pre- or in-service teacher training programs is viewed to have positive impact on ELT/EFL teachers, experienced or inexperienced, awareness and views regarding their language and teaching competencies. The data from the survey provided clear evidence that prospective/active teachers appreciated such a non-native teacher training syllabus based on EQ, technology, performance, practical activities such as case studies, act-out, and role-play in developing effective instructional and personal strategies.

The data gathered has also revealed that a very detailed TTS designed is needed to train non-native teachers to gain confidence, experience, competence and practice prior to or during theoretical teaching in the classroom. However, we could recommend that all teachers join in such teacher training programs to practice fundamental EQ competence issues related to teacher-learner interaction, class management, problem solving, crisis management, the implementation of new technologies (internet resources, social media and various aspects of digital technology) into ELT classroom and thus they are apt to increase self-esteem and lower their anxiety actively participating in role-play, act-out activities as well.

Due to some reasons and facts, either prospective teachers, student teachers or experienced teachers actively involved in ELT after certain theoretical education, are expected to keep up with recent developments in ELT/EFL fields and world of technology related to foreign language education. The rationale behind the idea of designing such a non-native TTS is that to help non-native ELT/EFL teachers to keep up with those recent developments and enable them reflect what they have acquired/learned from these trainings into increasing their awareness of teaching and the learners' learning a foreign language in a better, safe and fear-free, low anxiety teaching environment and learnable atmosphere.

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Teacher Education Through Ict. Moocs: New Learning Environments

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ABSTRACT

This paper is a report on the case study on the use of MOOCs for training teachers.

Open learning is a key issue around which there has been a strong and focused attention from the international scientific community in recent years. With the spread of Open Access practices and Open Educational Resources in science and education, the goal of reconfiguring higher education towards informal, open and intergenerational learning, without technical, legal and economic barriers was born. Notably the creation of a new example of open learning; the MOOC (Massive Open Online Course) and of OER (Open Educational Resources) which represent the new frontier of e-learning. The CCK08 (Connectivism and Connective Knowledge course) was the first to integrate open learning content syndication, thus making it the first true MOOC. It, the CCK08, has been labelled as a connective learning MOOC (Siemens, 2004). Which emphasizes the learning itself as a social process or a cMOOC personal knowledge is established by a network, which feeds into organizations and institutions that in turn feed the network again, and then continues to provide learning for individuals. What do the teachers think of this increasingly pressing technology? And of the possibility of having to live with it, then to dramatically overturn the method of teaching, training and work they have always adopted?

INTRODUCTION

A MOOC is an educational model that theoretically has unlimited subscription; it is open and allows anyone to participate, usually at no cost; has on-line learning activities typically taking place via the web; a course is structured around a series of objectives defined in a specific area of learning (Haber, 2014). The range of MOOCs embody these directives differently and guidelines of how the MOOCs function continue to evolve. Yet, even in the absence of a final model of what they are or do, the MOOCs have prompted a review of the customary training in higher education, giving new value to the role of teachers, the arrangements for the establishment and to the award criteria of credits (Al-Atabi, & Deboer, 2014). Most MOOCs are structured in a similar way to traditional online courses. With MOOCs each course has a pre-defined content and typically consists of readings, lectures and assignments that are often of short duration (6-12 minutes). Students attend classes, study the assigned material, participate in discussions and online forums, and respond to the quiz and test on the course material. Online activities can be strengthened through face to face meet-ups involving the participation of those who follow the courses and who live close to each other. Among the users of MOOCs there are students who participate for a wide range of reasons, for example for informal learning, for the search of new skills in a particular area or, in some cases, also for credits toward a certification program (Martin, 2012).

Massive Open Online Courses (MOOCs) are a source of debate in the discussions today on education online (Bellack, 2015). Having rapidly expanded and developed since their introduction in 2008, these courses have now become a "transformative revolution" in education, achieving both advocates and critics (Bonvillian, & Singer, 2013). However, despite their recognition, research in the field is still relatively limited (Salter, 2003). Recently, teachers from different institutions have expressed negative reservations about MOOCs: there are those who criticize them for mass-market training which devalues what is the direct interaction between teachers and students (Allison, Miller, Olivier, Michaelson, & Tiropanis, 2012). For this reason MOOCs should be designed as placing mastery of the content as the primary objective and not the complete attendance of the course; In fact, the rate of students who finish the course often remains below 10% (Chen, & Jang, 2010). The MOOC has launched an era of global access to higher education for anyone with an Internet connection. The shape and style of MOOCs has the potential to significantly reduce barriers to education, in fact, many pioneering MOOCs teachers have pointed out that with a single MOOC they have managed to reach more students than in all their previous courses combined (Ciotti, 2012). The MOOCs offer powerful and innovative ways to make learning a lifelong commitment and have galvanized the most senior leadership in higher education in evaluating the strategic role of online education (Fornasari, 2013). The MOOCs encourage institutions to seek partnerships and collaboration, fostering a network of relationships between students and most colleges and universities (Hollands, & Tirthali, 2015). The MOOCs have proven to be valuable as a kind of workspace or laboratory for innovation, helping to discover new and good practices that can be used by others in the online format. Perhaps the most important contribution of the MOOC to date has been to raise important issues and conversations on the essential design of the curriculum and accreditation of students; this furthermore

constitutes a valid learning experience for those who have access to higher education (Poy, & Gonzales-Aguilar, 2014).

Although less than 10% of the universities in operation had the intention to begin the use of MOOCs from 2013, most of the institutions are currently engaged in the discussion of the role that this unique educational model will have for years to come. Current studies indicate that only about 32% of the main Universities stated they have no intention of pursuing MOOCs (Allen, & Seaman, 2013). This is because despite their potential, these courses are suffering from one of the highest student dropout rates from classes. Completion estimates typically range between 5-20% (Baggaley, 2013). While online learning has many features similar to the practices of other formats of Distance Learning (DE), its unique capacity is to overcome the barriers of time; this has made DE one of the most influential forms of online training to date. It is thought that online learning stimulates a transformative revolution and that plays an important role in reshaping the landscape of education as it is known today (Allen, & Seaman, 2014). Unlike many versions of DE, online education has made considerable progress in entering the current educational industry (Siemens, 2008). Despite its growing acceptance, Online Education (OE) has continued to receive a lot of criticism with respect to DE. Many have argued that online learning environments cannot replicate and replace the key elements of traditional education, which involves interpersonal relationships and authentic learning communities (Sitzman, & Leners, 2006). Others, more recently, have criticized online learning emphasizing the problems associated with the credentials of quality control, or the socio-economic repercussions. Despite the criticism, both the technology and market demands continue to push innovation to expand the field, bringing more and more attention from the general public (Ciotti, 2012). In addition to this growing technological innovation, within the educational environment it has gone from strength to strength providing various arguments for the potential use in the area of online learning. From Seaman and Downs a proposal emerged of the connectionist model of education utilizing models of learning centered on the figure of a teacher. Some have argued that this new method of study has led to a "double revolution" in which changes in educational theory took place simultaneously with the development of the idea of online learning as a viable alternative (Bonvillian, & Singer, 2013). Regardless of the reason, the rapid increase in online education has sparked the interest of researchers and practitioners (Hockridge, 2012); the same way many of them have tried to develop the best approaches of practices for online learning (Ligorio, Habermas, 2005). The CCK08 (Connectivism and Connective Knowledge course) was the first to integrate *open learning* with distributed content, thus making it the first true MOOC. This has attracted participants from all over the world. Which means that the contents of the course will not be available in one place, but could be anywhere on the web. The course consists therefore of the collection of links which connect all the content to a single network, thus creating an instrument of syndication of content, in order to bring all the material to a single site. The CCK08, was labelled as a "MOOC connectivist" or a "cMOOC". The starting point of connectivism is the individual. Personal knowledge is established as a network, which feeds into organizations and institutions that in turn feed the network again, and then continue to provide learning to individuals. This cycle of development of personal knowledge allows students to stay updated in their field through the connections that were formed (Siemens, 2004). This CCK08 model is based on a connectivist learning theory that emphasizes the learning itself as a social process. "In a connectivist MOOC, people use that which somebody else has put in (Morris, 2013).

THE STUDY

The connectivist theory of George Siemens is based on the idea that learning occurs within a network, in which students use digital platforms such as blogs, wikis and social media platforms to connect content and to learn how to create and build knowledge. Within a cMOOC (Connectivist Massive Open Online Courses), students are encouraged (but not required) to contribute actively, using these digital platforms. The contributions of the participants are in the form of blog posts, tweets, and are put together by the organizers of the course to be shared with all participants by daily e-mail or newsletter. According to Rita Kop (Kop, & Hill, 2008), there are three connectivist approach challenges: *self-directed learning, presence and critical literacies*. According to the connectivist theory, the student is the one who learns autonomously and informally, is not necessarily included in traditional educational institutions and has skills in communication, creation and sharing of user created content. In substance is a *prosumer*, as define by Toffler (Toffler, 1980). In this case, the teacher addresses the teaching differently from the traditional model, becoming a facilitator that can also be present during the activities carried out by students (Clarà, & Barberà, 2014). A connectivist teacher leaves the student the freedom and the responsibility to set their own goals, to manage their time, to find the resources, to experiment with new tools and make them work. The focal point is the participation in each training event that provides an activity, rather than the transfer of knowledge from teacher to student (Sitzman, & Leners, 2006). The connectivist proposes learning which does not take place in a single environment, but which instead is distributed all over the Web (Kop, 2011) After speaking about the world of MOOCs, now let's see how this revolution is seen in the field of distance learning. What do the teachers of this ever more pressing technology think? And of the possibility of having to

live with it, then to dramatically overturn the method of teaching, training and work they have always adopted? Nowadays the MOOCs method in Italy and other countries is not yet fully known, but it is catching up in our awareness (ISTAT, 2014). On this basis, we go and ask how this virtual reality of teaching and training can become a reality in the role of a teacher (Renninger, & Shumar, 2002). The case study proposed (Stake, 1995) a sample of 900 teachers: primary school (300), middle school (300), secondary school (300), from the city of Taranto (a city with features which exemplify a standard reality of Southern Italy). These teachers were given a closed answer questionnaire (of which the data is most significant) to monitor beliefs and motivations (Ricolfi, 2002) with respect to the use of ICT in schools and specifically the MOOC. The data was tabulated with SPSS software.

FINDINGS

The questionnaire was distributed and completed by 900 teachers (primary and secondary schools) of which 603 were female teachers and 297 male teachers, divided into five age groups (Table 1).

Table 1

Age	Number of Teachers
Younger than 30	5
30 - 40	120
40 - 50	330
50 - 60	430
Older than 60	15
Subjects taught	Number of Teachers
Humanistic	265
Scientific	210
Technical	175
Pedagogical	200
Most subjects	50
Educational use of PC	Number of Teachers
Never	148
Rarely	250
Frequently	422
Always	85

To the question "Have you ever heard of MOOCs (Massive Open Online Courses)?" They replied as follows: of 900 teachers (primary and secondary schools), 580 respondents had never heard of MOOCs, 320 others claim to be aware. The school nowadays proposes the use of the Internet to promote educational success and the right to education through resource sharing, innovation and communication (Fornasari, 2013). The purpose is to allow access to learning and training activities; to address the theoretical and methodological aspects of communications media in an educational context and reach to achieve a proper use of languages, multimedia and network technologies; and to broaden the study and application of multimedia communication in an educational context with the use of online learning (Miltiadou, & Savenye, 2003). The next question "Have you ever attended training courses through online learning?" Some resilience to online training was shown by almost half of the sample. (Image 2). It is to be noted that within the teaching staff represented in the sample, a large majority of teachers are over 50 years of age which is a fact that explains (see the rates of the digital divide in Italy in the Istat study "Citizens and New Technologies" (2014) some resistance the use of ICT. In the last question "In your opinion, do you think the traditional method of teaching through massive use of ICT will change in the next 10 years?" (Image 3). There have also been quite cohesive answers here. Only 6% of the sample answered no.

Image 2

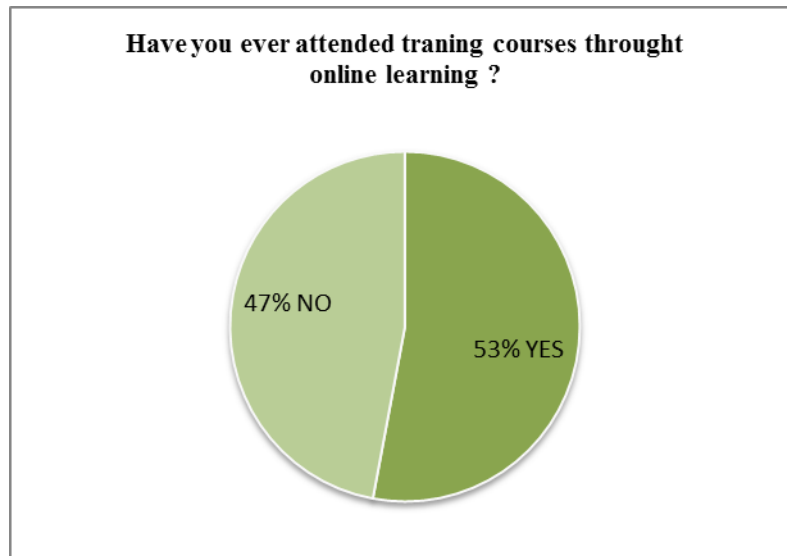
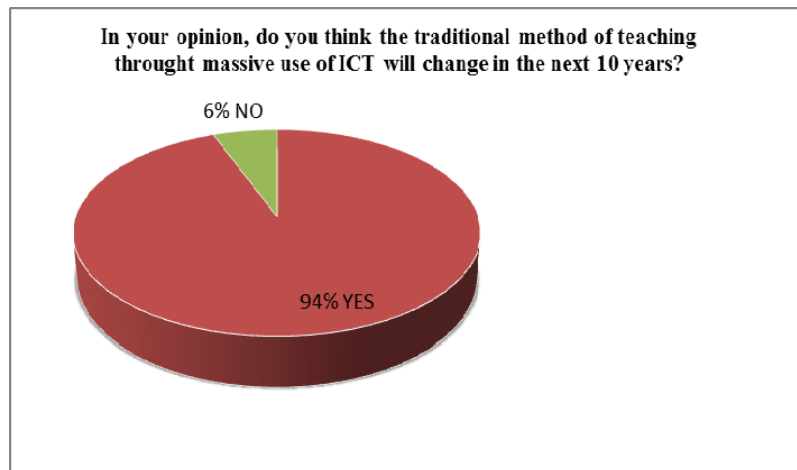


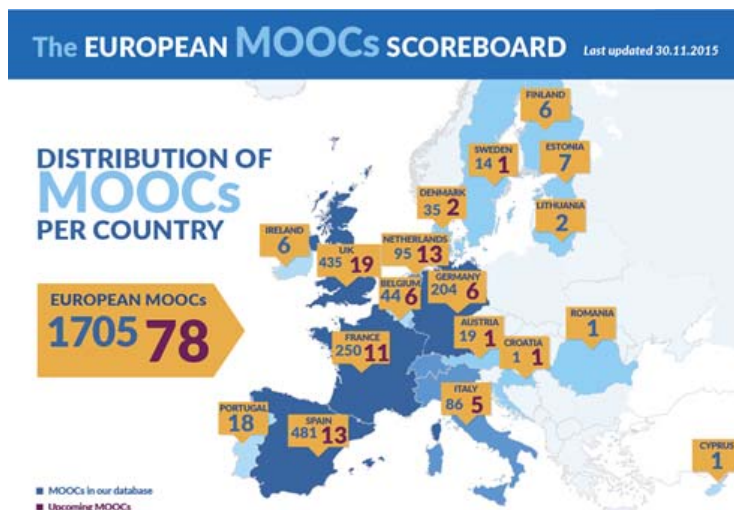
Image 3



CONCLUSIONS

The questionnaire was designed to examine the views of teachers with regard to technology that is increasingly present in the teaching offered by teachers. The question is: what do they think of the real potential of ICT in school and especially of MOOCs? According to the results, 94% of teachers of the sample believe that in the next ten years the development of new technologies in school will change the methods of teaching and learning. Despite a large number of teachers who demonstrate to not know the world of ICT and MOOCs (580 teachers of 900) and therefore Education online and distance education, it would seem that they are favorable to change as long as they receive appropriate training (Galliani, 2004). All are aware of how important it is and support the use of information technology. Certainly in a few years the teachers will adapt more and more to living with the use of these platforms, which will become the subject of inspiration for other teachers and support their work. From this, it is hoped that in the future the use of these programs will become a more widespread teaching choice among teachers who are aware that their students are digital natives. The case study proposed concerns a sample of 900 Italian teachers from Taranto, one city (with a population of 200,000 inhabitants) in Puglia (South Italy). In truth also through the acquired data from European studies we see situations that are not much different from those of the present study; there are still few school situations which use the potential of these new tools (European Schoolnet Academy, 2015). This contrasts with the training at university level through the use of MOOCs where these platforms find increasingly more space and application (see Figure 1 - European MOOCs scoreboard, 2015).

Figure 1



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Teaching And Learning Accounting In An Innovative Business Simulation: Portuguese Case Study

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ABSTRACT

Accounting education had to evolve in order to acknowledge and take advantage of information technologies. These technologies are important in creating a credible simulation and better support to both students and teachers. We present a qualitative case study of a course of business simulation based on the use of information technologies. Developed by a Portuguese accountancy college, this employment-driven subject relies on two kinds of technologies: educational and entrepreneurial. This learning process improves students' confidence on addressing the challenging professional world. In order to achieve this goal, the college had to deal with significant financial and human resources.

Keywords: Accounting, Business, Education, Information, Portugal, Simulation, Teaching, Technology

INTRODUCTION

For accounting education to regain relevance, continuous changes and improvements in the courses of this area are necessary. This learning process must keep up with technological innovation that occurs among the professional accountants. New skills are required to deal with information and information technologies systems. This paper aims to contribute to the field of accounting education. Studies are lacking on how these information technologies are being used, despite their growing trend. (Ed et al. 2015).

Therefore, we studied a traditional Portuguese accounting school (School of Accounting and Administration of Porto - ISCAP) with more than a hundred years of experience. We analysed how this school responded to actual accounting problems regarding technology. The school redesigned the accounting graduation, adding two courses (Business Simulation Project I and II) with inherently practical nature, based on a complex set of tasks identical to the real business world and on the usage of Information Technology (IT).

In this qualitative case study, we discuss these courses, in operation since February 2003. The aim of our research is to identify how the accounting education in these courses is adapted, and how the new technologies are incorporated and perceived by students and teachers.

This paper is divided into four main parts. In the first part we present a literature review, focused on technologies in accounting education and business simulations. The second part is focused on the methodology, describing its goals and methods of data collection. The case study is described in the third part, analysing the course response to the new needs of the accounting profession, based on the discussed results of the interviews with students and teachers. The fourth and last part presents the conclusions and limitations of this study and also suggestions for future research.

LITERATURE REVIEW

TECHNOLOGY IN ACCOUNTING EDUCATION

The accounting education evolved to fulfil business requirements, better prepare students for market requests (Yap, Ryan, and Yong 2014) and to thrive in a changing environment (Byrne, Flood, and Willis 2002).

The modern organizational environment requires professional to develop new skills which schools should foresee to train their students to do. Skills should include the ability to research a wide variety of sources like web searches and to work with a wide range of data services (Albrecht and Sack 2000).

In a Yu study (Yu, Churyk, and Chang 2013) alumni's were the first to recognize their limitations as they felt badly prepared in the use of database, oral communication, technology domain and problem solving.

Accountant professionals must research and work with a large amount of (disorganized) information therefore students should be active participants in the learning process, learning by doing, working in groups and being able to locate, acquire and organize information (AECC 1990). The increasingly dynamic environment in which accountants work, required a reorientation in teaching accounting. Nowadays it is difficult to do accounting without the use of specific software. In graduate courses it is required a first contact with professional technologies such as ERPs (Enterprise Resource Planning), so students develop their confidence and capacity to use of these tools in the real world.

The newest generations of students are better familiarized with technologies – they learn to deal with mobile phones, tablets and personal computers from an early age. Therefore, we must take advantage of these valences to implement incremental changes to develop some of their strengths such as teamwork, motivation, allowing them to make the difference in organizations, developing communication with supervisors, and ease with technology (Mastrolia and Willits 2013).

In order to address these weaknesses and solidify skills and attitudes, teaching based on business simulations arises supported by a problem based on learning pedagogy. Methodologies of teaching/learning inherently practical arise, based on the simulation business/enterprise, in which the students experience organizations real situations and are able to train broader skills.

BUSINESS SIMULATION

Business education based on simulations arose in the 1950's (Gredler 2004) in which students worked in a high complex environment very similar to real life business. The characteristics of a simulation are: participants interact with a complexity of situations similar to business reality; with clear rules, responsibilities and limitations defined by the teachers allowing the participation of students; several strategies can be implemented in environment data (such as leadership); and students receive feedback on actions taken (Gredler 2004).

This simulation learning model has four phases: the first phase is expository, involves the teacher presentation of the topics and contents to be discussed. In the second phase, teacher explains the rules, procedures, evaluation methods, targets and types of decisions required. The third phase describes the participation of students in the simulation. Finally, phase four involves feedback, the students analyse the process and what went wrong, comparing the learning experience with real life and making connections with content from other courses since it is a multidisciplinary learning process (Joyce, Calhoun, and Hopkins 2009).

This teaching process also known as a facilitator (Keskitalo, Ruokamo, and Väisänen 2010), helps students in the transition to the professional world. The teacher is no longer a player of ideas, but leads the students in a training process with autonomy that demands more critical and creative capacity. Studying is a workout, since students are trained to course skills and knowledge.

The simulations are created on a problem based learning pedagogy, characterized by simulating real situations adapted in order to develop learning. This pedagogy highlights the importance of questioning allowing students to select and filter the essential information for decision making. This competence is underdeveloped in accounting education but it is crucial in order to be successful. The students work as a team during the semester just like entrepreneurs who constantly meet to solve real-world accounting problems. (Ed, Stanley, and Marsden 2012).

This pedagogy is based on Learning Theory of Constructivism. According to this theory the students build their own knowledge instead of being transmitted by the teacher (Biggs 1996). Students learn by choosing and develop their knowledge through individual and social activities. Knowledge is built not acquired (Phillips 2000). In problem based learning pedagogy, the learning process is driven by real-world problems, unstructured and is an active-learning and learner-centered approach. This learning environment is based on constructivism in which real problems are used in the learning process (Tan 2004).

RESEARCH METHODOLOGY

This qualitative study is based on an interpretative paradigm and follows a descriptive case study (Ryan, Scapens, and Theobald 2002).

We studied the courses of Business Simulation Project created in 2003, in the School of Accounting and Administration of Porto, Portugal. These courses are based on accounting education, centered on IT and aim to solve problems similar to real world.

The study was conducted by researchers (two teachers and two assistants) that are part of the courses team, as knowledgeable and experienced in this process. Our study reports to two semesters: second semester of 2014/2015 (February-July) and first semester of 2015/2016 (September-January).

The purpose of the research is, in one hand, to understand how students face new technologies and the complexity of business tasks and on the other hand, understand if they feel prepared and confident for the labour market.

Accordingly, we formulated the following research questions: How does accounting education embrace new technologies, to face new requirements of accounting profession? How are the technologies used in the courses of Business Simulation Project, perceived by the students and teachers?

The sources of data used were empirical observation (document analysis, direct observation), informal conversations and interviews (McKinnon 1998). To ensure the credibility and control the subjectivity of researchers, the interviews were recorded and a triangulation was made between this information and other sources (particularly with empirical observation) (Yin 1994).

Observed behaviours of students in class and on schedule meetings, exchanged emails with the teachers and with the course support office were analysed for data collection. These data were recorded in journals throughout the semesters. Information was also collected from the semester surveys to students, video presentations of student's work, PowerPoint's and other support classes' documents. Informal conversations with students who completed the course in the second semester of 2014/2015 and begun their professional activity in the same year (2015) were registered. Information was also gathered from teachers and assistants' weekly meetings, from informal conversions, minutes and exchanged emails.

The six interviews took place between September 2015 and January 2016. People with adequate profile were interviewed: the course director, a teacher, IT technician, three students (one who completed the course and other two finishing it).

In the final phase the collected data were interpreted and discussed.

FINDINGS AND DISCUSSION

How does accounting education embrace new technologies, to face new requirements of accounting profession?

The School of Accounting and Administration of Porto developed in 2003 a project that differentiates the school in accounting education. The project did allow the creation of two courses of Business Simulation Project based on new methods of teaching/learning and assessment.

The project aims to familiarize students with the new information technologies, through the use of modern information management tools, under a complex and systemic business simulation.

The courses were introduced in the graduation of Accounting and Administration, taking place during two semesters, with a workload of 180 hours, a total amount of 438 students and 18 classes. It follows the quality standards, having a certificate based on the Technical Specification ET SC-EDUC-27 since 2003. The motto is "know-how" and "learn to learn". Its purpose is to give a practical overview of professional activity, facilitate the transition to the labour market and to respond to the needs of organizations strengthening students' skills and building professional, personal and ethical attitudes.

These courses aim at preparing professionals by providing them with new skills such as the ability to structure, search and reorganize information in an integrated environment, teamwork, decision-making and the ability to communicate.

Students (organized in groups of three) create and manage virtual organizations, interacting in real-time. For that two kinds of information technologies are used: educational (technology-based assessment and simulation support technology) and entrepreneurial (ERP and a complementary system).

The educational tools developed for the course include a technology-based assessment and simulation support technology. The technology-based assessment allows continuous feedback (monitored by the teacher during the semester). It contains programs such as assessment of physical dossiers; program to compare the expected results with the effective tasks performed, a global report of session's assessment containing attendance, ethical

attitudes, oral presentation of the final report, written tests and final report classification. The simulation support technology includes managerial environment program such as classes' guidelines reports, business plans, tasks details, summaries and layout of the classrooms with direct interaction (allowing identification of the students in classroom, the virtual organizations, the attendance, and the behaviour record).

The entrepreneurial technology includes information technologies and ERP identical to some medium/large companies. There is also a complementary system to simulate scenarios similar to real life (such as bank and government transactions). The programs involved are: entities, creation of documents, management information and multimedia, exchanges, salaries, accounting, invoicing, payments, electronic commerce, bills of credit, fixed assets, maintenance, management material products, production, management panel, management of the system, computer telephony integration (in the ERP) and in complementary system: electronic bank and government/taxes.

There are also two simulation laboratories, one room for support team and a room for servers. In order to support this environment it was necessary to create a technological structure especially built for this purpose. This included five servers: one for the Oracle© database, another to support the remote desktop access, other as a domain and communications server, other as domain server and to control electronically the assiduity and punctuality, by the use of a personal card and the last one for Business Intelligence (BI) and Balanced Scorecard (BSC).

The communications systems were especially conceived for Business Simulation Project and had to be especially configured by Siemens© in order to provide internal faxes and computer telephony integration. This was at the time innovative and remains so. For computer telephony integration to work out a complex structure was created, attaching automatically a telephone extension number to the virtual organization logged on. This extension number matches with the number of virtual organization.

Students work in simulation laboratories with the physical and logical materials to allow multiuser company operation. Each laboratory contains thirty-one computers, sixteen printers, fifteen scanner, fifteen handheld bar code scanners and sixteen telephones, among other material. It's also possible to use a remote desktop to consult support documents, assessment feedback, evaluate company database and extract reports.

To support them, there is a team with teachers (six teachers) and a support team (four assistants and two IT technicians). The support team is responsible, under guidance, for maintaining virtual organizations. For that they have to prepare databases (ERP), treat documents information (invoices, contracts...), manage electronic banking, manage technology-based assessment, create business plans, prepare hand-outs to support classwork, maintain servers and other hardware.

Weekly planning meetings are necessary to align all the team and ensure that classes run normally. Teachers are responsible for the lectures, guiding students throughout the tasks, control the participation of the students in the business simulation system, give feedback through the assessment framework and follow-up after classes when necessary.

The course structure is demanding, with a huge amount of equipment and software to manage and with a big support team. Despite all of this, the structure is considered adequate to the accounting education. The initial investments made paid off, since some companies recruit students with the requisite of having attended the course.

The interaction between virtual organizations creates a large amount of information, with legal deadlines and obligations, with the same working pressure as in real business life. Sometimes some information purposely will be insufficient or incongruous in order to generate confusion and cause internal discussion.

The environment is very complex to manage, with large amount of unstructured information, phenomenological versatility, real-time management and intense interaction.

How are the technologies used in the courses of Business Simulation Project, perceived by the students and teachers?

This business simulation model, according to students, is appropriate to the objectives of the course and functional: consisting of seven virtual organizations, a group of three students, one teacher and one assistant by laboratory. The standard certificate of the courses is reliable and permits the accomplishment of the proposed objectives.

The atmosphere in the classroom is very professional, allowing students to preview how real organizations work. In this way they recognize the importance of developing several tasks including obligations regarding to VAT (value added tax); processing, paying and legal obligation of salaries; amongst others. The remote desktop is very useful as it allows them to analyse permanently the information produced by tasks performed all over the semester.

The IT's used, as similar to the real world as possible, are recognized as a good framework to prepare them to the professional future.

For teachers, this teaching/learning model allows participation in a simulated environment with the ability to cover different situations, leading to competent decision making in some functional areas of business. It is therefore recognized the requirement to encourage interaction with other courses due to its multidisciplinary nature. This motivation model facilitates the articulation between the coordinators of all graduation courses. The students face an interactive process with teachers and assistants receiving constant feedback of their work. The teacher is a facilitator, using models that range from the expository to the practical models, where concepts and theories are applied increasing and improving the interaction with students. This interaction makes education a constant challenge.

CONCLUSION

Nowadays efficiency is a key factor in the business world. Information needs to be relevant and timely used to support decision-making capacity. Schools had to adapt and create new models of learning and teaching. The presented model of business simulation is supported by two kinds of information technologies: educational and entrepreneurial. This model prepares students for the real world since it uses complex and modern technologies, automated procedures, integrates different tasks and permanent information with remote control.

Students recognize reliability in the business simulation model proposed. Standard certificate and complexity of tasks are extremely positive aspects, which give them confidence to face business reality. The support technologies are a strength factor approaching the model to real professional life. The relevance of the model grants graduates' students to succeed in the labour market as the cases and technologies learnt are similar to those in use by professional accountants.

The team of teachers, essentially experts beside academics, recognize the efficiency and effectiveness of the model, in educating future professionals and enhancing the use of technologies to strengthen the acquisition of knowledge. Teachers are confronted with a motivating and interactive method, although time consuming, particularly on the assessment level.

One of the limitations of our research is the fact that the authors are part of the case studied as they integrate the team of business simulation. There was a concern to triangulate information with all sources (document analysis, direct observation, informal conversations and interviews), in an attempt to decrease the observational bias error. For future research we suggest comparative case studies that would help to better understand how other national or international schools provide answers to accounting education and if simpler models can be as effective.

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Teaching And Learning Advanced Calculus Using The Web

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ABSTRACT

The inclusion of technological resources in higher education has modified the model of the traditional class. Several tools, with the aim of easing both the teaching and the learning of specific concepts that usually are hard to acquire, have been designed by the Group Engineering & Education (GIE, Grupo de Ingeniería & Educación in Spanish). This is a research group at Facultad Regional San Nicolás from the Universidad Tecnológica Nacional in Argentina. Between the didactic resources created to be used in Advanced Calculus, websites, videos and tailor-made apps appear. The use of these tools in the learning process helps students to become more active, autonomous and reflective.

In this paper some tools are presented to be used when teaching Fourier series. They were designed for the Advanced Calculus course of Industrial Engineering. The main tool is a website, including several videos – explaining both theory and different exercises– and interactive apps developed with the software Mathematica®.

INTRODUCTION

Since 2010, authors of this paper have been working on the design of websites and interactive apps about issues of Algebra and Analytic Geometry, Calculus (Caligaris et al., 2015a) and mainly on those related to Numerical Analysis (Caligaris et al., 2010; Caligaris et al., 2015b). These latter are “the material” offered in the different Numerical Analysis courses at the Facultad Regional San Nicolás. All numerical analysis topics were covered, but Fourier series for solving differential equations, the only one of Advanced Calculus in the Numerical Analysis and Advanced Calculus course from Industrial Engineering, did not have a website, and students claimed for it. These sites can be reached directly through their web addresses or through the button Resources at the site of the group GIE, <http://www.frsn.utn.edu.ar/gie>. The access to these sites is free, in other words, they are not restricted to the institution where they were designed, and it is possible to reach them from every part of the world. These sites can be considered as learning objects, because they have all the properties that characterize them: they have digital format, they are designed with an educational aim, they have interactive content, they are independent and indivisible and they can be reused (Naharro et al., 2007).

These websites can also be used by students at home to deepen the topics developed in face-to-face classes. With their use, the in-class teaching is enriched in many respects. On one side, the limits of the class are extended – speaking about time– and on the other side, the use of digital materials (hypertexts and multimedia) lets academics to better adapt to preponderant learning styles detected in students (Caligaris et al., 2015c), enriching the address of the issues being studied (Salinas & Viticcio, 2008).

The general design of these sites offers a first section with a theoretical approach of the topic which is useful for students who either want to deepen concepts or want to begin the study; another section which contains solved in detail and proposed exercises; a part where some visual tools that implement the method being studied are given, and let solve large-scale exercises that cannot be solved by hand; a self-assessment which lets self-monitor the learning, with feedback in each answer so as acquired concepts can be consolidated and misconceptions can be rectified; a section of links of interest related to the issue of the site, and at last the section where bibliographic references can be found.

In the Fourier Series site, some links to videos appear, which will be described later, where some theoretical developments are exposed and resolution of some exercises are worked out. The visual tools given on the section of interactive windows are CDF files, that is, windows designed with the software Mathematica®, which can be seen with the CDF player, a free program that can be downloaded from the Wolfram site (www.wolfram.com). There is a section below especially devoted to the description of these files.

This website is also intended to be used on blended learning courses which tackle Fourier series and resolution of problems including differential equations using this series. The site lacks of communication tools so, contact between students and professors/tutors of the courses should be done by mail or forums existing on the virtual

platform chosen for the blended learning.

THE WEBSITE “FOURIER SERIES AND DIFFERENTIAL EQUATIONS”

The access to the website “Fourier Series and Differential Equations” is via the URL <http://www.frsn.utn.edu.ar/gie/AN/fourier>, or from the button **Resources** of the site of the GIE group (www.frsn.utn.edu.ar/gie). The starting page of the site is shown in Figure 1. The language of the website is Spanish, because it was designed for our students in Argentina.

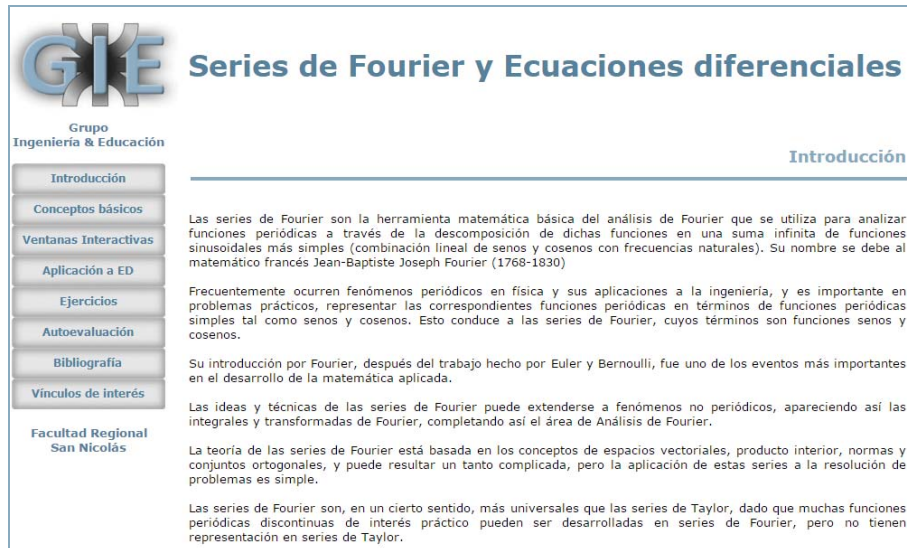


Fig 1: The main page of the website “Fourier Series and Differential Equations”.

The structure of navigation of this site is the same of the other sites developed for numerical analysis. It consists of a menu with buttons that lead to the sections **Introduction**, **Basic concepts**, **Interactive windows**, **Application to Differential Equations**, **Exercises**, **Self-Assessment**, **Links of interest** and **Bibliography**. A description of each one is given below.

The section **Introduction** gives some introductory explanations about the issue and some examples of use, so as to generate the need of learning this topic.

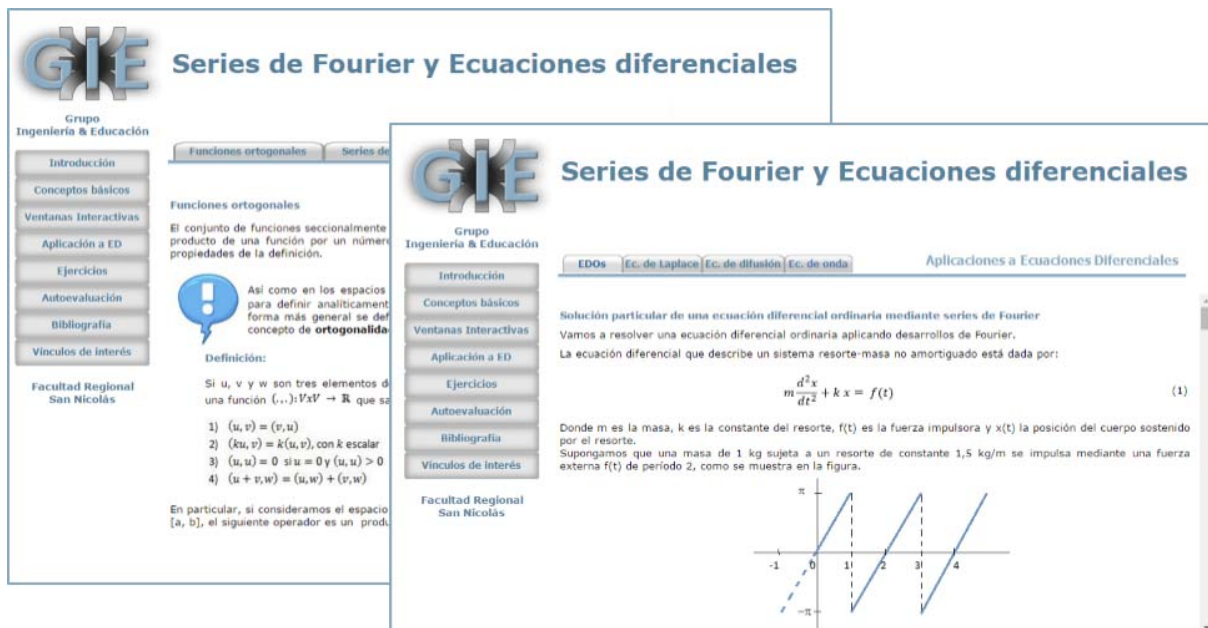


Fig 2: The sections “Basic Concepts” and “Application to differential equations”.

The section **Basic concepts** offers tabs for two related concepts, as it can be seen in Figure 2: Orthogonal

functions and Fourier series. Concepts of theory are given here, using a simple and clear language.

The section **Interactive windows** provides access to customized tools developed by the authors. These applications will be discussed in detail later. The section **Application to Differential Equations**, as shown in Figure 2, gives the way to solve both ordinary differential equations and partial differential equations using Fourier series. An example of each type is developed step by step in each tab.

In the section **Exercises**, two tabs appear. The first for solved exercises and the second for proposed exercises. The idea is first show students the steps needed to solve an exercise in the right way, and then give them some exercises to practice. In the section **Self-Assessment**, some multiple choice questions appear. Both sections are shown in Figure 3.

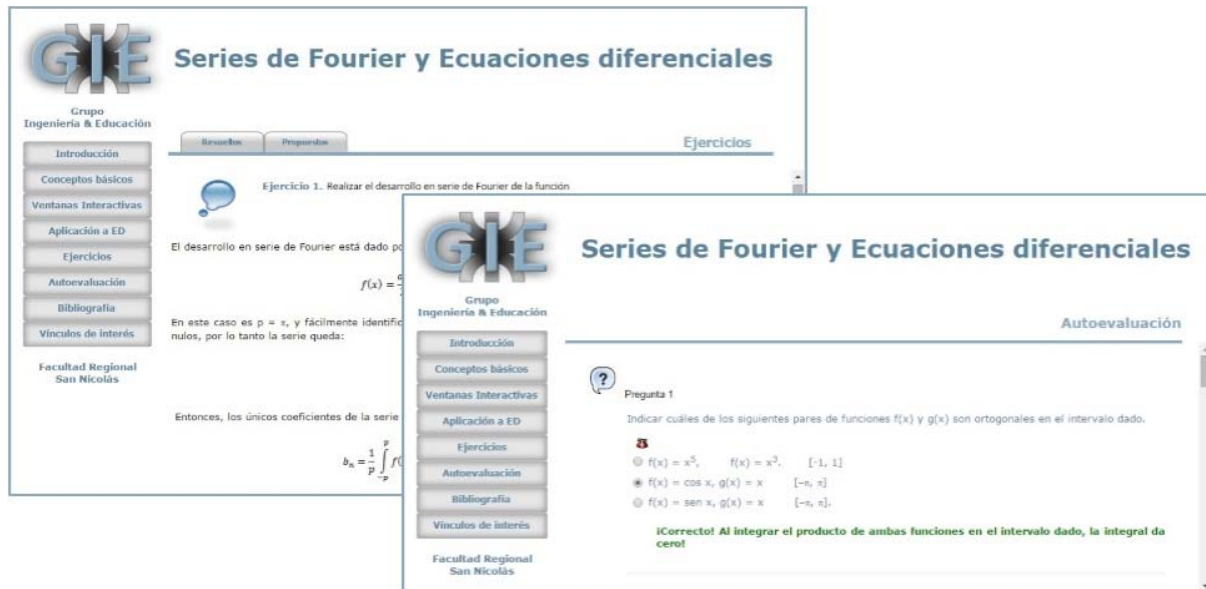


Fig 3: The sections “Exercises” and “Self- Assessment”.

The **Self-Assessment** section was developed with eXe (www.exelearning.org). The questions offer a hint that can be used before answering. Each time an answer is selected a brief explanation is shown: green if the choice was correct or red otherwise. In this way, each answer has a feedback, stimulating the fact that the correct option has been selected or giving guidelines if an incorrect answer has been chosen.

In the section **Link of interest**, some links to reliable external sites related to the issue being addressed are offered. The section **Bibliography**, gives a list of the books used for the development of the material offered in this site.

VIDEOS FOR THEORY AND PRACTICE

Several videos on different topics can be found on the Web, but they usually do not meet the requirement of the course. One major obstacle is the language: most of them are English spoken. Therefore, in order to have videos that fit the way the issues are addressed in class, it was decided to develop new videos.

Two types of videos were made: the first type covers the theoretical basis, and the second type shows the solution of different exercises, using Fourier series. A glance of this two types can be seen in Figure 4. The chosen software was PowerPoint and Doceri (www.doceri.com), which lead to develop two completely different kind of videos.

The maximum duration of each video is ten minutes. The idea is that students can concentrate in the issue being developed in each video.

The videos were uploaded on YouTube, not as public, but the links provided when doing the upload were shared with the students.

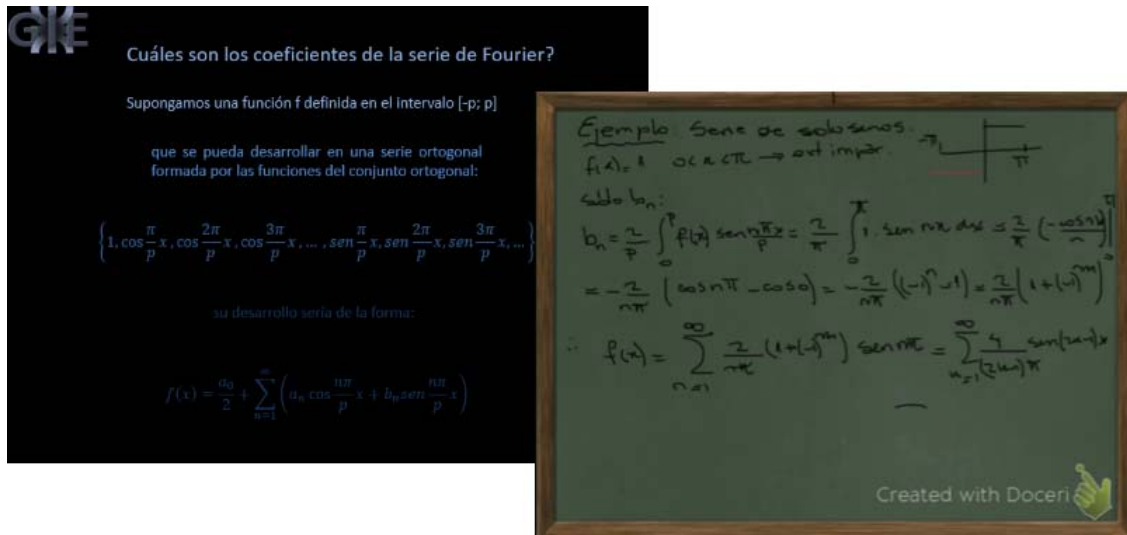


Fig 4: A glance of the videos made for Fourier Series.

INTERACTIVE APPS FOR FOURIER SERIES: CDF FILES

Two applications were designed, as CDF files, to see how Fourier Series approximate functions. Each one of these files was thought with a different didactic purpose, and trying to overcome some of the limitations of the CDF files available at the site of the Wolfram Demonstration Project (<http://demonstrations.wolfram.com/>).

Figure 5 shows the app developed for analyzing and visualizing what happens when the amount of terms of the Fourier Series considered in the approximation is increased.

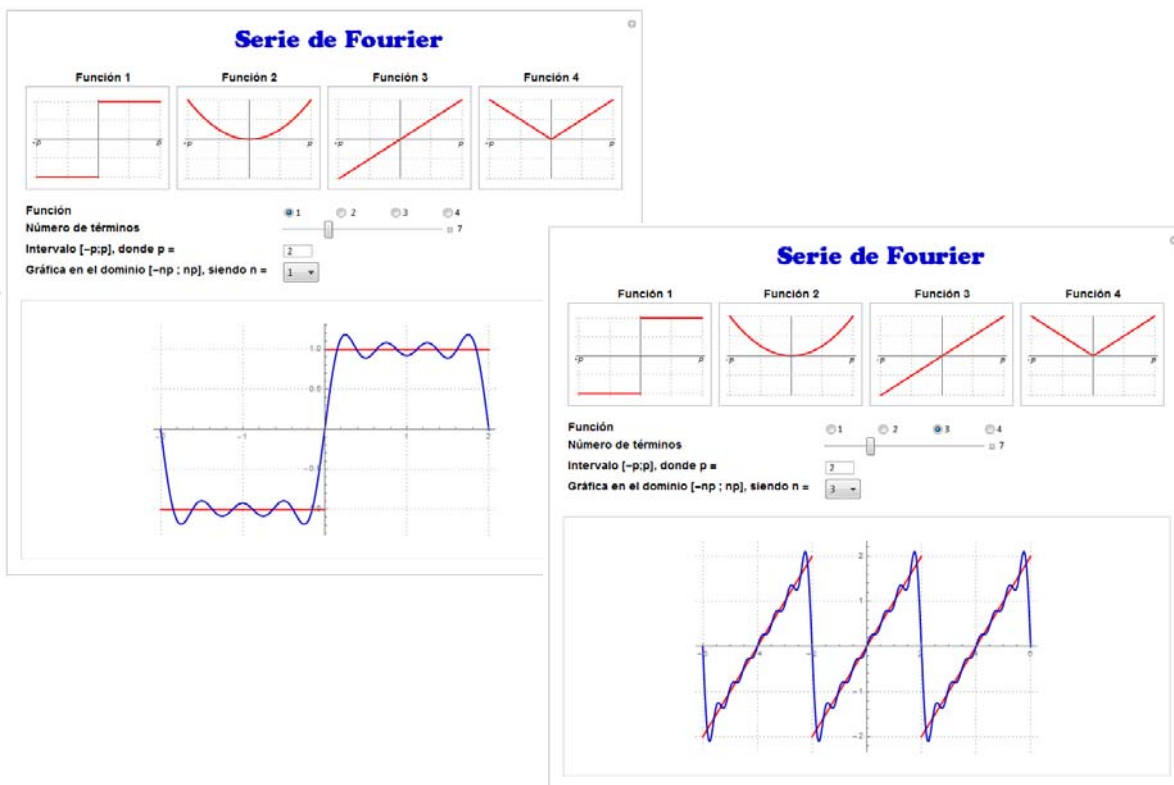


Fig. 5: Interface of the CDF file designed to approximate a function by Fourier Series

There are four functions available in this tool, one of them must be selected to obtain the corresponding Fourier's development. Also, the symmetric interval where the approximation will be done, and the number of terms to be

considered must be chosen. By default, the tool shows the plot of the function associated to the partial sum asked in $(-p, p)$. To show the periodical extension, the number of periods to be shown must be selected from a dropdown list.

So as to compare different approximations obtained with semi-interval series, another tool was developed. It is shown in Figure 6.

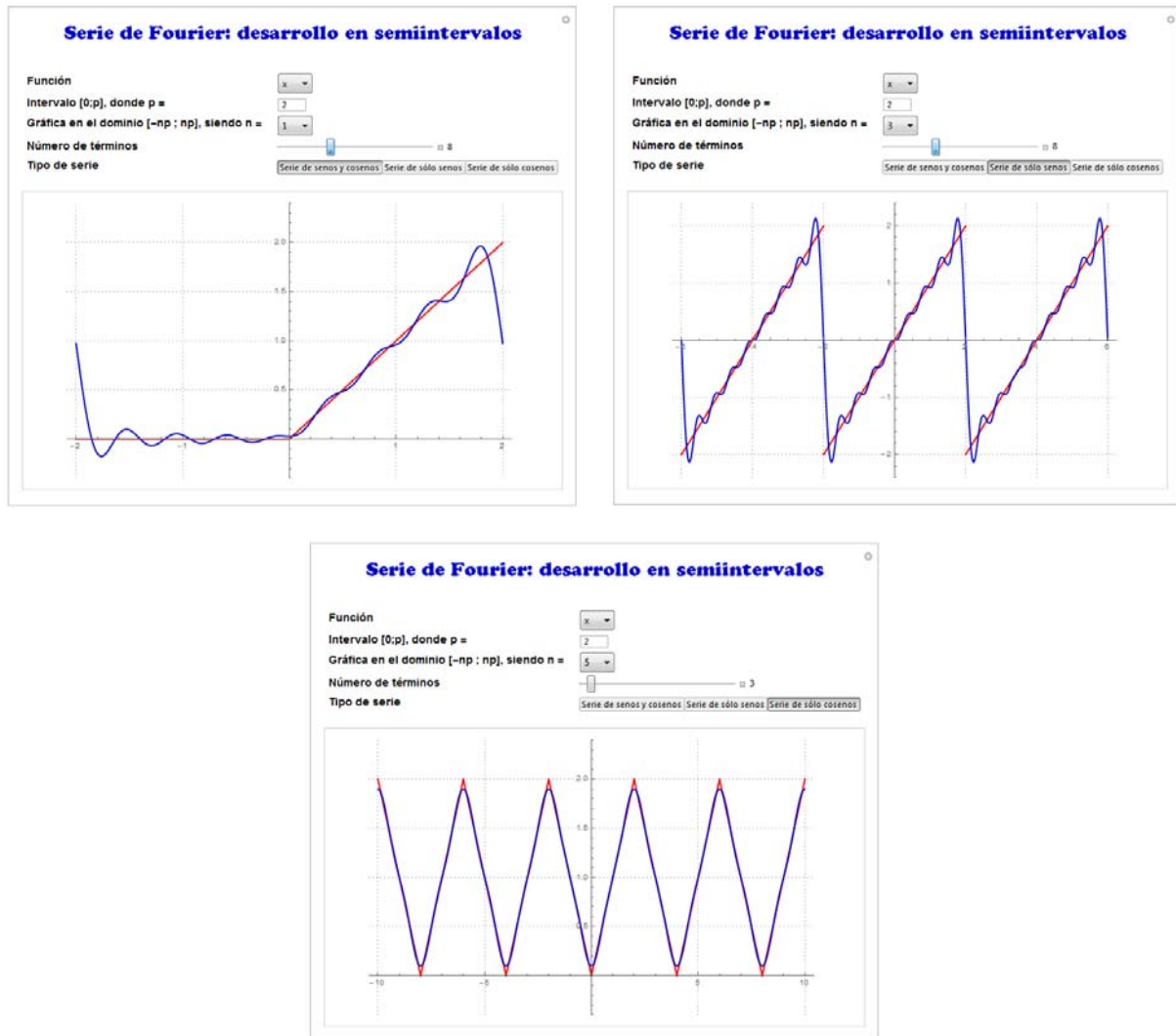


Fig. 6. Interface of the designed CDF to compare different approximations

In this window, the function which is going to be approximated must be selected from a dropdown list. The interval where the approximation will be done, the number of terms that will be calculated and the number of periods to plot must also be chosen. At last, the type of series must be selected.

It should be remembered that there are many ways to approximate a function by a Fourier's Series in the interval $(0, p)$, defining arbitrarily the function on the interval $(-p, 0)$. Three cases were considered when this app was designed:

- $f(x) = 0$. This function now is defined in the interval $(-p, p)$, and it is neither odd nor even. The Fourier's Series associated to this function will contain sins and cosines.
- $f(x) = f(-x)$. This is a function defined in the interval $(-p, p)$ and it is even. The Fourier's Series associated to this function will contain only cosines.
- $f(x) = -f(-x)$. This function now is defined in the interval $(-p, p)$ and it is odd. The Fourier's Series associated to this function will contain only sin terms.

CONCLUSION

Information technologies offer a new way of spreading information, and youngers are aware of this fact. Websites, videos and interactive tools are a powerful resource in the learning and teaching processes, because of the didactical and pedagogical possibilities they offer, of unsuspected limits.

The general design of the site presented in this paper offers a first section with a theoretical approach of the topic and other sections with practice which are useful for students who either want to deepen concepts or want to begin the study.

The visual tools merged in this site allow students to visualize graphics of partial sums of several terms, which is impossible to obtain with paper and pencil, and they have the possibility to watch how convergence happens, by comparing different partial sums with the original function.

The videos offered give the students the possibility to review what is made in class wherever and whenever they want, as if they were in class.

The authors of this work consider that the use of these tools in the learning process helps students to become more active, autonomous and reflective. It is worth to remark that the presence of professors and assistants is still necessary, both in face-to-face classes as in virtual courses, in this last case by means of mails, forums, chats or better by creating live events.

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Technology In Education

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ABSTRACT

Day by day people are changing and increasing needs in the interests accordingly. Rapid changes in science and technology in the 21st century have affected the educational field and was put into practice. Traditional means of education - the use of new technology as well as the use of materials is also important. The computer becomes more access to information, especially with the introduction of the Internet into our daily lives and learning resources are also rich quick. In this context, our country, education quality capture efforts, the young generation of budding advancing and to follow constantly evolving age, in order to maintain the desired conditions of daily life require to integrate absolute education and technology. And to provide quality education to keep pace with technological developments in both education and the latest advanced technology use will increase success in the classroom.

Keywords: education, technology, technological development

INTRODUCTION

Different than all other living beings, humans have produced information since the beginning of their existence, they have used this information, shared it with the other individuals of their community and thus handed this knowledge down to future generations. Many different tools and methods have been used to distribute and hand this knowledge down to future generations.

Technology dates as far back as the history of humanity. Actually the technology that is put forth with this expression does not overlap the concept of technology as we understand it today. Because this understanding that considers the cave paintings drawn on walls in the dark ages for communication purposes as technology actually means only computers and accompanying devices. That is why an independent concept of technology can be talked of only until the industrial revolution in the 18th century, whereas the concept of technology after this period appears as one that is in the hands of dominant groups and is affected by the social sphere thus affecting it as well. Whereas the transfer of knowledge was handed down to future generations orally in the past for many years, written form started to be preferred due to increasing population and complex social structure. No significant changes occurred in education during the long years that followed this transformation. Whereas there are opinions putting forth that education is facing a radical change in our time. Technology in education – especially computers use – plays an important role in this change.

The realization that educational problems will not be solved via traditional education applications have resulted in the design of new teaching-learning activities as well as new approaches in their application.

EDUCATION

Turkish Language Society defines education as: helping children and the youth to acquire the relevant knowledge, skill and understanding required for social life; direct or indirect help in their personal developments, upbringing.

Whereas another definition is as such: Education is the process that takes place starting from birth of the individual until his/her death and it is the appearance of behavior in the individual through their own lives.

There are many different definitions of the concept of education. Based on these definitions, education can be defined as the acquisition of new behaviors by the individual within their own living space with the aid of environment, social and cultural values during the time period that passes starting from their birth until their death. Part of the education of the individual is carried out in a planned and programmed manner in the classroom.

TECHNOLOGY

Technology is the sum of all applied technical knowledge that is used to find or develop new methods for new goods or service production or new production and management methods as well as to solve practical problems. Technology appears as innovations or discoveries. Hence, technology makes up the application aspect of fundamental sciences. Even though some discoveries are results of various coincidences, technology actually depends on research and development activities.

Today, technology is perceived more as products that require high quality scientific knowledge and technique. Even though technology appears in our daily lives in this manner, it is actually an area that encompasses all social and economic activities and organizations which foresee the transfer of technology into our daily lives. If we make an optimistic definition, it is the application of scientific principles and innovations for solving

problems. In other words, technology is an application of science. Whereas the concept of “advanced technology” which is used more frequently today, is defined as but not limited to, “the use of programmable integrated circuits and related systems for data processing, production, information management and transfer, education, national defense, entertainment, energy management, environmental pollution control, security, communication, effective use of material and human resources”.

EDUCATION TECHNOLOGY

Education technology is the functional structuralization of learning or teaching processes by setting knowledge and skills to work in order to dominate education in general and learning. In other words, learning is the design, application, evaluation and development of learning – teaching processes.

The human labor element in education technology includes all individuals contributing to the learning – teaching process. Executives, teachers, service staff, guidance specialists, library staff, researchers who carry out scientific studies in their field and specialists are all members of the human labor element. Whereas all other resources apart from human labor include those that are not related with human labor. These are elements such as tools and materials, methods, physical environment or libraries which are required during the process.

Education technology includes all kinds of systems, techniques and help used for developing the process of learning. These four attributes gain importance in such a structure:

- Defining the goals that the student is planned to reach,
- Analysis of the subject to be learned in accordance with teaching principles and its proper structuralization,
- Selection and use of the proper environment for teaching the topic,
- Use of the proper evaluation methods to evaluate the success levels of students as well as the effectiveness of the course and the tools used in the course.

HISTORY OF THE USE OF TECHNOLOGY IN EDUCATIONS

When we look back at the use of technology in education, we see that in reality technology is put to use in education in countries that develop technologies. Technology developing countries such as USA have first started to use technological advancements in education. Various stages of technology use in education can be stated as follows:

- Visual materials have been used in military movies for training soldiers during the 1st and 2nd World Wars,
- Television was started to be used for education during the 1950's and visual-aural technology departments have been started to be founded at universities,
- Ford Association has started to support education via television in the States during 1950-1960,
- The American Research Institute has developed individual teaching programs called “Need Based Learning” in 1967.

Whereas the stages of computer use for educational institutions can be listed as follows:

- Computers were first started to be used in educational institutions during the 1950's when large universities started to use them for administrative purposes.
- Studies were started during the 1960's for developing computer aided teaching programs. One of these projects is PLATO.
- Greater number of schools started to use computers for administrative purposes during the 1970's,
- TICCIT (Time-Shared Interactive Computer Controlled Information Television) system was started to be developed in 1972,
- A tendency from personal computers towards network systems and internet developed after the 1970's with the advances in internet.

A new period was started when countries started to join NFSNET which is the internet backbone that Turkey joined in 1993 as well as with the rapidly increasing technological competition.

Whereas in Turkey, the use of technology was started to be mentioned with the use of radio and television for non-formal education during the 1970's with the 3rd Five Year Development Plan after which it was decided to start a second television channel for distance higher education and non-formal education with the 4th Five Year Development Plan. After 1995, technology entered the educational system rapidly as the use of advanced technological computers and internet increased. Whereas the MLO, ILSIS and MEBSIS studies carried out by MEB at the end of the 1990's resulted in focusing more on numbers related with the use of technology in education rather than the functionality of technology or changing the structure of administrative processes.

Distance learning has recently gained an interactive, dynamic and lively dimension with the popularization of simultaneous courses carried out via the use of telephone lines, personal computers, video devices, cd-roms and internet.

Thus, people can receive the education they need independent of both time and space. The greatest advantage of such an education is that they carry with them the attributes of proper education such as “right on time” and “right when needed” as well as their effect to provide gains greater than cost in the long run.

- The fact that students can carry out longer works in joy due to the attractiveness of studying with technology, leads to great benefits in the long run.

EQUIPMENT AND OBJECTIVES USED IN EDUCATION TECHNOLOGY

Education equipment are all kinds of learning and teaching aids that are used for observation and research in order to ensure that students grasp the knowledge provided to them effectively during the process of education while ensuring that teachers provide a more effective teaching.

Equipment used in education technology (in order of development);

- Blackboard, chalk,
- Book-notebook-pencil,
- Printing press,
- Models-mock-ups
- Pictures, slides, films,
- Radio tv-video, camera,
- Teaching devices, computers,
- Individual and mass automation (interactive video, disc, cd, hypercard, teleconference, bulletin board, e-mail),
- Network systems (internet, intranet, network, novell),
- Telecommunication: (communication systems-satellites),

Objectives of Education Technology are putting the following into effect for the solution of educational problems:

- Providing educational services to a greater public,
- Making teaching – learning processes more effective,
- Individualization of teaching – learning activities,
- Regulation of all applications and processes related with teaching and learning,
- Making educational needs and opportunities the topic of scientific research,
- Transforming educational institutions into areas of application,
- Ensuring continuity in curricula,
- Increasing the effectiveness and efficiency of the teaching staff,
- Arrangement and control of environmental factors,
- Adapting the teaching-learning processes in accordance with student abilities.

CONCLUSION

Modern education technology encompasses a greater meaning and application than the understanding of crowding educational institutions with aural, visual, technological tools-equipment. According to this understanding, “education technology is defined as the systematic planning, application and development of teaching-learning processes by making use of all labor and non-labor related resources based on researches carried out on human learning and communication in order to provide a more effective education technology”. These education technology applications that are characterized as a modern understanding with greater scope foresees dramatic changes with regard to the roles of educational programs, methods and techniques as well as the roles of teachers. In other words, the understanding of modern education technology with a greater scope is based on the regulation, application and development of teaching-learning activities in accordance with the “system approach”. Educational technology application based on system approach adapts the arrangement of all resources including human labor and tools-equipment used to provide a more effective education as well as the handling of all elements with regard to goals.

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The Achievement And Satisfaction Of Undergraduate Students Of Phranakhon Rajabhat University Through Multimedia Learning On Environmental And Natural Resources Management

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ABSTRACT

This study aimed to 1) develop multimedia learning on Environmental and Natural Resources Management, 2) compare the achievements before and after learning, and 3) study the students' satisfactions toward the multimedia learning. The sample was 20 students majoring in Environmental Science. The tools consisted of 5 lessons of multimedia learning with 50 items of learning achievement test, and questionnaire to measure the learners' satisfaction. The statistics used for data analysis were percentage, mean, standard deviation, and t-test. The result revealed that the students' learning achievements after learning were significantly higher than before learning at .05, and their satisfactions toward multimedia learning were at high level.

INTRODUCTION

Education is and important indicator for human resource development and a significant basis for other developments. Good quality education for citizens will result in sustainable development for the nation (Ampai Harakunarak, 2007). At present time, information technology and communication are changing rapidly and playing important roles toward the nation development. Advanced information technology and communication can connect the world into one unit. Therefore, knowledge and expertise should be created to manage and benefit the capital resources within the nation (Pimwarun Nunthaitaweekul, 2008). Access to information resources can be performed conveniently all the time. It substantially benefits new generations especially in efficient learning development. Searching for knowledge is not limited only in classroom anymore. Learners can learn by themselves independently from news and information in multimedia. This is a big change from the instruction with a teacher in front of a classroom to the learning with more advanced computer technology. Thus, the multimedia has been developed to encourage more learning. Multimedia is another form of media which is appropriate with the present-time learning. It consists of presentation techniques of using pictures, sounds, and interesting messages. It is easy to use and learners can learn by themselves conveniently (Wittaya Damrongkiattisak and Napawan Archaphet, 2012) which is appropriate with the higher education learning because it is considerably different from the high school learning. Students need to adapt themselves in learning such as number of long-learning hours, more complicated contents, and more analytical tests. Moreover, learners need to participate in various kinds of activities such as academic matters, sports, art and cultures. So, the learning only in classroom is not sufficient for them. Learners need to seek additional knowledge outside classroom by themselves. Their learning is not limited only in classroom anymore. Electronic media is, therefore, a good tool to promote learning.

The course "Natural Resources and Environment Management" is a required subject for the 2nd year students majoring in Environmental Science, Faculty of Science and Technology, Phranakhon Rajabhat University. The subject aims to create knowledge and understanding about the importance of natural resources and environment, problems and impacts, and principles for sustainable natural resource and environment management to develop learners' learning which focuses on knowledge, virtue, ethics, cognitive skill, interpersonal relationship skill and responsibility, including the skills of numeric analysis, communication and information technology usage according to the Qualifications Framework for Higher Education of Thailand. Thus, the multimedia developed for the course "Natural Resources and Environment Management" will assist learners to understand the contents more and encourage learners to learn by themselves when they are ready according to the learner center model and to be consistent with information technology skills for living in the 21st century as well (Hoggatt, Shank and Smith, 2015)

OBJECTIVES

- 1.To develop multimedia learning on Environmental and Natural Resources Management.
- 2.To compare learning achievements before and after using the multimedia learning
- 3.To study students' satisfactions toward multimedia learning on Environmental and Natural Resources Management.

METHODOLOGY

Sample

The sample was regular undergraduate 20 students majoring in Environmental Science who enrolled in Environmental and Natural Resources Management course in year 2015.

Tools

1. The five lesson multimedia learning including: 1) Definition and Importance of Resources, Nature and Environment 2) Situation on the use of natural resources and environment 3) Problems and Conflicts of Resource Management 4) Fundamental Concept concerning Natural and Environmental Resources Management and 5) Sustainable Natural and Environmental Resources Management

2. 50 items of learning achievement test.

3. Questionnaire to measure students' satisfactions toward the learning.

Method

This study was an experimental research, developing 5 lessons of multimedia learning on the subject Environmental and Natural Resources Management. Then, the media was used as a part of teaching and learning process for the 20 samples. The learning achievements were gathered by the achievement test. The data was analyzed by basic statistics; frequency, percentage, mean, standard deviation, and t-test.

RESULTS

1. By t-test, the comparison between before and after learning scores of 20 students showed that they were statically significant at .05; the after learning mean score ($\bar{X} = 44.64$) was higher than the before learning mean score ($\bar{X} = 35.17$) as shown in Table 1.

Table 1: Students' achievements measured by using multimedia learning

Multimedia	Full Score	\bar{X}	S.D.	t
Before learning	50	35.17	6.67	5.41*
After learning	50	44.64	5.03	

*Statically significant at .05

2. From the 20 questionnaires, it was found that the students' satisfactions toward both aspects of the multimedia were at high level ($\bar{X} = 4.38$) as shown in Table 2.

Table 2 : Students' satisfactions toward multimedia learning

Lists of Assessment		\bar{X}	SD.	Result
Content				
1.	Multimedia content is up-to-date and in accordance with the purpose of the course objectives.	4.55	0.51	Very high
2.	Contents are clearly organized in proper order.	4.45	0.51	Very high
3.	Contents are harmoniously arranged.	4.5	0.51	Very high
4.	Contents are valuable and interesting.	4.6	0.50	Very high
5.	Knowledge gained from multimedia learning is practical.	4.5	0.61	Very high

Lists of Assessment	\bar{X}	SD.	Result
Instructional tools			
6. Instructional tools are essential for learning.	4.6	0.50	Very high
7. Learning with this instructional multimedia is interesting.	4.4	0.60	High
8. Instructional tools are suitable for learners.	4.4	0.60	High
9. Instructional tools helps you understand the lessons better.	4.25	0.64	High
10. Picture and sounds are clear and insightful.	4.4	0.68	High
11. Font and font size used in the presentation are clear and appropriate.	4.35	0.67	High
12. Chosen font color is appropriate.	4.05	0.68	High
13. The multimedia encourages understanding.	4.1	0.55	High
14. You can learn from the multimedia by yourself.	4.2	0.69	High
15. Multimedia allows users to view materials and concepts repetitively.	4.35	0.59	High
16. Multimedia is suggestive of new perspectives and encourages further learning.	4.55	0.76	Very high
Total	4.38	0.61	High

DISCUSSION

After considering the usage of multimedia which the researcher has developed for the course “Natural Resources and Environment Management”, the result revealed that the multimedia had good quality that learners could learn efficiently. After comparing the results of learning with multimedia by testing before and after the learning, there was significant difference at the level .05 which meant that the developed multimedia was a good quality educational technology and could be used as learning multimedia since it consisted of slides, motions and sounds (Clarke, Ruth C, Mayer and Richard E., 2011) which stimulated learners to learn (Mayer, 2005) and motivated them with enjoyment and grab their attention (Aekarat Sisawang, 2013). Besides, the multimedia allowed learners to learn independently and control learning by themselves. So, the learners enjoyed learning (Manee Siwiboon, 2008) and their learning achievements could move into higher levels.

From the study of students’ satisfaction toward the multimedia in the course “Natural Resources and Environment Management”, the content satisfaction was in the highest level in every item while the learning media satisfaction was at high and highest levels. This was consistent with the study of Panapa Piromnark (2014) who studied “Useability of Instructional Media in Multimedia for Student Development study class in Transportation Management Business Faculty, Sripatum University” which revealed that the students’ satisfaction was at high level (mean 4.28) because the modern media had good quality and was appropriate with present-time instruction which focuses on technology. Also, it emphasized on learner center which increased learning efficiency.

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The Application Of Smart Devices In Teaching Students With Special Needs

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ABSTRACT

Smart devices such as smart phones and tablets have become part and parcel of our lives in recent years. The effects of these new smart devices can be seen everywhere. Students, especially, use these devices in their daily learning process and the application of these tools will be more and more important in the following years. Therefore, it's very important to keep students' attention continuous with the assist of these smart devices. Smart devices help students to study anytime in anywhere, so students learn whenever they want without any limitations. These roles also help students to keep in touch with their teachers. It will also help them to be integrated in social life more easily. This study is about developing a complete software tool to be used in the education of students who need special education. The software is designed for smart devices such as smart phones and tablets. Students who are mentally handicapped may get benefit of using this software for a complete learning session or as a supporting tool. The software is developed on Android platform. In the current version, the concepts of "less" and "more" are considered. The target students are Turkish students who need special education.

INTRODUCTION

Mobile applications become more popular with the rapid development of mobile technology. The educational software development also benefit from this rapid development of mobile technology. It is possible to support the face-to-face education with the computer aided tools. Moreover, mobile devices such as smart phones and tablets are available today for educational purposes. Thus, there is a need for effective software and tools to make these devices useful for education.

On the other hand, there are students with special needs. These students are educated with special methods. Students with special needs also benefit from computer assisted tools. Therefore, an effective software tool that is applicable in mobile environments like smart phones and tablets should be developed. This paper addresses the problem of mobile solution for students who need special education. Other than the conventional software developed for educational purposes, in this study, the developed software involves teaching methodology dedicated to students who need special education.

This study mainly focuses on students who are mentally handicapped. It is aimed to teach them skills of identifying "less" and "more". This is accomplished by special and iterative methods showing the students different objects in different colors and combinations. Also, the software includes special effects to keep the attention of the students who need special education continuous. There are repeated sections with different images on the same concept. According to the student's response, the sections will be completed and the application will shift to the next sections.

When students run the application, they face with two images containing two different objects but of the same type, the same color and the same size. Firstly, the application teaches based on two images. Then, similar images involving varying sizes, colors and types are displayed in the further sections, in an increasing manner. The sections are repeated four times with different objects and a test session runs after the sections in order to detect if the student understood well or not. If students can give at least tree correct answers, the application will go to the next sections and continue. Firstly, the above steps are followed for the teaching of the notion "less", and then, similarly, the notion "more" is taught.

This study is designed for Turkish students. Hence, it includes audio effects and instructions in Turkish. Although currently the software is using Turkish audio instructions, they can be easily translated to other languages and the software may be available in any language.

There are similar studies in the literature like the study of Lopez A. F. et al. to develop a software in order to support the education of students who need special education in mobile devices based on iOS system, in 2013 (A.F. Lopez et. al., 2013). However, software development for Turkish students who need special education is still not satisfied and this study is motivated by this need.

The structure of the paper is as follows. The next section discusses the literature review about the topic. Then, methodology section explains the methods and algorithms used. Application section describes the actual application developed with its screen shots. Then the paper ends with conclusion and references.

LITERATURE REVIEW

There are related studies in the literature starting from early 2000s that mobile devices and applications become more popular. Besides supporting technologies like smart boards or digital lecture material, complete software solutions dedicated to educational purposes are also introduced to the market. Popular use of mobile devices and personal computers make the educational software developers work on different environments and operating systems. In the last decade, the popularity of mobile devices directed the developers to develop software that is compatible with mobile operating systems. Therefore, with the parallel improvements in educational software development and mobile technology, mobile educational software development is now taking the attention of the researchers. There are significant improvements in the field which are published recently.

In 2009, John Traxler defined the mobile learning as a learning method developed with the support of learning material available for Personal Digital Assistants (PDAs), smart phones and computers capable with wireless connection technology (J.Traxler, 2009). In 2004, Bulun, M., Gülnar, B. and Güran, M. presented a study about the use of mobile devices and educational software on mobile devices. They pointed out the advantages of using mobile devices as a tool to support education (Bulun M. et. al., 2004). In a recent study, Celalettin A. and Berk Ç. contributed on new methods in mobile learning using Quick Response Code (QR code) in 2013 (Celalettin A., Berk Ç., 2013).

Moreover, researchers also worked on the educational software for mentally handicapped or disabled students. These are the students who need special education. In 2012, D.B. Kagohara et. al. reviewed the use of iPods and iPads in teaching programs for individuals with developmental disabilities (D.B. Kagohara et. al., 2012). A.F. Lopez et. al. discussed mobile learning technology base on iOS devices to support students with special education needs (A.F. Lopez et. al., 2013).

In Turkey, also some research activity takes place starting from the early 2000s. A study is done by R.K.Ağca and H.Bağcı about the usage of mobile tools in education. They analyzed the mobile device usage from the student side (R.K. Ağca, H. Bağcı, 2013). Another significant study is done by Aruk İ. about the usage of information systems technologies in the education of students with special needs. They also developed a sample application (Aruk İ., 2008). This study is also done for the Turkish students who need special education.

METHODOLOGY

This study mainly focuses on teaching "less or more" concept between the objects. The algorithm is based on showing the students different images and explaining "less or more" concept with audio instructions. Firstly, the student will face with two images with same objects, same types, same colors but different sizes. Then, the application directs the student with audio instructions like "this is less" and "this is not less". Then, the application will ask to student "look to screen and choose which image is less". If the student selects the correct image, the application will pass to the second section which includes the same concepts. That section will be repeated four times. But on the other hand, if student fails to give the correct answer in any part of that section, then the application will turn to the beginning of teaching and the overall process will be repeated. If the student is successful to finish that four repetitions, then two different images of the same objects, same types, same colors but different sizes will be faces and the application will ask to students "look to screen and choose which image is less". This section will be repeated four times but this time without teaching. If the student scores at least three correct answers out of four, this section will be completed and the application will continue to the next section.

In the next section, the student will face with two images with same objects and same types but different sizes and different colors. This part is different than the previous teaching and testing parts. The method will be the same with previous sections, in same concept. If the student is successful to finish this section, then the application will continue to the next section. The next section includes two images with different objects, different types, different sizes and different colors. Then, the teaching and testing methods will be the same.

Again, a successful result will lead the student to the next section which is in the same concept with previous sections but this time the student will face with three images. Another successful stage will continue to the next section with four images and so forth. Being successful in the last section finalizes teaching "less" notion to the student. Similar approach is followed by the "more" notion.

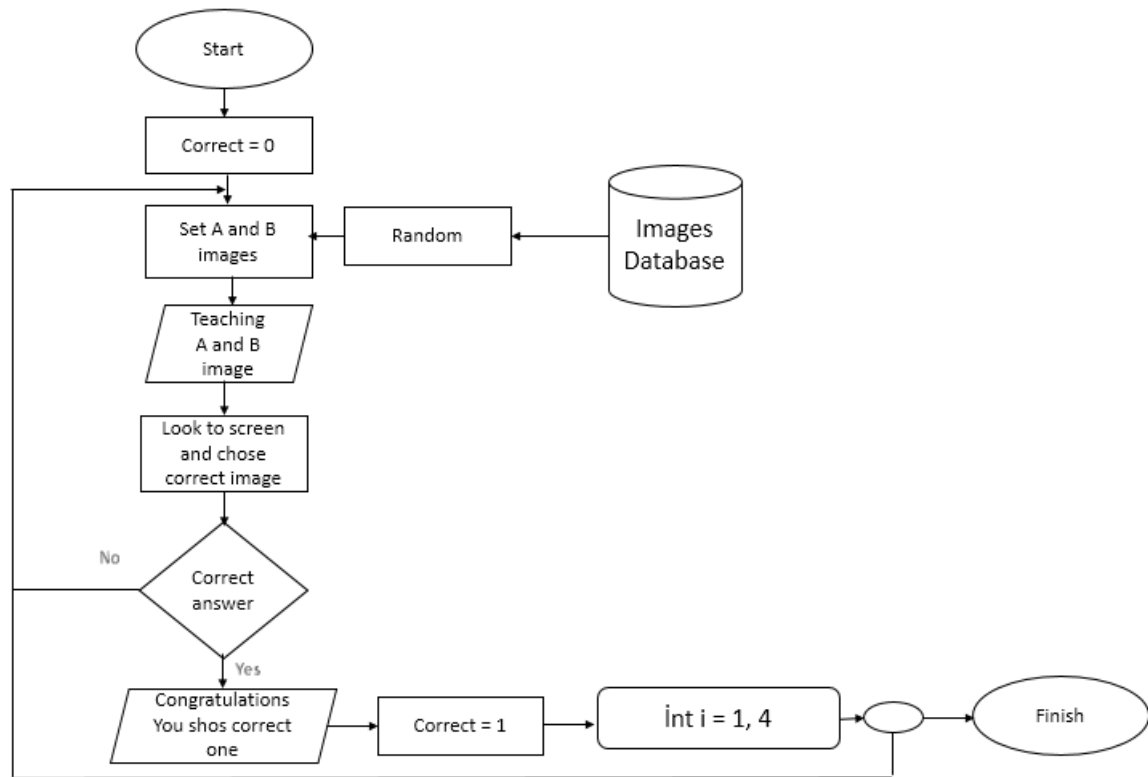


Figure 1. Flowchart of teaching module.

- 1- Two images two different numbers and colors with objects but with the same type and size
- 2- Two images with different numbers, type, color and size.
- 3- Have three images with different object with numbers, types, colors and sizes
- 4- Four images with objects with different numbers, types, colors and sizes

Figure 2. Pseudo-code for teaching module.

Methodology of teaching other possible notions will be the similar. The corresponding pseudo-code is provided in Figure 2. The flowchart of the overall process is available in Figure 1.

APPLICATION DEVELOPMENT

Currently, there are two main operating systems, platforms, available in the market place. The majority of the mobile devices are running on Android or iOS system. Therefore, in this study, we prefer to use these platforms. Android platform is more suitable for free application development, that's why we first focus on developing this educational mobile application on Android platform. The development of the iOS version of the software is one of our future work.

The mobile application is developed on Android Studio, based on java programming language. It is planned to run on devices which use android operating system. Devices with the installed version of at least Android 4.0 (Ice Cream Sandwich) operating system will be compatible.

The algorithm mainly depends on visual inputs to the student, and assuming that the student (a potential user) has special needs, we employ a repetitive structure in order to teach the student slowly and efficiently. The flowchart of the algorithm is shown in Figure 1. As it is seen from Figure 1, looping structures that show different images to the student to teach the less or more objects in the scene, the application includes an image database. a sample instruction used for comparison is shown in Figure 4. Sample images are presented in Figure 3. In total, we employ 64 sample images currently. The screenshots of the actual program are shown in Figure 5.

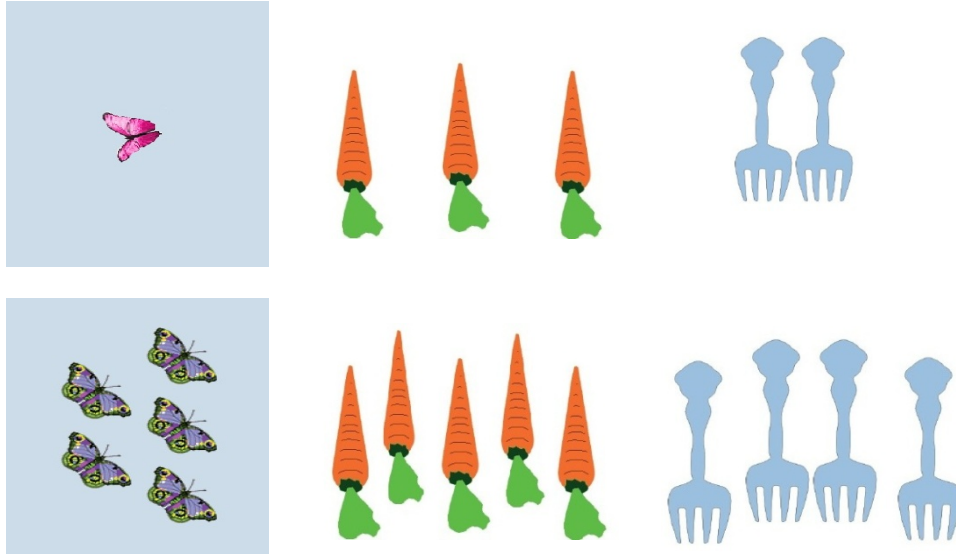


Figure 3. Sample images.

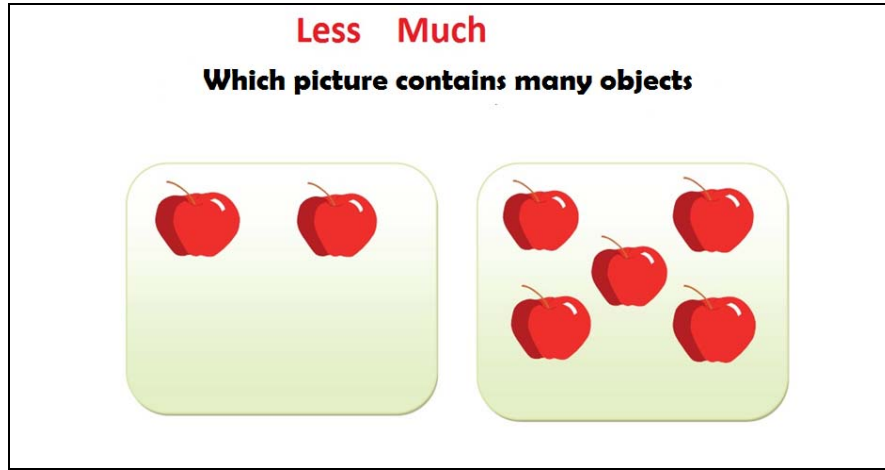


Figure 4. Instructions used for "less or more" comparison.

The application also includes audio to direct the student through the images. Currently, the application teaches the concepts of "less or more" to the students. Development of the next module that teaches the students to put the images in the ascending/descending order according to the number objects in the scene is under study now.

Test phase of the application is planned after completing the next module. We plan to test the application on students who need special education at 'Lefkoşa Özel eğitim ve İş eğitim Merkezi'. The test stage will include teaching the "less or more" and "ordering" concepts to selected students and then evaluate their ability.

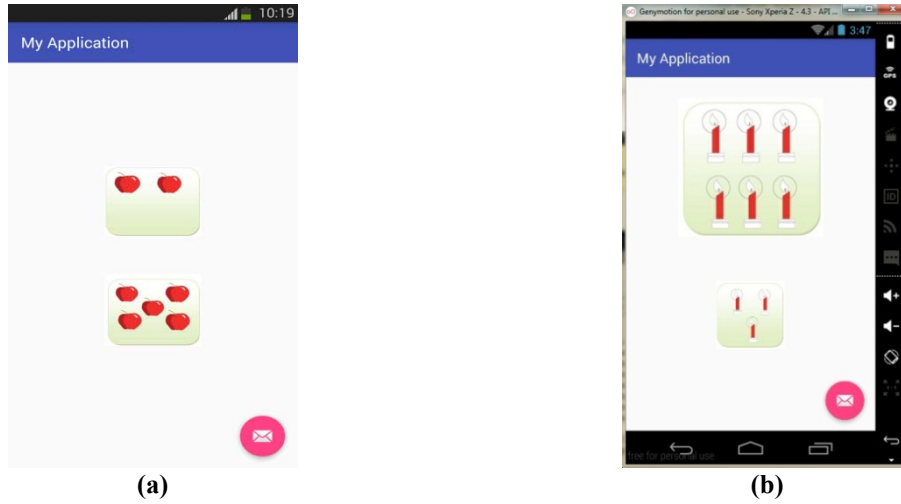


Figure 5. Screenshots of the application developed: (a) images including apples (b) images including candles.

CONCLUSION

A mobile application is designed and implemented for smart mobile devices. The application design is aimed to be used in teaching students with special needs. The application is designed to serve Turkish students with special needs. We focused on the teaching of the concepts "less or more" to the students with special needs. The next module to be implemented will focus on teaching the students to sort the images according to the number of objects in the scene. The application has been developed on Android platform and preliminary outcomes are presented. The evaluation of the application is planned to be done after including the design of the next module.

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The Development Of Online Mobile Classroom Using Power Generated From Solar Cells

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ABSTRACT

This research is conducted in order to support the physical learning environment. The researcher has created an Online Mobile Classroom Using Power Generated from Solar Cells (“OMC-SC”) that can contain approximately 15 persons to be the learning facility for teachers and students of the Faculty of Education, Kasetsart University. The design and construction of OMC-SC has received the quality assessment and approval by experts in educational technology in Thailand. After this project being piloted with 30 students (15 students each time) in 1st semester of 2015, the result indicates the high level of efficiency, effectiveness and satisfaction of the teachers and students.

INTRODUCTION

Creating learning opportunities for supporting the development of ability to learn of learner is necessary when it comes to the instructional management in 21st century. Nowadays, many institutions have a good administration of their buildings or other facilities to create better learning environment so as to support the modern methods of instruction for teachers and students in various curriculums, for instance, building a Smart Classroom which is comprised of instructional media particularly in the form of electronic media that incorporates computer technology. So students can have self-learning and research including can have two-way interaction between the learner and the media (Uskov & Bakken et al, 2015). As for the Virtual Classroom, it is the administration of the venue or classroom that utilizes the computer technology together with 3D application program. Learning contents are designed to enable learners to study profoundly, and to promote the better results of learning (Pattanasith & Rampai et al, 2014).

At present there are several learning facilities that enhance modernized learning to help learners keep pace with the world. One amongst those is media of instruction which is currently available in various forms and they can be used in learning, searching, storing and disseminating data or information that exist in books, journals and other publications. Also, the using of this media technology can help build the communication and self-learning skills as well as collaborative working skills and the social network of learning. These are what organizations or schools should provide to be the source of learning and should accommodate learners and teachers to use them with quality, efficiency and sufficiency (Kaarina & Gonzalez, 2011). If any institutions still continue the use of traditional sources of learning, for instance: original style classroom with no modern teaching materials whether because of adherence to the traditional approach of teaching or no attention to supply modernized equipment or lack of funding, the teaching methods will rely primarily upon persons as teachers in conveying knowledge. And this could affect the mission of instruction which is to develop the potential of students in the 21st century (Chaengchenwet, 2010).

Therefore, the development of learning resources for supporting students to have access to new technologies of 21st century, in order to enhance their technology skills, communication skills and collaboration skills, is necessary and must be proceeded to happen so as to promote the quality and efficiency of instruction. Lately at this time, the Faculty of Education, Kasetsart University has a plan involving the construction of new school building due to shortage of classrooms and increasing number of students. As the researcher's works relating to the teaching of educational technology and communication at the Department of Educational Technology at the Faculty of Education, Kasetsart University, a state university in Thailand, it is thought that the development of learning resources by developing the Online Mobile Classroom Using Power Generated from Solar Cells (“OMC-SC”) could possibly to the satisfactory extent solve the problem of shortage of classrooms and help enhance learning skills in the 21st century for the students at the Faculty of Education. Moreover, the result of this research could also be used as an innovative prototype for online classroom using electricity generated from alternative energy, that is, solar cells, which can be moved to or relocated in anywhere conveniently for effective learning of the students at the Faculty of Education Kasetsart University.

THE STUDY

This research is conducted in order to build a quality online mobile classroom with solar cells in consultation with nine experts from educational technology and alternative energy. The researcher designed the construction project based on the principle from ADDIE Model (Branch 2010 p.2) which is composed of:

- A (Analysis) dynamic, flexible guideline for building
- D (Design) effective learning and performance support
- D (Development) tools
- I (Implementation)
- E (Evaluation)

The ADDIE Model is used in every stage of the development of OMC-SC respectively. When the construction process completed, it was tested to assess the quality by users who are enrolled students of the Faculty of Education in 2015. Random groups of 15 students from Bachelor's Degree and 15 students from Master's Degree (30 students in total) were put into the OMC-SC to use it for a total period of two weeks (15 students per week). After the trial, the researcher then evaluated the satisfaction of the students who had used the OMC-SC.

The tools used in collecting data include questionnaires answered by the experts regarding quality of OMC-SC, particularly in respect of appropriateness to be used as an online classroom, correctness of equipment and kits installation, safety and convenience in using. In addition, the questionnaires were also answered with regard to the efficiency and effectiveness of OMC-SC by the user students concerning time efficiency of learning in OMC-SC, responsiveness to the needs of learning and researching, convenience of using and safety. Furthermore, there were questionnaires about satisfaction of the students who had entered the OMC-SC regarding the physical environments in OMC-SC which are, in particular, temperature, clarity of sound, lighting and space condition inside the OMC-SC.

FINDINGS

The OMC-SC that has been developed and tested by the students is composed of:

- 1) Body
- 2) Classroom,
- 3) Instructional media, and
- 4) Solar cells generator

The body consists of the frame and wheels for towing it. The classroom includes the space equipped with desks and chairs for learners, and air conditioner is installed inside for the ventilation and controls of temperature. Lighting system functions by a series of LED lights. As to the instructional media, amplifiers, audio speakers and microphones are set up inside the OMC-SC. Additionally, Internet box-set including Wi-Fi router and online computer server system as well as a big LED screen are installed as parts of instructional media. Lastly, the solar cells generator system to generate power from the sunlight is comprised of 1) solar panels, 2) solar charge controller, 3) capacitor, 4) inverter DC to AC. All components were put in together to complete the construction of OMC-SC. After that, the finished OMC-SC went through the functional testing to find its working quality by the experts who examined it and answered the questionnaires. It is found that the level of appropriateness is high, the average point is 4.33 and SD point is 0.27, which means OMC-SC is suitable to be used as an online mobile classroom. As to the correctness of equipment and kits installation, the experts found that OMC-SC has the high level of correctness where the average point and SD point are equivalent to 4.11 and 0.38 respectively. For the level of safety and convenience of using OMC-SC, it is at high level as well where the average point equals 4.00 and SD point equals 0.56.



Figure 1 the construction of body, frame and wheels as well as the online mobile classroom

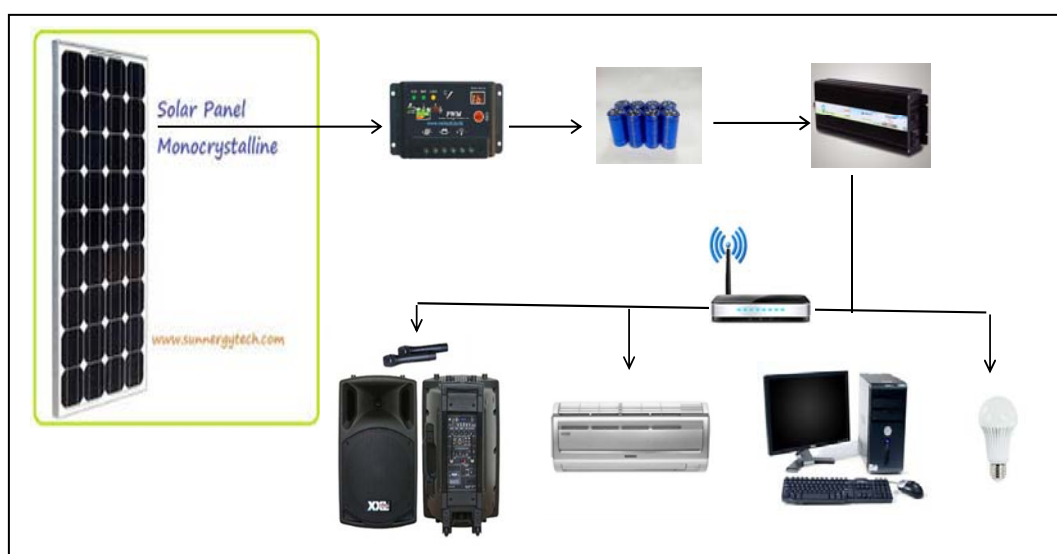


Figure 2 the diagram of solar cells generator system connected with computer, air-conditioner, lighting and instructional media system

After the students using the OMC-SC, the survey was conducted via questionnaires answered by 30 students. It shows that the efficiency of using OMC-SC, which means the time efficiency of learning and researching, is at high level. The average point and SD point in this aspect are 4.10 and 0.78 respectively. In regard to the effectiveness of using OMC-SC, that is, the responsiveness to the needs of learning and researching, it remarkably ranks at the very high level with the average point equivalent to 4.70 and SD point equivalent to 0.99. Importantly, the level of safety and convenience of using OMC-SC is very high as well with the average point equivalent to 4.60 and SD point equivalent to 0.82.



Figure 3 the using of OMC-SC

The satisfaction of the students using OMC-SC is assessed in relation with the physical environment in OMC-SC. The satisfaction of the students concerning temperature in OMC-SC is at high level with average point equal to 4.33 and SD point equal to 0.94. The satisfaction of the students towards the clarity of sound inside OMC-SC is at very high level and the average point and SD point are 4.80 and 0.79 respectively. The satisfaction of students as to the lighting or brightness inside OMC-SC is ranked at very high level too with the average point at 4.67 and SD point at 0.45. Regarding the space condition inside OMC-SC, the students are satisfied at high level and the average point and SD point of satisfaction level are 3.93 and 0.98 respectively.

CONCLUSION

The management of learning facilities for learners in 21st century is essential and necessary because it can help learners enhance their learning skills in reading, writing, critical and creative thinking, communicating and collaborating with others in working (Trilling & Fadel 2009, p.50-56). Thus, responding to the needs of learners is crucial in order to serve or facilitate them in searching information or researching. Especially in this era where information is various in very wide sources and can come from anywhere flowing all the time in the network of this world, in order for learners to have efficient and effective access to this various information they need to have the right tools or supports which is advanced enough to be utilized when needed. As such, this research has been conducted to develop the online mobile classroom using power generated from solar cell (OMC-SC). The findings from this research can be utilized to satisfy the demands of learners and can solve the problem of the shortage of classrooms at the Faculty of Education, Kasetsart University. Especially, OMC-SC has gone through the quality assessment and received the high level of satisfaction from the experts in educational technology and alternative energy. Also, OMC-SC has received high level of satisfactory feedback regarding the efficiency and effectiveness of using OMC-SC from the testing students of Faculty of Education, Kasetsart University, Thailand.

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The Impact of an Augmented Reality System in Teaching Machine Dynamic Course for Engineering Students

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ABSTRACT

This paper summarizes one-year research project funded by the College of Education at Sultan Qaboos University. The study aims to investigate the impact of using augmented reality system as a tool to enhance students' motivation and understanding in Machine Dynamics course and compare this new approach with traditional learning approaches. The experimental design to be used for this study for 30 students from college of engineering at Sultan Qaboos University. Students will be randomly assigned to two groups (15 students each): experimental and control group. Both groups to be taught one chapter from Machine Dynamics Course during four weeks by the same teacher. The experimental group to use the Aurasma application, so students in this group are allowed only to use iPads. On the other hand, the students in the control group are going to study the same chapter using the traditional method. Students' understanding and motivation towards the augmented reality system (Aurasma) to be measured by using observation method. More specifically, times of students' access to the augmented reality application on iPad or textbook to study and get information are to be calculated. Students' performance or understanding of the materials to be measured on weekly basis using achievement tests.

INTRODUCTION

Nowadays, technology has been integrated into many fields; education is one of the main fields. It was observed that technology made a great transition in improving the educational process. Day by day, different technologies have been involved and it was observed from the results of (M. M. Chiu, B. W.-Y. Chow, and C. McBride-Chang, 2007) study which shows that despite of different learning strategies, still there is a necessity to integrate complementary technologies which will help in enhancing to develop new kinds of learning environments for both teachers and learners. Augmented Reality applications are one of those new technologies that are used because of its effectiveness in the educational process. The main idea to use the augmented reality is to enhance the learner's senses by manipulating virtual objects with the real world (R. Azuma, 1997). According to (G. Chang, P. Morreale, and P. Medicherla, 2010), the augmented reality takes down shorthand the gap between the real world and the virtual world.

Further, (A. Cascales, I. Laguna, D. Pérez-López, P. Perona, and M. Control, 2013) found that augmented reality applications play a good role in providing a real motivation and stimulus for the children and teachers observed a very positive impact on them. Also, it promotes active behavior in the student, communication skills, and all kinds of interactions in the classroom. Moreover, the augmented reality helps the students to learn more as there was a positive impact in achieving the learning goals with those who used the augmented reality more than those who didn't use it. Also, (M. Billinghamurst and A. Dünser, 2012) indicates that augmented reality applications motivate students to explore their surroundings and collaboratively develop their problem solving skills. On the other hand, it was detected Some obstacles that remain in making AR experiences part of the average classroom. One is the lack of content-creation tools. Many educational content developers, such as teachers, do not have the highly developed programming and 3D modeling skills currently required to design AR experiences. Unless tools become usable without such skills, AR interfaces most likely will not catch on in the mainstream curriculum (M. Billinghamurst and A. Dünser, 2012).

• Augmented Reality and understanding

Some innovations of Augmented Reality have been developed and are being used to enhance the learning and training efficiency of the students. Several studies suggest that AR contributes to improve student's comprehension and the understanding of the content. (Shelton, 2004) indicates the significant role of augmented reality in enhancing students understanding in astronomy class. His study described the following:

The virtual sun and earth are manipulated on a small hand-held platform that changes its orientation in coordination with the viewing perspective of the student. The student controls the angle of viewing in order to understand how unseen elements work in conjunction with those that were previously seen. As another example for the employment of AR in astronomy, (Johnson, et. Al, 2010) described Google's SkyMap as an application

using AR technology. SkyMap overlays information about the stars and the constellations as users browse the sky with the see-through view from the camera on their smart phones. However, it is important to mention that the different features of AR play a significant role in improving student's comprehension. According to (Chang, Morreale, and Medicherla, 2010) study, students and trainees can strengthen their motivation for learning and enhance their educational realism-based practices with virtual and augmented reality.

(Freitas, R., & Campos, P. (2008) indicated that SMART (System of augmented reality for teaching) helps in increasing motivation among students, and it has a positive impact on the learning experiences of these students, especially among the less academically successful students.

This research will investigate the impact of using the Augmented Reality system (Aurasma) in teaching Machine Dynamics course on engineering students' motivation and understanding compared to the traditional way of teaching. We hypothesized that students' who use AR will show better performance in comprehension test and more motivation for learning.

• **Augmented Reality and motivation:**

Most of the researchers pointed out that students' motivation increase with the use of effective learning strategies. Therefore, the effective learning strategies complement with proper computer technology can seriously increase learning motivation. (Chu, Hwang, & Tsai, 2010; Hwang, Tsai, Chu, Kinshuk, & Chen, 2012). The use of Augmented Reality (AR) on learning process helps students to effectively gain understanding of the learning material afterward increasing their learning motivation. Such an approach enables students absorbing learning concepts that are not directly understood by their human senses (e.g., sight, sound, and touch). Therefore, AR offers opportunities for students to be engaged in a meaningful learning environment and interact effectually with it. (Azuma, 1997). Moreover, (Chiang, Yang & Hwang, 2014) found that AR approach helps in obtaining significant learning as it helps in improving students' attention while they focus on exploring the learning material. In addition, it aids to provide relevant information to the students based on their context, so AR being a good tool in developing students' interests and experiences. Moreover, AR promotes their confidence regarding the learning activities while they face the challenges of the learning tasks at the same time AR helps in increasing the students' feeling of satisfaction after completing those learning tasks.

THE STUDY




The experimental design will be used for this study. Students will be randomly assigned to two groups: experimental and control group. Both groups will be taught one chapter from Machine Dynamics course during four weeks. The same teacher will teach both groups. The experimental group will be using the Aurasma Augmented Reality System(Aurasma) as an application. The content in the application will be designed or collected by the researchers as they will specify the pictures from the chapter that will be used for the application, so students in this group will be allowed only to use iPad. On the other hand, the students in the control group will study the same chapter and will be in a traditional way. Students' understanding and motivation on an augmented reality system (Aurasma) will be measured by using:

1. Comprehension Test

To measure students' understanding of the Machine Dynamic course, the researchers designed a comprehension test for one chapter of the book. The test contained four different questions. The test is designed according to the chapter content, the students are exposed to this test two times, one time before using the Aurasma and the other after using the Aurasma to compare the results.

2. Motivation Scale

The motivation scale is designed to measure students' motivation toward Augmented Reality System(Aurasma). The scale contains 20 questions; each question has three choices (happy face, normal face, sad face; see below figure). The student chooses the answer that represents his/her opinion. The researchers apply the scale before the experiment to measure the children's motivation towards Augmented Reality System(Aurasma), and will apply it again after completing it to compare the results and find if any differences exist.

		
Applies to me	Not sure	Dose not apply to me

CONCLUSIONS

This study aims to investigate the impact of an augmented reality system(Aurasma) on students' motivation and understanding. The study is in progress and its results will be concluded in the coming few months.

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The Information And Communication Technology Learning Package For Enhance Graduated Students' 21st Century Skills

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ABSTRACT

This research aims to design and develop the Information and Communication Technology learning package for enhance graduated students in 21st century skills that divide into 3 stages: first stage is to study the appropriate model of ICT skills learning package, second stage is to develop ICT skills learning package for graduated students, and third stage is to study the use of ICT skills learning package form graduated students. The participants were master degree students that study in Department of Educational Technology in 2015 academic year. Research tools were: matrix analysis data form, satisfaction questionnaire, 21st century skill evaluation. Data were analyze by Arithmetic mean and Standard Deviation (S.D.)

Research findings showed that the model of ICT skills learning package in 21st century for graduated students that analyze and syntheses are include the 4 main elements: 1) Connectivism, 2) Knowledge Management, 3) Self-Directed Learning, 4) Collaborative Learning, and 5) Online Learning Environment. Finally, the model showed the quality evaluation by 3 experts found that “appropriated level” which is the “Prototype model” that can be develop to the learning package system in the next step.

INTRODUCTION

Information, communication technology shaped the facilities and services of lives. The way of learning, the way of sharing experiences has been changed. ICT becomes integral of our lives and it promises opportunity for learners to gain equality in education within diverse contexts and services. The needs for ICT skills professional development that can meet today's educators' demanding schedules, that uses quality content and resources that are available to teachers from any place and any time, and that can deliver relevant, accessible, and ongoing support has stimulated the development of online teacher professional development programs. Online teacher professional development programs make it possible for educators to communicate, share knowledge and resources, and reflect via asynchronous interactions. Moreover, Rabah (2015) suggests that the benefits and challenges of ICT integration is a powerful and flexible tool for learning, it is needed and desired to meet globalization challenges in particular knowledge and communication breakthroughs that the world can achieve using information communication technologies (ICT) are so numerous that educational institutions are striving to invest in ICT tools in an attempt to help raise citizens who are ready to face the challenges of the 21st century where media, manufacturing industries as well as commerce have become increasingly technology-oriented. In addition, Omar and Noordin (2013) supports that the uses of Information and Communication Technology (ICT) have been developed tremendously in order to assist the operations for daily business and education throughout the world. Technological advancements today have passed beyond cables and wires where the means of communication now can be done from just about anywhere. Office works can be done from home, meetings can be conducted virtually and educational classes can be handled from thousands of miles away without having to have the students to sit in front of their teachers in the same classrooms. However, there is a concern recently that such technological advancements would not be possible to be continued without the sufficient supplies of human capitals. The condition of education in Thailand today still has several problems. Especially, the quality of learners seems shortages (Secretariat of the Council of Education- Thailand, 2010). Along with the lack of pedagogy skills that is not match in the actual practical needs for higher education. Particularly, Lee (2010) have suggests that the common difficulties and limitations regarding the implementation of knowledge management into classrooms cultures. In addition, the concept of social media that based on the appropriate tool and the medium to deliver knowledge, and helps learners can communicated with each other (Catherall, 2008) especially in teaching and learning using the potential of internet network to access with various sources of learning (Bellegheem, 2011).

The main purpose of this study is to research and develop activities to be appropriate with the learners that integrated with the concept of knowledge management and social media. The question then becomes, “How to design and develop the appropriate design the model of Information and Communication Technology learning package”. The expected benefits are the appropriate model that is the systematic approach to enhance graduated students in 21st century skills. More over the results of quality assessment of model that is body of knowledge to develop the learning skill of graduated students. In addition the results can be the information to support the higher education systems policy maker.

THE STUDY

This research aims to 1) design the model of Information and Communication Technology learning package for enhance graduated students in 21st century skills, and 2) develop and evaluate the Information and Communication Technology learning package for enhance graduated students in 21st century skills. The methodology provide into 2 phases, the details are as following:

The 1st phase focus to design the model of Information and Communication Technology learning package for enhance graduated students in 21st century skills.

1. Analyzing the elements of Personal Knowledge Management (PKM) are included the activities: Activation (Community of Interests), Demonstration (Before Action Review), Application (Community of Practices), and Integration (After Action Review) and designed activity in to the Online Learning Environments: OLEs and Virtual Learning Environments: VLEs.

2. Analyzing the elements of Self-Directed Learning: SDL are included the 5 elements: Set Goal, Plan, Learn, Show, and Reflex. Driven by “Seek & Sense” activity.

3. Analyzing the elements of Collaborative Learning: CL are included the 5 elements: Collaboration, Discussion, Community, Brainstorm, Interaction, and Share Idea. Driven by “Show & Share” activity.

4. Analyzing the elements of Monitoring and Evaluation are included the 3 elements: 1) Creatively and Innovation, 2) Critical Thinking and Problem Solving, and 3) Communication and Collaboration.

5. Integrating the elements of Personal Knowledge Management, Self-Directed Learning, Collaborative Learning, and Monitoring and Evaluation by the matrix analysis technique

6. Studying the appropriate quality of model of Information and Communication Technology (ICT) learning package for students in 21st Century by the 3 experts (Educational technology and Knowledge Management field)

Finally, the 2nd phase go for develop and evaluate the model of Information and Communication Technology (ICT) learning package and assessment tools.

1. Developing the model of Information and Communication Technology (ICT) learning package and quality evaluated by the 3 experts (Educational technology and Knowledge Management field).

2. Try-out model of Information and Communication Technology (ICT) learning package by the 45 graduate students who study in semester, 2015 for study the research tools quality (try-out methods).

3. Preparing the all of research tools that using in the next step.

Research design: by following the One-Group Posttest Design.

1. Population and samples:

1.1 Population are the graduate students who study in semester, 2015 academic year at Faculty of Education, Kasetsart University, Thailand.

1.2 Samples are 45 graduate students that collected by random sampling technique and learn by the model of Information and Communication Technology (ICT) learning package.

2. Research tools:

2.1 The Information and Communication Technology (ICT) learning package.

2.2 The Information and Communication Technology (ICT) skills test.

3. Data analysis:

3.1 Descriptive statistics were Arithmetic Mean and Standard Deviation (S.D.) are used to describe the basic features of the quantitative data.

3.2 Qualitative data were analyzed by category group and issuing data technique.

FINDINGS

1. The model of model of Information and Communication Technology learning package for enhance graduated students in 21st century skills was appropriated with the criterion of quality, detail are as follow:

1.1 Personal Knowledge Management (PKM) are included the activities: Activation (Community of Interests), Demonstration (Before Action Review), Application (Community of Practices), and Integration (After Action Review) and designed activity in to the Online Learning Environments: OLEs and Virtual Learning Environments: VLEs.

1.2 Self-Directed Learning: SDL are included the 5 elements: Set Goal, Plan, Learn, Show, and Reflex. Driven by “Seek & Sense” activity.

1.3 Collaborative Learning: CL are included the 5 elements: Collaboration, Discussion, Community, Brainstorm, Interaction, and Share Idea. Driven by “Show & Share” activity.

1.4 Monitoring and Evaluation are included the 3 elements: 1) Creatively and Innovation, 2) Critical Thinking and Problem Solving, and 3) Communication and Collaboration.

1.5 Integrated elements of Personal Knowledge Management, Self-Directed Learning, Collaborative

Learning, and Monitoring and Evaluation by the matrix analysis technique, details see on fig. 1

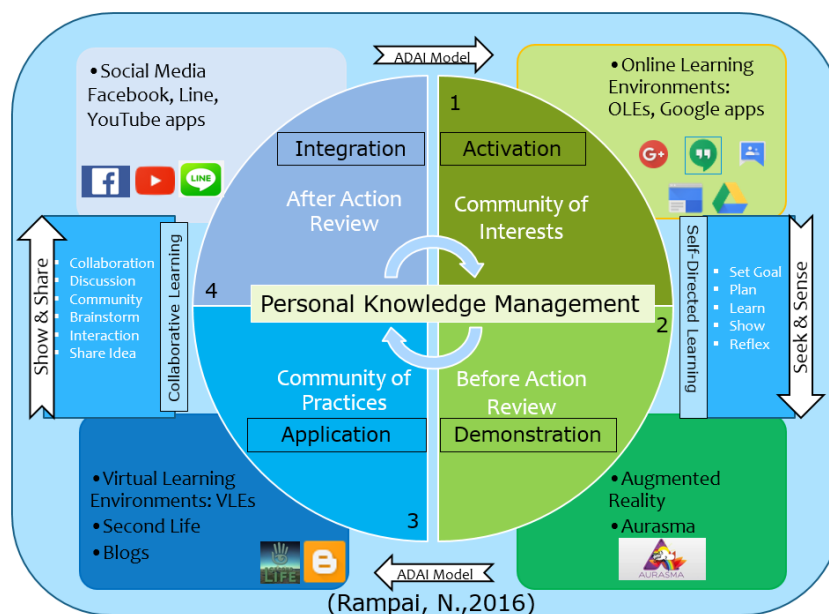


Fig 1: The model of model of Information and Communication Technology learning package for enhance graduated students in 21st century skills.

2. The quality of the model of Information and Communication Technology (ICT) learning package in 21st century for graduated students by the 3 experts was appropriated with instructional media showed overall results quality at highest level (mean=4.51, S.D.= 0.54), details are following: the highest level showed at process step (mean=4.61, S.D.= 0.54), the overview of the basic elements of the model (mean= 4.52, S.D.= 0.59), the overall of productivity (output) step (mean= 4.50, S.D.= 0.56), the overall of the input step (mean=4.40, S.D.= 0.58) and totally, model that mean the model of Information and Communication Technology (ICT) skills learning package in 21st century for graduated students can supports the student to learn and enhance their self-directed learning skill on the next steps, details see on table 1

Quality issue	Arithmetic Mean	Standard Deviation (S.D.)	Level
the basic elements of the model	4.52	0.59	highest
the input step	4.40	0.58	high
the process step	4.61	0.54	highest
the output step	4.50	0.56	highest
the overall results quality	4.51	0.54	highest

CONCLUSIONS

Research results exhibited that the model of Information and Communication Technology (ICT) skills learning package in 21st century for graduated students was appropriated and fit to the quality of instructional media system design and development principal. Online learning skills development is an emerging trend it is still a “new frontier”. Educators around the world experience many demands on their knowledge, time, and professional development. Developing and sustaining an effective online learning community can be challenging even in the midst of an era of much technological advancement.

Moreover, developing and sustaining an effective large-scale online community is even more challenging. In addition, professional development has mainly centered on learning processes that involve updating knowledge, yet it has made little headway as a construct that includes both the professional and personal characteristics and working conditions. It has also focused more on developing. Finally, the online learning technologies have the potential to transform the professional development of students; penetrate cultural, discipline, and other barriers; bring educators together to learn, share successes and challenges; and co-construct and transfer learning.

RECOMMENDATIONS

1. Applications to design and development that using web-based instruction for graduate students appropriately which guide the application of the next future to teaching in higher education institutions.
2. Online Learning Environments (OLEs) and Virtual Learning Environments (VLEs) are important tools to teaching and learning for graduated study.
3. Best practice to use Personal Knowledge Management process with Self Directed Learning and Collaborative Learning in the Graduated study courses.
4. Guidelines to online teaching & learning especially in “Seek & Sense” and “Show & Share” process among learners in the “Community of Interest” and “Community of Practices”.

ACKNOWLEDGEMENT

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The Lea's Box Project As A Pratical Implementation Of Educational Data Mining Algorithms

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ABSTRACT

Recent development in educational data mining resulted in new theories and algorithms, such as Knowledge Space Theory and Formal Concept Analysis. This paper presents a European research and development project called LEA's Box (a learning analytics toolbox) as an example of the practical implementation of these algorithms. The aim of the project is to facilitate the learning process and to become a platform for formative assessment.

INTRODUCTION

Over the past few decades, we have witnessed a rapid change in the access to information. As a result, the demands placed on employees have changed and schools need to reflect that. No longer is it expected of people to learn everything by heart or to perform routine tasks – what is needed today is critical thinking, creativity and the ability to assess both one's own work (self-assessment) and other people's work (peer-assessment).

As a response to the situation mentioned above, four institutions (TU Graz, Austria; University of Birmingham, UK; SEBIT, Turkey; and Scio, Czech Republic) have launched a research and development project called LEA's Box (Learning Analytics Toolbox), whose goal is to make use of the latest technologies and advances in data mining algorithms in order to address these issues and to help teachers make their pupils' learning progress more personalized and more effective. The project is funded by the European Commission, and while TU Graz and University of Birmingham are responsible mainly for the scientific part of the project, the task of SEBIT and Scio is to try out the applications and tools developed within the project in real classrooms.

LEA's Box is basically a collection of tools aimed at promoting modern education – education which respects the fact that information and data are, nowadays, omnipresent. Teachers have at their disposal plenty of different tools developed within the project, from a tool facilitating the creation of mind maps, to tools enabling teachers to evaluate soft skills and classroom behaviour. In this paper, two LEA's Box tools are going to be described in more depth: the myClass tool and the Flower Tool. These make use of the latest learning analytics approaches and algorithms such the knowledge space theory, the formal concept analysis or the measurement decision theory, which are going to be briefly presented as well.

MYCLASS TOOL

As mentioned above, the LEA's Box tools make use of the latest learning analytics algorithms in order to enhance the learning process. One of these is the knowledge space theory, which is described in detail in Albert (1994). The knowledge space theory is based on the idea that it is possible to capture and describe relations between different skills. For example, being able to solve a particular problem (e.g. multiplication of two-digit numbers) is a prerequisite to being able to solve other problems (e.g. multiplication of decimals or three-digit numbers) – and, simply put, the knowledge space theory tries to find models that capture these relations mathematically. This approach uses two principal concepts: a knowledge state and a knowledge structure. A knowledge state is typically a set of items a pupil is able to solve. For example, if a test contains items 1 to 20, a knowledge state may be a subset of those items consisting of items 1, 5 and 12. A knowledge structure is a set of possible knowledge states. When having a sufficient amount of data, it is possible to model the relations between different items taking into account the skills that are required to solve them. This is very useful for teachers, because it can help them decide which items to present to their pupils next and which learning path their students should take.

Another important approach is the formal concept analysis, whose principles are explained in detail in Belohlavek (2008). This is basically a method used to analyze data and to describe the relationship between a particular set of objects and a particular set of attributes. An important notion in this context is a so-called formal concept, which is defined as a pair of maximal subset of objects and maximal subset of attributes such that every object has every attribute.

Using these approaches, it is possible to model and subsequently visualize competence structures and learning paths, which is an issue that has been explored when developing the myClass tool. An example based on a test in

mathematics is shown below. First, it was necessary to identify competencies needed to solve the items in the test: these are shown in the left table of [Figure 1]. Next, test items were linked to the competencies, as shown in the right table of [Figure 1]. Finally, a competence structure arising from the relationships described in the tables was created, see [Figure 2]. Knowing this structure may help teachers decide what items they should present to their pupils next and what their pupils may be reasonably expected to solve.

Competencies		Test Items	
a	Adding	1	d, h
b	Subtracting	2	a, c, h, j
c	Multiplying	3	a, d, h, j
d	Dividing	4	a, d, h, j
e	Simple Equations	5	a, d, h, j
f	Units of length, currency, weight, time	6	a, b, c, d, f, h
g	Geometric Shapes	7	a, b, c, k
h	Understanding Text Items	8	h, m
i	Reading basic diagrams	9	g, h, m
j	Sketching a problem	10	a, b, c, d, h, i
k	Logical thinking	11	a, b, c, d, f, h
l	Inductive reasoning	12	a, b, c, d, f, h
m	Spatial reasoning	13	a, b, c, d, f, h, k
		14	a, b, c, d, f, h, k
		15	a, b, c, d, f, h, k, i
		16	a, b, c, d, f, h
		17	a, b, c, d, f, h
		18	a, b, c, d, f, h
		19	a, b, c, d, f, h
		20	a, b, c, d, e, h
		21	a, b, g, h, m
		22	h, m
		23	a, b, c, d, f, h
		24	a, b, c, d, h, j, k, l
		25	a, b, c, d, h, j, k, l
		26	a, b, c, d, f, h, k, i
		27	a, b, c, d, f, h
		28	a, b, c, d, f, h, k, i
		29	a, b, c, d, f, h
		30	a, b, c, d, f, h

Figure 1: Competencies needed to solve a test in mathematics and their connection to the test items

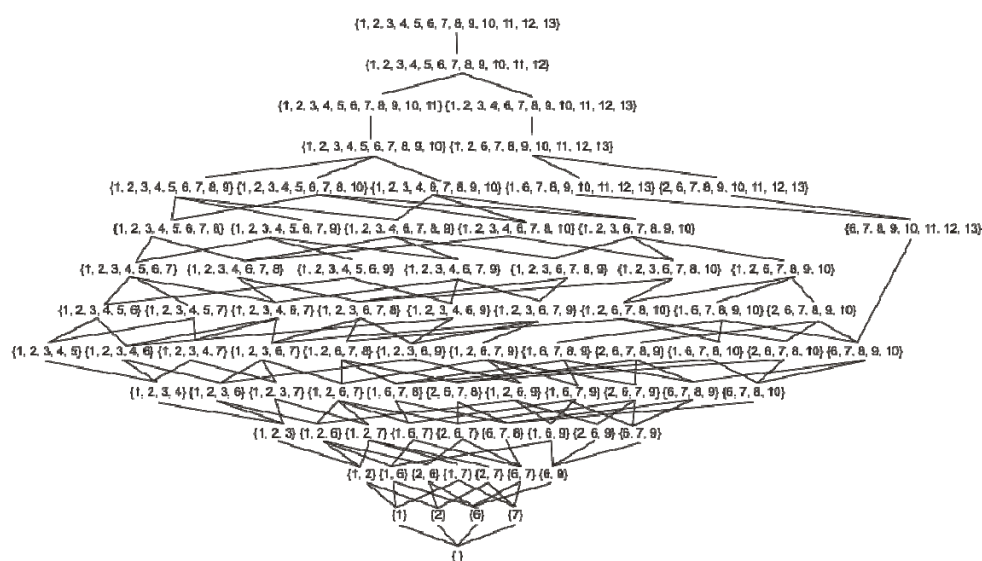


Figure 2: An example of a full competency structure

FLOWER TOOL

The Flower Tool is another example of a tool developed within the LEA's Box project. The main aim of this tool is to combine different sources of data regarding a particular skill, namely data reflecting a pupil's point of view (self-assessment) and his or her teacher's point of view together with the results of an external assessment tool, such as a standardized test. Furthermore, this tool focuses not only on skills which are measurable by conventional tests, but it also captures pupils' and teachers' point of view regarding other important factors that may have influence over pupils' performance, such as their motivation, effort, load and satisfaction.

Let us describe the first use case piloted in real classrooms. Pupils were presented with a flower whose leaves represented different subskills of a particular skill (in this case, reading and listening in English) and whose

petals represented the above-mentioned factors which contribute to pupils' performance (motivation, effort, load and satisfaction). This flower is depicted below, see [Figure 3] (the tool is available in the Czech language, as shown below).

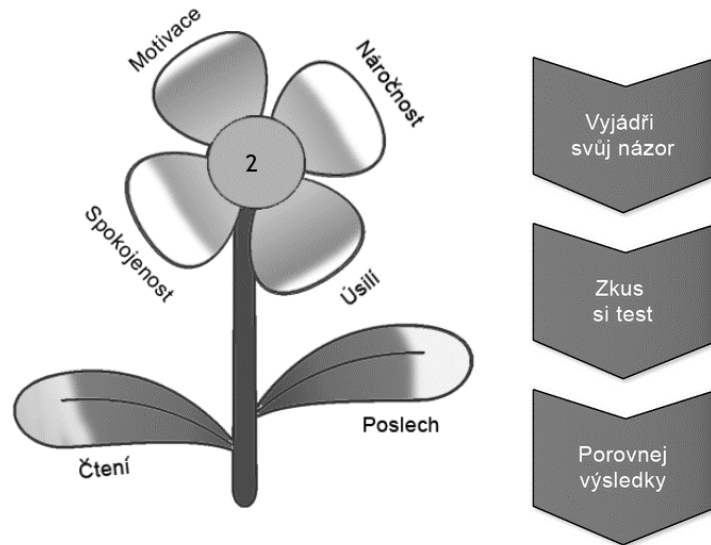


Figure 3: The Flower Tool

Pupils were first asked to rate their skills on a scale based on the Common European Framework of Reference for Languages (for more information, see Figueras, North, Takala, Verhelst & Van Avermaet, 2005), and to fill in a short questionnaire to help them determine the level of their motivation, effort, load and satisfaction. Then, they were asked to write the grade they believe they deserve in that particular subject (English) into the middle of the bloom. Teachers did the same for each of their pupils. Next, pupils were given a test in English developed by Scio. The test is called Scate and it is a computer adaptive test which can divide students into categories defined by the Common European Framework of Reference for Languages (A1, A2 etc.). The approach which the test uses to categorize respondents is based on the measurement decision theory formulated by Rudner (2009), which is an extension of the Bayes theorem. Let \mathbf{M} denote a set of k possible categories into which a respondent may be placed. For each of the categories $m_j \in \mathbf{M}$ let $P(m_j)$ denote the probability that a randomly selected respondent belongs to category m_j . Furthermore, let \mathbf{z} denote a vector of n elements, with element z_i representing the response to item i , where $i = 1 \dots n$. Element z_i is equal to 1 if item i has been answered correctly and 0 otherwise. Also, let $P(z_i | m_j)$ denote the probability that a respondent belonging to category m_j answers item i correctly. Using this notation, we can calculate the probability that we observe vector of answers \mathbf{z} if a respondent belongs to category m_j as:

$$P(\mathbf{z} | m_j) = \prod_{i=1}^n P(z_i | m_j)^{z_i} [1 - P(z_i | m_j)]^{(1-z_i)}.$$

The probability that a respondent with vector of answers \mathbf{z} belongs to category m_j can be expressed as

$$P(m_j | \mathbf{z}) = \frac{P(\mathbf{z} | m_j) \cdot P(m_j)}{\sum_{j=1}^k P(\mathbf{z} | m_j) \cdot P(m_j)}$$

Respondents are placed into the category for which this probability is the highest. From the equation, we can see that the probability that a respondent will be categorized as m_j depends not only on their answers in the test, but, to a certain extent, also on the probability a randomly selected person belongs to a particular category, i.e. on the proportion of people in the target population belonging to particular categories.

After a respondent has taken the test, results appear. These include the test-based categorization of a pupil displayed alongside a pupil's own personal view of his or her abilities and his or her teacher's opinion. Teachers get access to the same information and can, in addition, get aggregated results for the whole classroom. An example of these results is shown below, see [Figure 4]. Needless to say, these results are a very useful source of

information for both the pupils and their teachers, especially because they include self-assessment and, in addition, combine it with other sources of information. For example, it may be difficult sometimes to identify what hinders a pupil's progress, whether it is a lack of motivation or insufficient effort or something else. In cases like this, the Flower Tool may offer valuable insights into the roots of a pupil's struggle in a particular subject.

Summary I (in percentages):

	Motivation	Load	Satisfaction	Effort
Student	73.3	40	66.7	80
Teacher	86.7	6.7	100	93.3

Summary II:

	READING	LISTENING	GRADE
Student	C1	C1	2
Teacher	B2	C1	1
Test	B1	B1	

Figure 4: Example of results generated by the Flower Tool

CONCLUSIONS

This paper presented the LEA's Box project as a practical implementation of algorithms used in learning analytics. LEA's Box is a research and development project, but the theoretical frameworks developed within the project are tested and piloted in real classrooms. The LEA's Box tools are based on the assumption that skills needed today differ from the skills which used to be taught at schools before, which places additional demands on teachers when formulating what, when and how to teach.

Namely, two tools out of the many applications developed within the project were presented in more depth. One of them was the myClass tool, which was created by TU Graz. One of the important research fields of this institution is the knowledge space theory and the formal concept analysis, which are approaches that model relations between different skills and competencies. Information about these relations is very useful, as it may help teachers better formulate the learning process in a particular field and identify competencies that should be taught next.

The second tool presented in this paper was the Flower Tool, which is a tool promoting self-assessment and combining different sources of data. The main idea of this tool is that a combination of different sources of information about a pupil's performance in a particular subject and about factors contributing to this performance may unravel interesting facts which may help the pupil and his or her teacher direct their learning process accordingly.

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The Reevaluate Statistical Results Of Approach About Pedagogy Of Anatolian In Parents, Lived In One Anatolian City Using Artificial Neural Network And Multivariate Regression Analysis.

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ABSTRACT

In this paper, the research data about “Evaluation of Anatolian Pedagogy Approaches of the Parents “ is examined by Artificial Neural Networks (ANN), Multivariate Regression Analysis and these results are compared with each other’s. When used parametric input associated with child education, with an approach that produces results using the learning abilities of people, just that generates output by looking at the linearity of the relationship has been observed differences between the two systems.

For training approach are chosen Anatolian (Traditional), Contemporary and Mixed (Traditional and Contemporary) pedagogical approaches. The aim of this study is to show that by using ANN, new information discovered, produced by imitating the human brain, and the results that are obtained automatically with modeling mathematical approach can be used to help the classic statistical computation systems on both of social and educational problems.

Thus, when they are presented as input different educational and social approaches, it was shown to produce realistic results of the outputs obtained by ANN to the correct education approach accepted in the community.

INTRODUCTION

Nowadays Parents reach a good education level, try to grow up their children by pedagogical principals. Trainers research the finest education method to make the children who warned with communication devices, most compatible and successful in the future. In addition to this interest the researches are increasing also in our country in parallel with world countries (Yavuzer, 2013;15). Because a healthy and strong society depends on the new generations. According to this in today’s world importance of children is understood increasingly. In our country which lives a transition period between traditionalism and contemporarism child education and importance of child are the main topic for many research (Kagitcibasi, 1983; Oner & Yılmaz, 2000). Depends on the this change, family-child relationships and mother-father growing style have some diversity from past to now. John Watson who is the first child rearing expert (1878-1958) he said, don’t hug your child, don’t kiss them and don’t permit them to sit your lap. Classical Baby and Child Care book author Dr. Benjamin Spock (1903-1990) is propagated Watson’s opposite opinion rapidly. Therefore, we cannot mention the only one expert opinion is dominant (Bee & Body, 2009;39) from an eclectic philosophy, we can synthase the different country’s child rearing and education system and contribute positively. Because children's lives and observing the rules of stereotypes in a specific society, be transferred to the next generation is an old mechanism as human (Meric, 1986:323). Good known of child psychology that will be conducted activities on education and training by parents is the major factors.

If parents don't have enough information about children spirit so they fell into error. This is inevitable. Therefore, parents have to learn about child psychology. Therefore, parents must obtain information on the children psychology and they should be try to recognize the child's mental structure.

Parents use different communication ways due to various reference about growing child (Swith, 2013;479). Mother's and father's parenting methods, teaching forms, values and attitudes they adopt, penalties and rewards in their chosen causes children to develop different personalities (Yildiz & Bicakci, 2004; Peksen-Akca; 2012). Because family is the environmental in where seeds (bad or good) grow up (Yavuzer, 1996:125). Parents-child relationship plays an important role from child's adequate or inadequate socialization. Parents of the child behavior and child gives meaning from this behavior is a basic feature in socialization process. There is two variable size in parents' behavior. These dimensions are in love behavior variable the rejection-acceptance, in control behavior variable the freedom- restrictions. End of acceptance from refusal-acceptance dimension, mother and father accept their child's physical, social, emotional, mental areas in need of improvement includes psychological discipline methods which are appropriate to level of development. End of refusal from mother and father select their child's mental areas need of improvement includes regardless of level of development and using discipline methods by force (Yamanoğlu,2009: 17). Therefore, it is necessary to parents' balance of love and discipline in providing in child's education (Camdibi, 2000).

As a result, in current educational approach that was given education and training in both family and school should be aimed to gain the original teachings which are formed as a part of our traditional culture (social values, morality, customs, cultural norms in raising children, moral rules) and religious values besides the contemporary ones. We believe that they can be remedied educational deficit on this field thorough the integration of Anatolian (Traditional) pedagogy and Contemporary education.

In the light of this opinion, previous questionnaire-based study was aimed to determine frequency use of Anatolian Pedagogy as an alternative training western-based education on people who live in Anatolian city married with children those having different socio-economic level. In our present study was carried out to examine previous survey data through ANN and Multivariate regression analysis and to compare those methods each other's.

MATERIALS AND METHOD

This questionnaire-based study was conducted by Senol et al (Senol et al, 2010) between April-May 2010, on 280 parents married with children who live in Kayseri/ Develi, those have different (low, medium and good) socio-economic levels. The aim of this study is to determine of the parents' knowledge, attitudes and behaviors on child education regarding Anatolian (Traditional) Pedagogy that can be recommended as an alternative to contemporary-based education approach.

In this paper, by consulting an expert, six data series were selected as an input to ANN. These data included the respond which was given the questions of survey from families who have different education approaches and demographic characteristics of them, were used for ANN. Demographic variables were included gender, age, number of children. Seventy percent of the results were used for the design of ANN structure's training and the remaining 30% was used for testing accuracy of the answer of the trained net. Table 1 shows the distribution of demographic characteristics and number of answers given to questions about Anatolian (Traditional), Contemporary and Mixed (Traditional and Contemporary) pedagogical.

Table 1: Distribution of the study group according to demographic, social and cultural variables

Input Variables	Number	Percentage (%)
<i>Gender</i>		
Male	123	43,93%
Female	157	56,07%
<i>Age($\bar{X} \pm SD$)(min – max)</i>	35,99 ± 11,63 (20 - 69)	
<i>Number of Children</i>		
1	77	27,50%
2	89	31,79%
3	56	20,00%
4	36	12,86%
5	14	5,00%
6	6	2,14%
7	1	0,36%
8	1	0,36%
Number of Answers for Anatolian Pedagogical Question	2435	33,45%
Number of Answers for Contemporary Pedagogical Question	3194	43,87%
Number of Answers for Mixed Pedagogical Question	1651	22,68%

($\bar{X} \pm SD$)(min – max) Arithmetic mean ± standard deviation; min: minimum; max: maximum.

Number of answers is given to 26 questions about Anatolian, Contemporary and Mixed Pedagogical for 280 Pollster. The percentage and number of answers for Anatolian, Contemporary and Mixed Pedagogical Question was 33,45% - 2435, 43,87% - 3194, 22,68% - 1651, respectively (Table 1).

Coding and statistical assessment of the data were performed using SPSS version 18.0 (Chicago, IL, USA) software package Program. Baseline sociodemographic factors are described as arithmetic means and standard deviations (Mean ± SDs) for continuous variables and chi-square test was used for categorical variables.

In this paper, ANN was used education approach for evaluation as shown in Figure 1. chosen variables; age, gender, number of children and number of answers given to questions about anatolian, contemporary and mixed pedagogical as input.

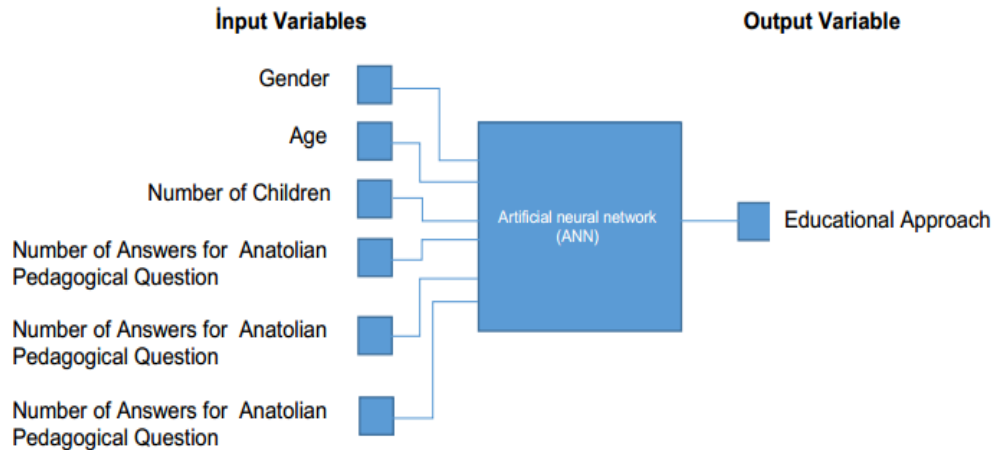


Figure 1: Block representation of proposed ANN structure for input/output variables.

Introduction of Artificial Neural Networks (ANN)

An Artificial Neural Network (ANN) is a mathematical model that tries to simulate the structure and functionalities of biological neural networks. Basic building block of every artificial neural network is artificial neuron, that is, a simple mathematical model (function). Such a model has three simple sets of rules: multiplication, summation and activation. At the entrance of artificial neuron the inputs are weighted what means that every input value is multiplied with individual weight. In the middle section of artificial neuron is sum function that sums all weighted inputs and bias. At the exit of artificial neuron the sum of previously weighted inputs and bias is passing through activation function that is also called transfer function (Figure 2.).

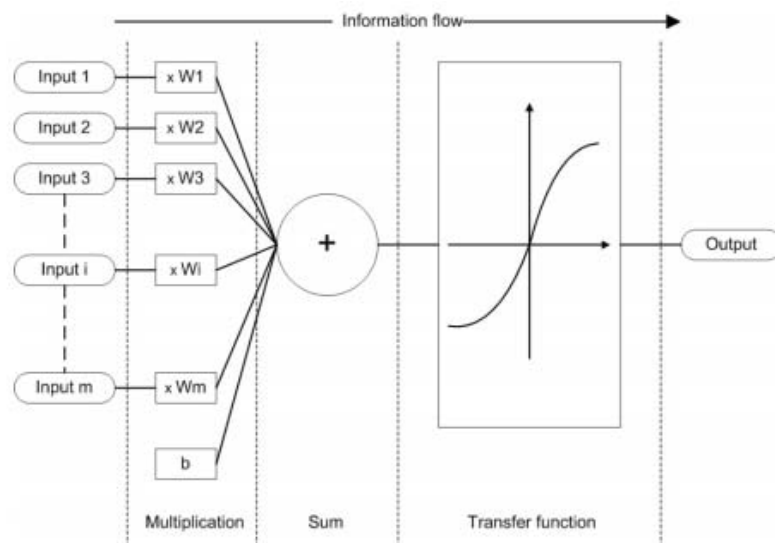


Figure 2: Working principle of an artificial neuron.

Although the working principles and simple set of rules of artificial neuron looks like nothing special the full potential and calculation power of these models come to life when we start to interconnect neurons into ANN (Figure 3.). These ANN use simple fact that complexity can grown out of merely few basic and simple rules. (Gurney, 1997; Kröse & Smagt 1996; Pavešić, 2000; Rojas 1996; Suzuki K. 2011).

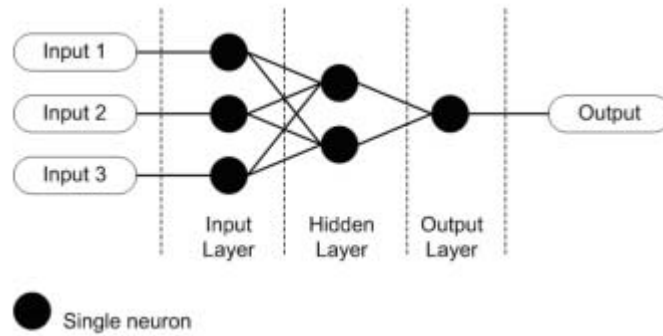


Figure 3: Example of simple artificial neural network.

Artificial Neuron

Artificial neuron is a basic building block of every artificial neural network. Its design and functionalities are derived from observation of a biological neuron that is basic building block of biological neural networks (systems) which includes the brain, spinal cord and peripheral ganglia. Similarities in design and functionalities can be seen in Figure 4, where the left side of a figure represents a biological neuron with its soma, dendrites and axon and where the right side of a figure represents an artificial neuron with its inputs, weights, transfer function, bias and outputs.

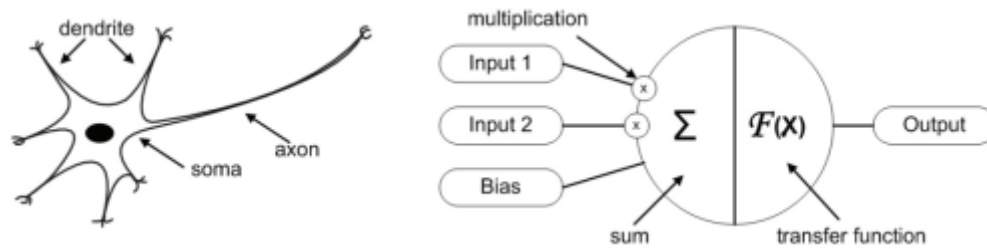


Figure 4: Biological and artificial neuron design

In case of biological neuron information comes into the neuron via dendrite, soma processes the information and passes it on via axon. In case of artificial neuron the information comes into the body of an artificial neuron via inputs that are weighted (each input can be individually multiplied with a weight). The body of an artificial neuron then sums the weighted inputs, bias and “processes” the sum with a transfer function. At the end an artificial neuron passes the processed information via output(s). Benefit of artificial neuron model simplicity can be seen in its mathematical description below:

$$y(k) = F(\sum_{i=0}^m w_i(k) * x_i(k) + b) \quad (1)$$

Where:

- $x_i(k)$ is input value in discrete time k where i goes from 0 to m ,
- $w_i(k)$ is input value in discrete time k where i goes from 0 to m ,
- b is bias,
- F is a transfer function,
- $y(k)$ is output value in discrete time k .

As seen from a model of an artificial neuron and its equation (1) the major unknown variable of our model is its transfer function. Transfer function defines the properties of artificial neuron and can be any mathematical function. We choose it on the basis of problem that artificial neuron (ANN) needs to solve and in most cases we choose it from the following set of functions: Step function, Linear function and Non-linear (Sigmoid) function. Step function is binary function that has only two possible output values (e.g. zero and one). That means if input value meets specific threshold the output value results in one value and if specific threshold is not met that results in different output value. Situation can be described with equation (2).

$$y = \begin{cases} 1 & \text{if } w_i x_i > \text{threshold} \\ 0 & \text{if } w_i x_i < \text{threshold} \end{cases} \quad (2)$$

When this type of transfer function is used in artificial neuron we call this artificial neuron perceptron. Perceptron is used for solving classification problems and as such it can be most commonly found in the last layer of artificial neural networks. In case of linear transfer function artificial neuron is doing simple linear transformation over the sum of weighted inputs and bias. Such an artificial neuron is in contrast to perceptron most commonly used in the input layer of artificial neural networks. When we use non-linear function the sigmoid function is the most commonly used Sigmoid function has easily calculated derivate, which can be important when calculating weight updates in the artificial neural network.

Artificial Neural Networks

When combining two or more artificial neurons we are getting an artificial neural network. If single artificial neuron has almost no usefulness in solving real-life problems the artificial neural networks have it. In fact artificial neural networks are capable of solving complex real-life problems by processing information in their basic building blocks (artificial neurons) in a nonlinear, distributed, parallel and local way.

The way that individual artificial neurons are interconnected is called topology, architecture or graph of an artificial neural network. The fact that interconnection can be done in numerous ways results in numerous possible topologies that are divided into two basic classes. Figure 5. shows these two topologies; the left side of the figure represent simple feedforward topology (acyclic graph) where information flows from inputs to outputs in only one direction and the right side of the figure represent simple recurrent topology (semi cyclic graph) where some of the information flows not only in one direction from input to output but also in opposite direction. While observing Figure 5. we need to mention that for easier handling and mathematical describing of an artificial neural network we group individual neurons in layers. On Figure 5. we can see input, hidden and output layer.

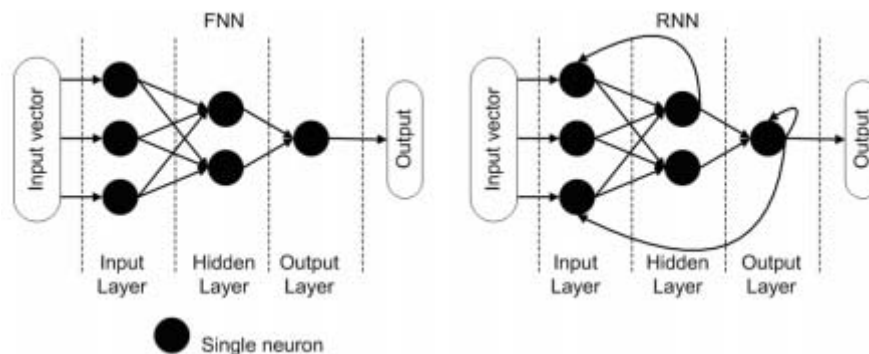


Figure 5: Feed-forward (FNN) and recurrent (RNN) topology of an Artificial Neural Network.

Feed-forward Artificial Neural Networks

Artificial neural network with feed-forward topology is called Feed-Forward artificial neural network and as such has only one condition: information must flow from input to output in only one direction with no back-loops. There are no limitations on number of layers, type of transfer function used in individual artificial neuron or number of connections between individual artificial neurons. The simplest feed-forward artificial neural network is a single perceptron that is only capable of learning linear separable problems. Simple multi-layer feed-forward artificial neural network for purpose of analytical description (sets of equations (3), (4) and (5)) is shown on Figure 6.

$$\begin{aligned} n_1 &= F_1(w_1 x_1 + b_1) \\ n_2 &= F_2(w_2 x_2 + b_2) \\ n_3 &= F_2(w_2 x_2 + b_2) \\ n_4 &= F_3(w_3 x_3 + b_3) \end{aligned} \quad (3)$$

$$\begin{aligned} m_1 &= F_4(q_1 n_1 + q_2 n_2 + b_4) \\ m_2 &= F_5(q_3 n_3 + q_4 n_4 + b_5) \end{aligned} \quad (4)$$

$$y = F_6(r_1 m_1 + r_2 m_2 + b_6)$$

$$y = [F_6(r_1 F_4(q_1 F_1(w_1 x_1 + b_1) + q_2 F_2(w_2 x_2 + b_2) + b_4) + \dots + r_2 F_5(q_3 F_2(w_2 x_2 + b_2) + q_4 F_3(w_3 x_3 + b_3) + b_5) + b_6)]$$

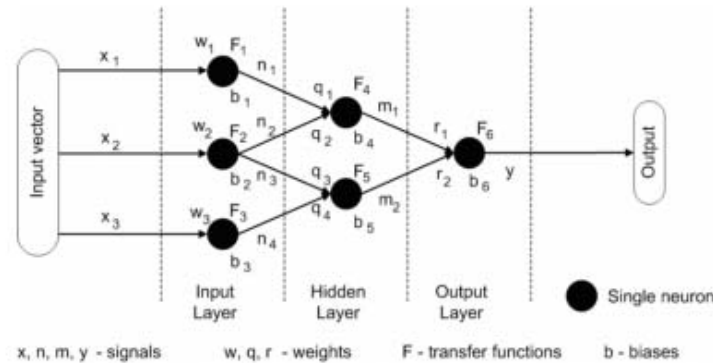


Figure 6: Feed-forward artificial neural network.

As seen on Figure 6 and corresponding analytical description with sets of equations (3), (4) and (5) the simple feed-forward artificial neural network can lead to relatively long mathematical descriptions where artificial neural networks' parameters optimization problem solving by hand is impractical. Although analytical description can be used on any complex artificial neural network in practise we use computers and specialised software as MATLAB that can help us build, mathematically describe and optimise any type of artificial neural network.

Multivariate Regression

Multivariate regression attempts to model the relationship between two or more explanatory variables and a response variable by fitting a linear equation to observed data (Tso and Yau, 2007). Every value of the independent variable x is associated with a value of the dependent variable y . The population regression line for p explanatory variables x_1, x_2, \dots, x_p is defined to be $\mu_y = \beta_0 + \beta_1 x_1 + \beta_2 x_2 + \dots + \beta_p x_p$. This line describes how the mean response μ_y changes with the explanatory variables. The observed values for y vary about their means μ_y and are assumed to have the same standard deviation σ . The fitted values b_0, b_1, \dots, b_p estimate the parameters $\beta_0, \beta_1, \dots, \beta_p$ of the population regression line.

Since the observed values for y vary about their means μ_y , the multiple regression model includes a term for this variation. In words, the model is expressed as DATA = FIT + RESIDUAL, where the "FIT" term represents the expression $\beta_0 + \beta_1 x_1 + \beta_2 x_2 + \dots + \beta_p x_p$. The "RESIDUAL" term represents the deviations of the observed values y from their means μ_y , which are normally distributed with mean 0 and variance σ . The notation for the model deviations is ϵ .

Formally, the model for Multivariate regression, given n observations, is equations (6)

$$y_i = \beta_0 + \beta_1 x_{i1} + \beta_2 x_{i2} + \dots + \beta_p x_{ip} + \epsilon_i \text{ for } i = 1, 2, \dots, n. \quad (6)$$

In the least-squares model, the best-fitting line for the observed data is calculated by minimizing the sum of the squares of the vertical deviations from each data point to the line (if a point lies on the fitted line exactly, then its vertical deviation is 0). Because the deviations are first squared, then summed, there are no cancellations between positive and negative values. The least-squares estimates b_0, b_1, \dots, b_p are usually computed by statistical software.

The values fit by the equation $b_0 + b_1 x_{i1} + \dots + b_p x_{ip}$ are denoted \hat{y}_i , and the residuals e_i are equal to $y_i - \hat{y}_i$, the difference between the observed and fitted values. The sum of the residuals is equal to zero. The variance σ^2

may be estimated by $s^2 = \frac{\sum (x_i - \bar{x})^2}{n - p - 1}$, also known as the mean-squared error (or MSE). The estimate of the standard error s is the square root of the MSE (Wikipedia)

ANALYSIS RESULTS AND DISCUSSION

In this study, of the participants overall mean age were $35,99 \pm 11,63$ (min:20, max:69) yrs , male mean age were 36.64 ± 11.74 (min:20, max: 69) and female mean age were 35.47 ± 11.55 (min:20, max: 68) yrs.

Of the parents 43,93% (123) was male and 56,07% (157) was female. All the individuals were married with children. Average number of children 2.46 ± 1.34 (min:1, max:8). The majority (59.29%) of the parents have between 1-2 child, solely 5.72% of them have 6-8child.

Of the parents 33.0% stated that about Anatolian Pedagogy is "generally appropriate" and 35.0% "sometimes appropriate" and 32.5% "never appropriate" which were used Anatolian Pedagogy" in Anatolia for raising of children.

Of the parents 43.5% who adopts fully Anatolian Pedagogy Education, they applied same education (Anatolian) their children, 43.3% who approve sometimes Anatolian Pedagogy education they occasionally applied it their children (Mixed); 35.2% who did not agree at all Anatolian Pedagogy Education that they almost applied it their children (Contemporary) ($X^2:14.931$, $p=0.005$). The knowledge, attitude and behavioral approaches of the parents on different pedagogical education was shown in table 2.

Table 2: Percentage of distribution of parents according to different educational approaches

Approaches	Anatolian		Contemporary		Mixed	
	Count	%	Count	%	Count	%
Do you take into account you will offer opportunities before have a child?	70	25.0	164	58.6	46	16.4
Did you had been start education for your baby in stage of pregnancy?	110	39.2	127	45.4	43	15.4
Does your child to participate in family decision?	55	19.6	163	58.2	62	22.2
Did you inform your child about adolescent period preadolescent?	73	26.1	153	54.6	54	19.3
Are the cultural differences affect children's education?	62	22.1	167	59.6	51	18.2
Do you have been meet the needs of the child over the age of eighteen?	153	54.7	73	26.1	54	19.3
Do you apply your children trainig that it had been applied you by parent ?	117	41.8	76	27.1	87	31.1
Do you display him/her the behavior that you wanted do or not exhibit behavior by your child?	94	33.6	110	39.3	76	27.1
Do you find positive which your children make his/her behaviour for drawing attention	116	41.4	95	34.0	69	24.6
Is the children should be disciplined with punishment?	76	27.1	204	72.9	0.0	0.0
Do you support your child's abilities?	86	30.7	159	56.8	35	12.5
Can you display your love your child through your attitudes and behaviors ?	54	19.3	182	65.0	44	15.7
Do you have been educated your child with your own traditional methods?	166	59.3	56	20.0	58	20.7
Do you interfere with the child's clothing style?	107	38.2	99	35.4	74	26.4
Do you watch the cartoon before it had been watch by your child?	127	45.4	73	26.1	80	28.6
Do you empathize with something that you want but do not want your child?	107	38.2	87	31.1	86	30.7
Do you give an opportunity him to assume responsibility for your child?	66	23.6	153	54.6	61	21.8
Do you have been disturbed intervention of grand mother/father for your style of upbringing	72	25.7	144	51.4	64	22.9
Do you play games with your child?	72	25.7	133	47.5	75	26.8
Do you intervene the games who your child plays?	84	30.0	83	29.6	113	40.4
Does have been given importance on women such as the importance given to men in Turkish society?	108	38.6	61	21.8	111	39.6
What do you think who applied about raising children in family?	32	11.4	177	63.2	71	25.4
Does have been decisived whose saying for reward and punishment in the family?	67	24.0	181	64.6	32	11.4

Is there any program which was applied your child in your home?	78	27.9	143	51.1	59	21.0
Does your child get permission from you leave at home?	156	55.7	60	21.4	64	22.9
Do you interfere with your child's group of friends?	127	45.4	71	25.3	82	29.3

In this study, by using Number of Answers on Anatolian, Contemporary and mixed Pedagogical Questions and demographic variables, 70% of research data were used to train the ANN (Feed-forward network with A two-layer, sigmoid hidden neurons and linear output neurons) with Levenberg-Marquardt backpropagation algorithm in supervised learning paradigms. 30% of the available data was determined as the test data and this data was used to test performance of ANN's training how good it is. The correlation value and mse (mean-square error) were considered during the analysis of ANN, structural parameters (as 10 hidden layer, 20 epoch number etc.) of ANN were changed until MSE error value converge to zero and correlation value converge one. After obtaining the optimum ANN structure, the performance of the system was tested by presenting input data which has not met.

In the same way, because of education approaches was described through independent variables such as age, gender, number of children, number of Answers for Anatolian Pedagogical Question, Contemporary Pedagogical Question, Mixed Pedagogical Question; Multivariate regression model was implemented in this research. After Multivariate regression's equation is obtained with 70% (training data) of all data. 30% (testing data) of all data was applied as input (independent variables) to equation.

In this study, we evaluated the results of education approach in terms of two models in Figure 7. And 8. When comparing the prediction performances of Multivariate Regression and ANN models, obtained the results with Multivariate regression model are different than the responses of questionnaires (real value) in Figure 7. In the other Figure 8, obtained the results with ANN model are closer the responses of questionnaires (real value).

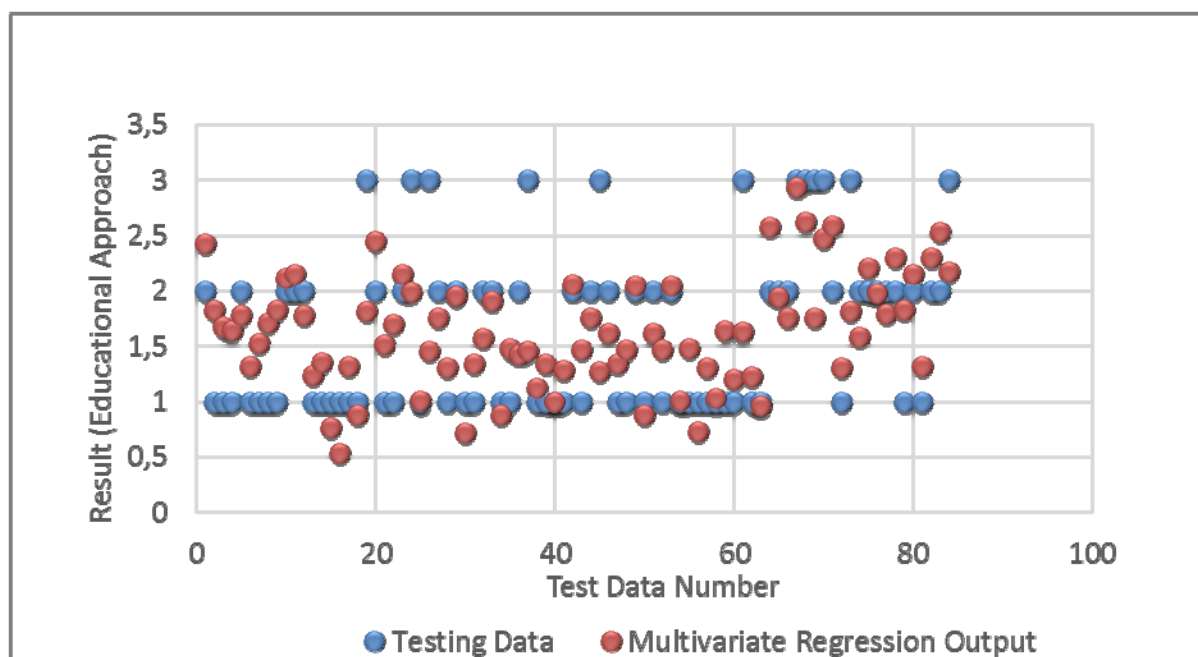


Figure 7: Multivariate Regression output values administered to test data and comparison of statistical analysis results with test data.

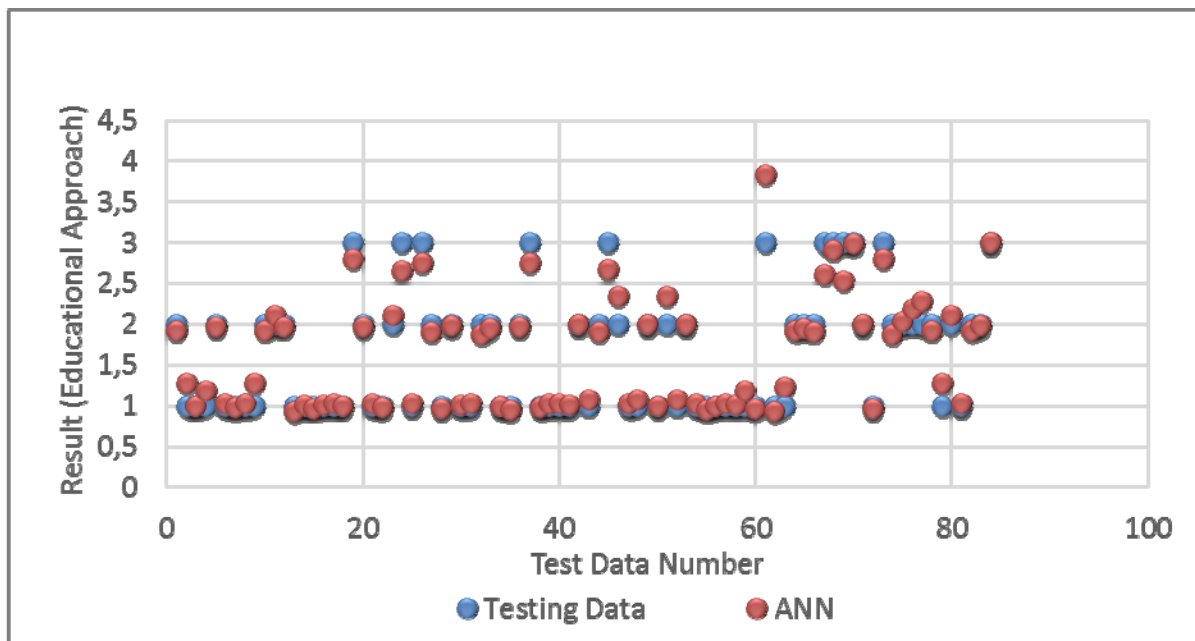


Figure 8: Artificial Neural Networks (ANN) output values administered to test data and comparison of analysis results with test data.

This study indicate which ANN model is best model as accomplished minimum MSE value and maximum coefficient of correlation(R) value as looking at the Table 3

Table 3: Comparison of ANN, Multivariate Regression as MSE, Correlation Coefficient

	Education Approach	
	Test MSE Error	Correlation Coefficient(R)
Multivariate Regression	0,32	0,61
ANN	0,04	0,95

In our study it was reevaluated that whether or not relevance to the real value that previous study questions in terms of consistency with ANN. In a study using ANN it was shown that training methods can be on assessment performance both of teachers and students. Thus ensuring the accuracy and fairness of the evaluation works. Accurate results about teachers and students' performances were obtained with ANN (Qianyin X., Bo L. 2015). In another study, ANNs are compared with more classical statistical techniques, such as multiple regression for classification or location decisions in schools and colleges and using in educational measurement. The best result was obtained with ANN (Everson H. T. et al. 1994). In other study, the performance of the candidates for admission into the university was evaluated and predicted with ANN. Evaluation shows that the ANN model can truly predict with regard to performance (Oladokun V.O., Adebajo A.T., Charles-Owaba O.E. 2008). In another study, performance of the students attending an e-learning course was modeled through ANN, very low error rate is obtained with ANN (Şuşnea E., 2010).

CONCLUSIONS

As a result, today's education approaches should be aimed to gain the original teachings which are formed as a part of our traditional culture and religious values besides the contemporary education and training. We believe that they can be remedied educational deficit on this field thorough the integration of Anatolian pedagogy and modern education.

This study aimed to develop expert systems by creating a different perspective besides statistical methods with ANN. The results obtained by ANN which has given very good results according to statistical methods. This shows that experts enter data as input variable in developed model with ANN before they have not and very realistic output is obtained. Thus Experts will not bother to obtain new data and working time will be saved with developed expert model and system.

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The Use Of Kinect In Teaching And Learning Environment

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ABSTRACT

The usage of technological materials in education as a result of the rapid changes in today's technology affects positively the productivity and permanence of the instruction. The newest one of these technological materials, Kinect sensor basically provides the controlling of the motion based process. With its structure of perceiving the body motions three dimensionally and the ability to work contactless, it not only provides the users' kinesthetic movements but also enables the self-learning and increases the rates of learning. In this study, the literature review of the applications developed with Kinect sensor in education environment was made and it was made a proposal for new applications.

INTRODUCTION

In recent years, the usage of electronic based devices like tablet, computer and smart phones has been rapidly increased. At the same time the usage of these devices in educational environment is becoming popular. These materials provide to create effective communication environment and express the knowledge easily. Especially besides its efficiency and permanence in instruction, it increases the rates of learning.

According to the recent studies, providing the communication with kinesthetic movement instead of with the physical interactions with these devices is accepted as a more efficient method (Garg, Aggarwal and Sofat, 2009). As the technological developments are taken into the consideration, there are rapid changes in the technologies which provide the perceiving of kinesthetic movement. The technology in which the interaction is provided kinesthetically is defined as gesture based computing (Küçük, Aydemir and Göktas, 2012). The base of the gesture based computing technologies is providing interaction with motions (Horizon Reports, 2011). Gesture based computing is technically based on perceiving of the kinesthetic movements with sensors and operating according to the situation of the perceived movement (Jung and Cha, 2010).

Today we mostly encounter with the technology of perceiving of the kinesthetic movements in game sector. Providing the control with body movements especially to feel the reality during the game enjoying in the platform by communicating effectively compose the main points supporting this development. This technology providing the perceiving of kinesthetic movements is used efficiently in many different fields besides game. Especially the usage of this technology in education is thought to have a strong potential. When the literature review is examined, it is seen that there are many studies related to the applicability of the gesture based computing (Küçük, Aydemir and Göktas, 2012). With its flexible structure in education environment, it enables students to get the instruction in new ways and to learn more easily and entertainingly. And also it enables to increase the students' motivation. Most of the education institutions begin to integrate this technology in their learning environment (Johnson, Adams and Cummins, 2012).

Kinect is one of the most popular gesture based computing technology used in recent days (Boutsika, 2014). Kinect was first released in November, 2010 by Microsoft firm as a piece of Xbox game console. The most important specialty of Kinect having the system of perceiving and following the skeleton. With the gesture perceiving on it, Kinect can perceive and follow the body motions (Öğütölmüş and Melekoğlu, 2015).

When examined the related literature review, it is seen that Kinect is one of the most preferable sensor among the gesture based computing technologies for instruction each passing day. According to Kissco (2011) Kinect will be the basic classroom technology used in the classroom. Hsu (2011) also defines Kinect as an interactive technology which helps teaching and learning and she finds out in one of her studies that Kinect has a positive effect to enhance classroom interactions and to engage students participating learning activities. According to the 2010 and 2011 Horizon Report it is similarly expressed that gesture-based technology such as the Microsoft Kinect system will take its place in educational settings in four to five years.

The aim of this study is to examine the studies related to usage of Kinect in educational settings. So there will be put aside studies related to the different educational usage fields of Kinect for individuals and the need of the researches for the future will be discussed.

KINECT SENSOR

Initially, the perceiving specialty of Kinect sensor was done automatically with Xbox 360 game console (Solaro, 2011). But then Microsoft was released Software Developing Kit (SDK) in order to use Kinect in computers and to develop applications (Souza, 2011). The main components of Kinect are below:

- 3D depth sensor
- RGB Camera
- Microphones
- Tilt Motor

3D sensors provide the perceiving of the motions of user/users and watching them in 3D environments. RGB (red, green, blue) camera enables the defining of user/users. The thing placed on front - below of Kinect is microphone setting. It is used to recognize the sound. The tilt motor placed below part of the Kinect is moved up and down automatically if it is needed (Smisek , Jancosek and Pajdla, 2011).

With its easy usage and enabling kinesthetic motions, sensors are becoming popular day by day (Blair and Davis, 2013). Especially after the firm has allowed users to develop applications, it can be used as a supplementary material besides the current technologies in engineering, medical and instruction fields.

FINDINGS

Gesture based computing technologies have the potential to increase the classroom interaction to a large extent. But the supplementary materials especially Kinect must be supported with computer, projector and with an appropriate program. When the learning methods taken into the consideration, Kinect is a technology which has the potential to increase the productivity of classroom interaction in terms of multidirectional interaction. Kinect can be used especially by teachers to increase the classroom participation and to create an environment for interaction and discussion. For students it can be an entertaining material increasing the motivation and attention of the students and giving opportunities to make activities increasing the interaction between them. With its multimedia and multi perceiving devices, Kinect can enable classroom activities which encourage students to learn (Hsu, 2011).

Ayala et. all (2013), make studies for students to teach the math subjects, terms, graphics and formulas more permanently and to participate the learning process more actively based on the Kinesthetic learning as a new method. By using Kinect the researchers have developed an application aiming to give kinesthetic math instruction and tested the application with a group of students using Kinect. The aim of the researchers at this time is to teach Position vs. Time graph that allows students to replicate with their hands several different kinds of movements and the software will detect, compute and generate graphs based on the positions in the selected time lapse. They observed an important increase in students' learning with the exams prepared by them.

Tsai and Yen (2013) also suggested a cubic net assisted learning system to enhance learners' spatial ability by using Kinect sensor technologies. This system is based on the geometric learning and 3D real-time objects were used to enable effective learning of the different viewing angle control. The aim of this suggested system is to increase learners' motivation by providing realistic 3D-visual materials and to evaluate the effects of specific operating experiences. Learners can learn the geometric learning theory and related information with questions and interactive games by using Kinect sensor including a hand-mouse function. According the score of the tests, the assisted learning system in this study mostly succeeded the desired results and it shows that Usability Scale (SUS) showed that their system is effective and can be used.

In his study, Hore (2014) used a real-time avatar simulation with the aim of creating an interactive game-based learning environment. This method can be effective for teaching biology because this lesson requires more visual object. According to test results it is understood that the game encourages students to take part in group activities and to practice biology and understand and appreciate real-world concepts.

Tenekeci et. all (2014) developed an application which can be used for letter teaching in reading and writing

instruction in order to enable the user interaction with games. It is designed to be used in pre-school and primary school term. The developed application has a structure which can be worked in two different modes. This application contributes to the literature with its testing specialty of the learners who are the beginner learner of letters.

Chang et. all (2015) developed a Kinect game for students learning the law of orbit in physics. As a testing group, 20 students, seventeen male students and three female students were selected from grade 4 to 10 grade. The applied questionnaire consisted of Computer Game Attitude Scale (CGAS) and Revised Technology Acceptance Model. According to the results of the test, there was a positive correlation between students' gaming performances and what they knew about the relevant physics knowledge. And also it was proved that there was not a correlation between the students' attitudes toward computer/video games and their perceptions toward the developed Kinect game in terms of its usability.

Kinect which tracks the user movement and responds in the same manner can be used to develop a game that is based on children learning interactively. And also it can be used as a teaching material for math, physics and many other subjects. It supports the disabled children by helping them to learn more quickly through visualization.

Komfiroozie et. all (2013) defined in his study that the percentage of visually impaired and hearing impaired people is the highest one among the special requirement groups. His aim was to present a strategy for training these children considering different advances of e-learning using motion detection technologies in Kinect device and objects recognition methods in 3D environments so that even very young children are able to receive basic and effective training and communicate with the surrounding world without knowing sign language or reading and writing skills.

Christinaki et. all (2013) developed a game based application to develop the communication skills of the children having autism in pre-school term. The developed game is designed simply, considering the specialties to visual and auditory stimulating of the people with autism. And also for the researchers planning to make research in the future, this study suggests them to make researches developing the fine motor skills.

Boutsika (2014) similarly applied a game developed by Kinect on 10 male and female students with autism. The basic aim is to strengthen people's mind and develop their social skills with the game named "Kinect Adventure". This application is observed to effect the personal development of the children with autism and Kinect is suggested to use as a supplementary material for the children with autism.

Kinect, because of its some usage specialties, can be used for the education of both the ones who has normal development process and the ones who need special requirement. The specialties are below:

- The students don't need any control providing which requires any contact.
- Each motion of the students reflects on the screen.
- With the help of Kinect, the students feel themselves like directing the game in real environment.
- Kinect provides to place the new motions in unconscious mind naturally and similarly to generalize the living the real.

Goncalves et. all (2014) examine the usage of Kinect in stereotype behaviors of the children with autism. In order to detect automatically in real time stereotyped behavior, such as hand flapping, they use the Dynamic Time Warping algorithm. The system is first tried in a laboratory environment with seven adults. As a result of the effective results of the experiment, the system also was tried with the children with autism in different environments. The results show that the defining of the motions of children with autism can be searched with the researchers in different ways.

Çalikuş et. all (2014) designed a gesture based music game using Kinect for the children who need special requirement. He aims to strengthen the minds of the children and to develop the skills of them like recognizing the color with an entertaining application. The application is tested with 10 university students. After the application, the changes in the memory skills of the users in different conditions can be analyzed. While designing the application, the appropriate interface and design for the children who need special requirement as a target group are taken into consideration. The game is planned as a drum game in order to enable the instruction with both music and motions. And also it is stated that application must be tested with the children who need special requirement.

Kadakal et al (2014) designed a study related to developing of interactive games about the children with autism. In this study, it has been prepared a content which is for removing of the mimic- based problems in interactive communication. It is expressed that the application must be evaluated with the children who need special requirement in order to get more accurate results.

Chang et al (2013) make a different study in order to evaluate the physical rehabilitation possibility with using Kinect on two adults in a school environment. As a result of the study it is expressed that the application developed with Kinect has the potential to manage the aims.

CONCLUSION

With the light of the technological developments today, it is seen that gesture based computing technologies will be the part of our life in a short time. Although these technologic materials need technological devices such as computer, projection or screen, in near future it is planned to release gesture based computing devices integrated to the computer, projection or screen.

It has been developed many application softwares including game with Kinect which is one of the most popular gesture based computing technologies. Especially it takes its place in literature as a supplementary source in educational environment. The applications are increasing each passing day with its flexible structure in educational environment. Kinect applications developed especially for educational environment are important for the ones who need special requirements as much as the ones who have normal growth process. Kinect can be said to have the potential of contributing the person's learning process positively to decreasing the limitations in classroom environment for the children who need special requirement.

The technology enables the flexibility of education, interaction and participation in courses, multimedia productivity and enjoying learning along with game. With this technology, it is desired to minimize educational limitations of these people though we believe that this system itself is able to promote software and hardware in order to make communication of person with classroom more interactive.

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The Use Of Learning Objects In Teaching Linear Algebra

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ABSTRACT

Several tools to assist both the learning and the teaching of certain concepts on Linear Algebra that are often difficult to understand were designed for the Algebra and Analytic Geometry course at the Facultad Regional San Nicolás, Universidad Tecnológica Nacional, Argentina.

The learning styles of freshmen using the learning objects were analyzed according to the VARK classification. Their preferences were taken into account when proposing different ways to use the offered material.

In this paper these preferences are shown, together with those of students in a course that did not use the same tools. Also, some resources designed with GeoGebra by the authors are briefly described, and some examples showing the way they were used are discussed.

INTRODUCTION

Nowadays, learning objects (LO) have become a powerful tool to support learning. One of the first set and widespread definition states that a LO is any digital resource that can be reused to support learning (Wiley, 2001). Learning objects have the ability to constantly update or change. Their purpose is to ensure a successful learning process. They should have the following characteristics: reusability, interactivity, scalability, and accessibility, among others. LO can be also classified according to their pedagogical purpose as instruction objects, collaboration objects, practices objects and evaluation objects (Arango et al., 2015).

The design of a LO is a challenge for teachers: they have to choose the contents and to create the appropriate presentation forms depending on the characteristics and learning styles of their students.

Some studies have shown that the use of learning objects, combined with classroom teaching, have positive effects on test scores and increases student motivation (Montagud Mascarell et al., 2014). With the aim of reducing learning difficulties and improving student performance, diverse GeoGebra Applets were designed coordinating graphic and symbolic forms of representation.

GeoGebra is open-source software that joins geometry, algebra, and calculus, which other packages treat separately, into a single easy-to-use package for learning and teaching mathematics from elementary through university level. It is available free of charge and used by thousands of students and teachers around the world in classrooms and at home. It has been translated to 36 languages by volunteers, and gathers a rapidly growing worldwide user community. For teachers, GeoGebra offers the powerful opportunity to create interactive online learning environments which has led many teachers to share free materials on the Internet. (Hohenwarter et al., 2008)

The designed tools were used in an Algebra and Analytic Geometry course at the Facultad Regional San Nicolás. In this work the Applets are briefly described, the learning styles according to the VARK classification of students using the learning objects, together with those of students in a similar course that did not use the same tools, are analyzed and their academic achievements are compared.

THE TOOLS

In previous works diverse GeoGebra Applets, designed for a Calculus course (Caligaris et al., 2015a) and for an Algebra and Analytic Geometry course, were discussed (Caligaris et al., 2015b).

Applets were prepared to work with the cross product, the scalar triple product, the subspaces generated by several sets of vectors and with systems of linear equations with three unknowns.

Fig. 1 shows the Applet prepared to work with the triple scalar product, some of its properties and the geometric interpretation of its absolute value and the one prepared to display graphical representations of the solutions of a linear system in a 3D Cartesian coordinate system and the rank of the matrices A and $A|B$.

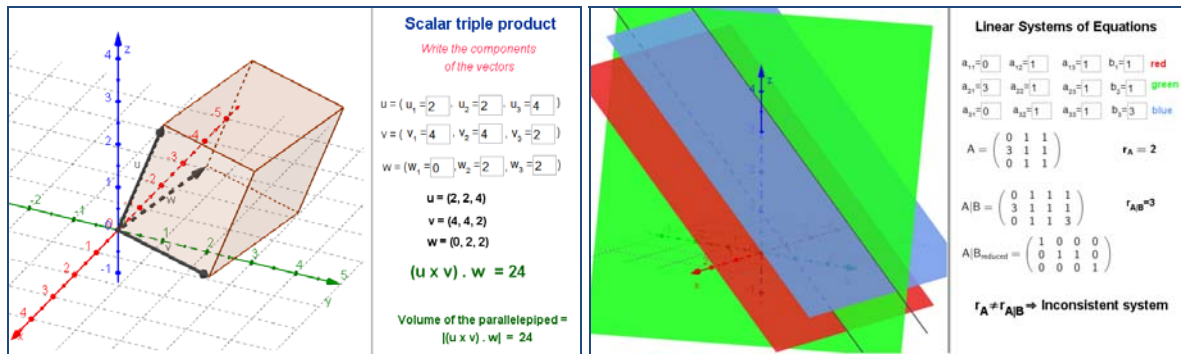


Figure 1. Applets designed for the Algebra and Analytic Geometry course.

Fig. 2 shows two other tools, which were used in class to conduct a review of the contents. The purpose for which these latter activities were raised is to work the justification of true or false propositions. In the figures, some answers are presented.

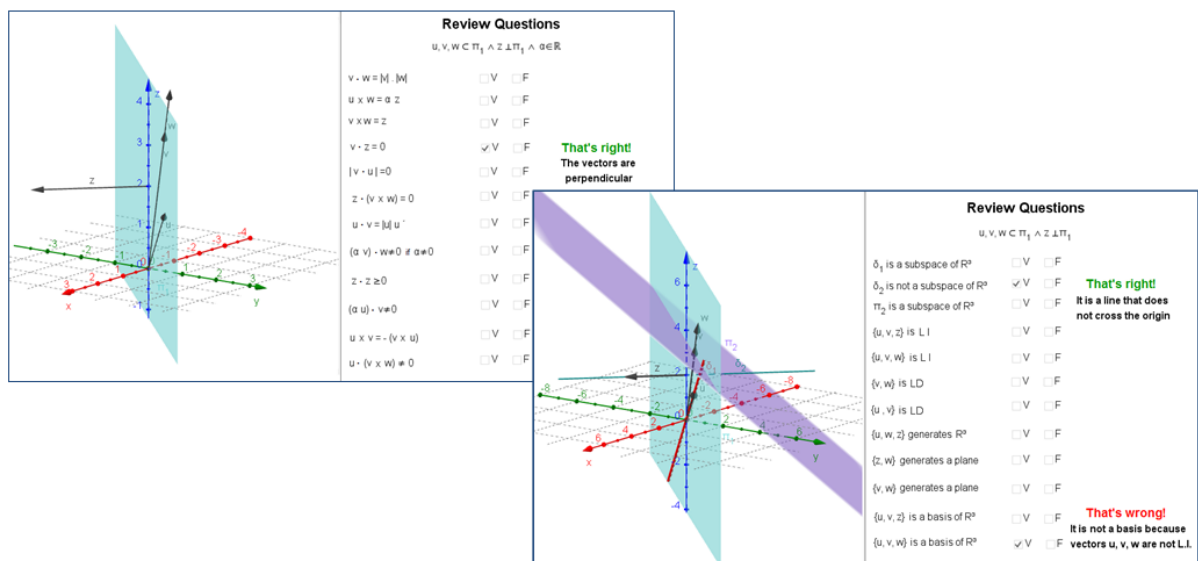


Figure 2. Applets prepared for reviewing diverse concepts.

When working with these applications, the students had the chance to experience and interact with them, thereby visualizing and increasing the understanding of certain concepts, particularly in the 3D geometry.

On the other hand, the interaction of students and teachers with the presented material, allows to monitor the process of construction of knowledge and not just the final result.

THE STUDENTS' LEARNING STYLES

Learning styles are the cognitive, emotional and psychological characteristic behaviors that can be used as relatively stable indicators of how learners perceive, interact and respond to the learning environment. Some students are comfortable with theories and abstractions; others feel better with facts and observable phenomena; some prefer active learning and others are inclined to introspection; some prefer the visual presentation of information and others prefer verbal explanations. A learning style is not preferable or better than another, just different, with different strengths and weaknesses (Felder & Brent, 2005).

To determine the specific learning styles different questionnaires, which differ not only in the time they demand and the number of their questions but also in their structure, are used (Klement, 2014).

The questionnaire that determines learning styles according to VARK (acronym for Visual, Aural, Read/Write, Kinesthetic) classification was used in this work. This classification takes into account the kind of sense that is preferred by students in the learning process (Fleming, 1995).

Students with visual preference learn best when studying with pictures, charts, tables, diagrams, maps and photographs. Students with aural learning style prefer listening and speaking before reading or writing. The R in VARK means read/write. Students with this preference can learn better using textbooks. Students with kinesthetic learning style prefer to learn by doing something with study materials (Klement, 2014). The additional category "multimodal" includes students who fall into more than one sensory modality, in any combination. Some authors found that between fifty and ninety percent of the students in a class consist on multimodal ones (Marcy, 2001).

The above four preferences, plus combinations thereof, are determined by means of a questionnaire of 16 questions with four possible answers. This VARK questionnaire allows the possibility of multiple responses for each question and all the answers are counted. Therefore, some respondents may choose more alternatives than others.

In Tables 1 to 3, preferences of students in Industrial Engineering that completed the Linear Algebra course in 2015 are shown. In Group A course, classes were developed without using the presented tools. Students in Group B worked using the Applets.

Table 1. Students classified by preference, Group A.

Preference	Number of students
V: Visual	3
A: Aural	10
R: Read/Write	6
K: Kinesthetic	2

Table 2. Students classified by preference, Group B.

Preference	Number of students
V: Visual	3
A: Aural	7
R: Read/Write	5
K: Kinesthetic	7

Table 3. Students with multimodal preference.

	VR	VK	AR	AK	RK	VARK
Group A		1	2	3		
Group B	1	2	2	1	1	1

THE STUDENTS' OPINION

In order to evaluate the use of the different tools, students completed a questionnaire at the end of the issue. This survey consisted of two parts. In the first one, it presented a series of closed questions to be discussed later using a Likert type scale. The options were: agree, neither agree nor disagree, disagree, with numerical values 2, 3, 4, respectively.

Table 4 shows some of the relevant statements of the linear systems of equations' questionnaire, with the obtained indexes. As it can be seen, the indices for the different survey items do not reach the value 3.

Table 4. Some statements in the questionnaire with the obtained indexes.

Statement	Index
The Applet facilitated my learning of the theoretical content on systems of equations	2.1
The Applet helped me to understand the geometric interpretation of a system of equations	2
The Applet facilitated my learning of the relationship between the geometric interpretation of systems of equations and the rank of the A and A B matrices.	2.3
In classes where the computer was used I was more entertaining than in others in the field	2.5
In classes where the computer was used I paid more attention than in other classes	2.8
Using the Applet made me more interested in the developed content	2.5

In the second part of the questionnaire, questions were open about the opinion they had of this kind of work in

class, using computers. Here are some of the answers provided by students about the linear systems Applet:

- *It seems a good tool to help.*
- *It makes easier the classes with geometric interpretation. It helps visual memory and to remember easily.*
- *I like using the computer. It is understandable.*
- *The contents are more understandable. It seems efficient using the computer.*
- *It is very entertaining and graphics are much better understood.*

Table 5 shows some of the relevant statements of the questionnaire corresponding to vector spaces, with the obtained indexes. In this case, also, the indices for the different survey items do not reach the value 3.

Table 5. Some statements in the questionnaire with the obtained indexes.

Statement	Index
The Applets allowed me to improve the understanding of:	
theoretical explanations of linearly independent or dependent sets	2.3
concepts such as basis and dimension of vector spaces	2.5
the concept of subspace generated by a set of vectors and its geometric interpretation	2.2
In classes where the computer was used I was more entertaining than in others in the field	2.4
In classes where the computer was used I paid more attention than in other classes	2.8
Using the Applet made me more interested in the developed content	2.5

Finally, the index obtained when students were asked if the contents review performed with the computer helped them to study for the exam was 2.4.

Some of the answers provided by students about the Applets related with vector spaces were:

- *I find it convenient to use them. They help to clear doubts about graphics*
- *It sounds like a good idea to implement new learning techniques when concluding an issue.*

THE STUDENTS' ACADEMIC ACHIEVEMENTS

Tables 6 and 7 show the students achievement throughout the course. Only students that completed the course and conducted the three examinations are considered.

Table 6. Students achievement, Group A.

Grade	Number of students		
	1	2	3
Grade ≥ 7	13	19	14
$4 \leq \text{Grade} < 7$	8	7	10
Grade ≤ 4	6	1	3

Table 7. Students achievement, Group B.

Grade	Number of students		
	1	2	3
Grade ≥ 7	9	17	16
$4 \leq \text{Grade} < 7$	11	12	12
Grade ≤ 4	10	1	2

As it can be seen, students working with Applets seem to have a slight improvement over the other group in the corresponding evaluation, the last assessment of the year.

FINAL CONSIDERATIONS

Students with visual and kinesthetic preference enjoy interacting with the applets not only in the course but at home. Students with aural learning style listen and dialogue with teachers and peers in the classroom. The authors of this work consider that the presented tools motivate the majority of students, whatever their

preference.

These tools are incorporated as part of the classes, as they are used while working with exercises and activities involving true or false justifications. This way of working creates a greater participation of the students. To develop this type of material requires more dedication from the teacher but it is worthwhile.

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Two Different Methods Usage In Multi-Digit Numbers Subtraction With Borrowing And Success Results

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ABSTRACT

In this study two different subtraction models are presented. These are Turkish (1) and Austrian (2) models respectively. It is known that primary school students have learning difficulty by multi-digit number subtraction especially with borrowing. The purpose of this study is to determine the skills and the success of the objectives belonging mathematics curriculum of two different methods.

Key words: Mathematic teaching/learning, primary schools, basic mathematic operations, subtraction.

INTRODUCTION

Most of the children have learning difficulties in subtraction. Once you have started the up tens to count and add them, it begins subtraction process. When it comes multi-digit numbers subtraction especially with borrowing, it is great problem to teach and to learn for them. To make clear, which method is easier to understand, two methods should be compared.

Resnick (1992) noted that, starting at about 7 years old, children begin to use a choice strategy: choose between two informal computational strategies to determine differences. In cases in which the numbers are relatively close, such as $7 - 5$, counting down ("7; 6 [is one less], 5 [is 2 less], 4 [is 3 less], 3 [is 4 less], 2 [is 5 less]-so the answer is 2") is more difficult to execute than counting up ("5; 6 [is 1 more], 7 [is 2 more]-so the answer is 2"); therefore, children tend to choose the latter strategy.

The above examples demonstrate that subtraction mistakes are caused by defects in the students' prerequisite behavioral objectives. Here the learning defect is due to not knowing the decomposition principle incorrectly. Therefore while teaching subtraction pre- and post-aspects of the behavioral objectives must be known for effective teaching (Ozder, 2011).

Different methods for teaching behavioral objectives related to subtraction skills including the principle of equality and change in decimal-hundred fractions where students make most of their mistakes can be tested (Haylock, 2005).

METHODOLOGY

If the digits of the subtrahend are greater than the digits of the lower number (minuend), then everything is very simple, for example:

$$\begin{array}{r} 974 \\ - 851 \\ \hline 123 \end{array}$$

For this calculation in (1) we say: 4 minus 1 is 3, 7 minus 5 is 2 and 9 minus 8 is 1. In (2) is used supplementary method and we say: 1 and 3 is 4, 5 and 2 is 7 and 8 and 1 is 9.

But if the digits of the minuend are greater than the digits of the subtrahend, then everything is quite terrible, for example:

$$\begin{array}{r} 672 \\ - 298 \\ \hline ??? \end{array}$$

In subtraction method (1) are the children are confused with drawing lines and calculate as:

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$$\begin{array}{r} 16 \\ 5 \ 6 \ 12 \\ - 6 \ 7 \ 2 \\ - 2 \ 9 \ 8 \\ \hline 3 \ 7 \ 4 \end{array}$$

2 less 8 is not possible, therefore we take from the 7 tens of subtrahend one ten, must deduct from 7 - 1 and it remains 6 tens, so have $10 + 2 = 12$ one count available and can now calculate $12 - 8 = 4$. And by the second step also 6 less 9 is not possible, therefore we take from the 6 hundreds of subtrahend one hundred, that is 10 tens must deduct from 5 - 1 and it remains 5 hundreds, so have $10 + 6 = 16$ tens available and can now calculate $16 - 9 = 7$. And finally $5 - 2 = 3$. So as a result, 12 minus 8 is 4, 16 minus 9 is 7, 5 minus 2 is 3. That is 374.

This calculation could be done with proposed method (2) as follows:

$$\begin{array}{r} 6 \ 7 \ 2 \\ - 2 \ 9 \ 8 \\ \hline 3 \ 7 \ 4 \end{array}$$

8 plus how much is 2, is not possible, therefore it is called 8 plus how much is 12; 4. So that it is remembered with a small 1 in addition to the 9 by minuend that later also actually by 1 more respectively have to deduct not only 9 but $9 + 1 = 10$. 10 plus how much is 7, is not possible, therefore it is called 10 plus how much is 17; 7. So that it is remembered with a small 1 in addition to the 2 by minuend that later also actually by 1 more respectively have to deduct not only 2 but $2 + 1 = 3$. Finally 3 plus how much is 6; 3. So as a result, 4 and 8 is 12, 7 and 10 ($9 + 1$) is 17, 3 and 3 ($2 + 1$) is 6. That is 374.

STUDY GROUP

For the determine the skills and the success if there is an improve or not, the study was conducted with 2nd grade primary school students at Atatürk Primary School in Kaynarca, Sakarya during the 2014-2015 academic year. There were 16 students in total.

RESEARCH INSTRUMENTS

All of 16 children were administered a formative test (as a pretest) with following 10 questions:

Q1) $\begin{array}{r} 783 \\ - 248 \\ \hline \end{array}$	Q2) $\begin{array}{r} 615 \\ - 494 \\ \hline \end{array}$	Q3) $\begin{array}{r} 921 \\ - 567 \\ \hline \end{array}$	Q4) $\begin{array}{r} 512 \\ - 199 \\ \hline \end{array}$	Q5) $\begin{array}{r} 1000 \\ - 328 \\ \hline \end{array}$
Q6) $\begin{array}{r} 403 \\ - 154 \\ \hline \end{array}$	Q7) $\begin{array}{r} 854 \\ - 798 \\ \hline \end{array}$	Q8) $\begin{array}{r} 746 \\ - 248 \\ \hline \end{array}$	Q9) $\begin{array}{r} 680 \\ - 334 \\ \hline \end{array}$	Q10) $\begin{array}{r} 921 \\ - 145 \\ \hline \end{array}$

2 weeks with 2 hours in a week teaching were held in the class. Firstly the Austrian method was presented and then many examples were solved with the participation of students. After 2 weeks teaching same questions in pretest were asked again (as a posttest).

FINDING AND RESULTS

The children have been involved in a short time and have shown success. For example:

$\begin{array}{r} 8171 \\ 921 \\ - 567 \\ \hline 354 \end{array}$	$\begin{array}{r} 921 \\ - 567 \\ \hline 354 \end{array}$
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Figure 1. Q3 with both of methods

By pretest were all of children confused in Q5 but by posttest 3 of 16 could answer it true (see Figure 2 and Table 1). One of the children has written under the line: "I have not understood and could not made".

$$\begin{array}{r} 1000 \\ - 328 \\ \hline \end{array}$$

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$$\begin{array}{r} 1000 \\ - 328 \\ \hline 0672 \end{array}$$

Figure 2. Q5 in pre- and posttest

By pretest 1 of 16 children answered Q6 correct but by posttest 9 of 16 have been able to create (Figure 3).

$$\begin{array}{r} 10 \\ 340313 \\ - 154 \\ \hline 250 \end{array}$$

$$\begin{array}{r} 403 \\ - 154 \\ \hline 249 \end{array}$$

Figure 3. Q6 in pre- and posttest

Table 1
Pretest – Posttest Result

Children	Results of the tests: true (T) or false (F) in																			
	Pretest with questions number (Q)										Posttest with questions number (Q)									
	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
1	T	F	F	T	F	F	F	F	F	F	T	F	F	T	F	T	F	T	F	F
2	T	T	T	T	F	F	F	F	T	F	T	T	T	F	F	T	T	T	T	T
3	T	T	F	F	F	F	F	F	T	F	F	T	F	F	F	T	T	F	F	T
4	T	T	F	F	F	F	F	F	T	F	T	T	F	F	F	T	T	F	T	T
5	T	F	F	T	F	F	T	T	T	F	T	T	T	F	F	T	T	T	T	F
6	T	F	F	F	F	F	F	F	T	F	T	T	F	F	F	F	F	F	T	F
7	T	F	F	F	F	F	F	F	T	F	T	F	F	F	F	F	F	F	T	T
8	T	T	T	T	F	F	T	T	F	T	T	T	T	F	T	T	T	T	T	T
9	T	F	F	F	F	T	F	F	T	F	T	T	F	F	F	T	F	F	T	T
10	T	T	T	T	F	F	T	T	T	T	T	T	T	T	T	F	T	T	T	T
11	T	T	T	T	F	F	F	T	T	T	T	T	T	T	F	F	F	T	T	F
12	T	T	T	T	F	F	T	F	T	T	T	T	T	F	T	F	F	F	T	T
13	T	T	T	F	F	F	T	T	F	T	T	T	T	F	F	T	T	F	T	T
14	T	T	F	F	F	F	T	T	T	T	T	T	T	T	F	F	T	T	T	F
15	T	T	T	F	F	F	F	T	F	F	T	T	T	F	F	T	F	F	T	F
16	T	T	F	F	F	F	T	F	T	T	T	T	T	F	F	F	F	F	F	T

For the pretest given true response rates of the students is 47% and posttest is 58%, thus is observed with the proposed method in a short time the increase of the level of success 11%.

CONCLUSIONS

Especially in this study was used second method because of the subtraction difficulties for students. After short practice sessions was seen this method is more understandable for the children. Moreover increases the skills and the success of the children in a short time. So second method seems to be better and uncomplicated and could be overcome the difficulties of subtraction understanding in mathematics.

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Universities And Globalization Processes.

The Study “Young Universe” By The Generational Observatory Of The University Of Bari Aldo Moro

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ABSTRACT

The Bologna process (1999) and the Lisbon Strategy (1997) emphasize that universities in their strategic development must incorporate a perspective that goes above and beyond the local and national, aiming at excellence in higher education in a globalized society (Bauman, 2001). Student mobility is therefore a basic component and one of the most obvious and important aspects and indicators of the internationalization of higher education. The Generational Observatory of the University of Bari Aldo Moro through its study "Young Universe" included a total of 10,730 students enrolled in the first year of degree courses at the University of Bari for the academic year 2014/2015, of which 39.2% were males and 60.8% females to monitor and study their behavior in relation to student mobility abroad. In this article we highlight the findings of the study.

INTRODUCTION

The University has, among its objectives, the inclusion of the student in a system of exchanges and training that fosters international contacts, through participation in parallel training courses or further study, providing foreign relations. The development of the international mobility of students, researchers, teachers and administrative staff is a priority of the Bologna Process which envisages that by 2020 at least 20% of those graduating in European Higher Education will have participated in an international exchange experience while studying (Bucharest Ministerial Conference, 2012). Student mobility, understood as "the process of integrating an international, intercultural or global dimension into the purpose, functions, or delivery of postsecondary education" (Knight, 2003, p.2) is an important means of internationalization. It includes flexibility for titles and credits. The first is a form of long-term focus aimed at leading to a diploma or certificate in the country of destination; the second is a form of short-term focus aimed at the acquisition of credits from a foreign institution. In this regard, the promotion of the internationalization of higher education institutions fall, for example, among the objectives of Erasmus +, the EU program for education, training, youth and sport for 2014- 2020. The latter identifies, among measures, their individual mobility for learning by offering students the opportunity to confront reality and university work of an international type. The student involved in one of the three cycles of higher education can then take courses and exams in a higher education institution site outside the borders of their own country and do a work placement in a company abroad. However, the student mobility programs are not the only chance to compete with the cosmopolitan dimension of higher education: language courses, summer schools and research experiences abroad represent more growth-oriented objectives of the study. With the globalization of economies, of knowledge, of culture, with the fall of borders and the creation of a liquid society (Bauman, 2011) where goods, things and people can move freely in logic reciprocal intersections and interrelations student mobility can be considered as a tool (and an indicator) essential for intercultural education, for acquiring intercultural skills, for internationalization of training in society skills. The Standing Committee of the 'Generational Observatory of the University of Bari Aldo Moro, established in 2009 in order to foster collaboration between the academic world and local context has created for this purpose a network of university and non-university collaborations, also internationally, to detect the needs and expectations of young people and translate them into active policies for their benefit. To this end, among the many areas of intervention of the Observatory, is the regular monitoring of young people through the administration of questionnaires designed to highlight the needs, expectations, experiences and perspectives, knowing that they, with the wealth of dynamics and innovation of which they are, in general, carriers, are a strategic resource for any Country which intends to look to the future. Choosing the path of higher education is in fact a delicate moment. There are many elements that come into play: on one front, internal factors, traceable in the realm of the self, that is individual characteristics, personal interests and talents; on the other, external factors, linked to each other themselves, namely, the family environment and social backgrounds, as well as trends in the labour market both nationally and internationally. These variables contribute to the development of a decision that will be important for the future of training and working. In fact, a university course in line with their passions and seen as a key to access the professional world can stimulate investing time and energy in view of a fulfilling future. However, the overall employment scenario to be faced sometimes becomes a deterrent to further study and in this respect, in Italy, just over half of those who complete the upper secondary school choose to enroll at the University (ISTAT,

2014) they might want, today, to compete with university education before they have before them a rich range of opportunities, represented by national and international education. The freedom of choice is the great achievement of the process of harmonization of European higher education, known as the Bologna Process. Started in 1999 with the signing of the Bologna Declaration by the Ministers of Higher Education from twenty-nine European countries, it aims to spread "Europe of Knowledge", allowing citizens to acquire the necessary skills to move in a social and cultural reality of international dimensions (The Bologna Declaration, 1999). An essential prerequisite for the construction of a common "European Higher Education Area" it is the convergence of training around a common structure of qualifications easily readable and comparable within a system of higher education in three cycles according to the Framework of Italian Titles, they are: Degree (first cycle), Masters or Specialism (second cycle) and Doctorate (third cycle) (Ministry of Education, University and Research. Department for University, Higher Education in Fine Arts, Music and Dance and for Research, CIMEA, 2011). The process, which is still continuing with the active participation of forty-eight member countries aims to bring about, by 2020, a reorganization of the higher education systems of European countries, to enable students and graduates to smoothly continue their studies or find an occupation abroad. It should be added, moreover, that an increasingly global society is changing training needs and therefore the future projects of the students. Our university system should therefore be able to reach and respond to the new requirements in a broad and far-sighted perspective of growth of the economy of knowledge and, consequently, in the world of work. In light of the foregoing reasoning, it is interesting to question what the approach of the universities are regarding the renewed sensitivity to the internationalization of education by choosing which students to target from the University of Bari Aldo Moro.

THE STUDY

The objective of this analysis is to detect, socio-demographic characteristics of the student population of the University of Bari through the indicator of international student mobility, to become familiar with experiences and opinions regarding the opportunities of overcoming national borders, in view of a enriching their own range of skills and experiences. The population survey is composed of enrolled members, during the period of data collection, the first year of an undergraduate program, Master's course and second level Master's, started in the academic year 2014/2015 at the University of Puglia. The instrument used for data collection was a questionnaire, specially prepared and divided into sections: Socio-demographic characteristics: includes questions designed to determine the socio-demographic characteristics, experiences abroad: are the opportunities offered by international student mobility and, specifically, it aims to learn about how many of those enrolled in a master's degree, have stayed abroad for study and how many of the colleagues from the three-year courses and single-cycle, would be willing to do it. The questions included in the section also point out students' opinions about the learning experience living abroad and the motives of those who have given up. The future planning: investigates educational and professional training projects of respondents. The questionnaire was administered between November 2014 and January 2015 via web survey (Corbetta, 2014), using software Esse3. At the end of the administration import operations and data processing were performed using Excel and SPSS software for the calculation of univariate and bivariate descriptive statistics (Trinchero, 2004). The population of the survey consisted of 10,730 enrolled in the first year. In comparative departments, offices of teaching and research, was conducted in four disciplinary areas, namely the legal and economic context, the area of science, the humanities sector and the School of Medicine. A third of students attend a course belonging to the first group discipline; about a quarter refers respectively to the humanistic and scientific sector and nearly 15% enrolled in a degree program run in the School of Medicine. The respondents are distributed among those attending an undergraduate program, equal to 66.7%, those who follows a Master's degree in one cycle, 19.1% and, finally, those who undertake a Master's course of study at second level, already possessing the title of doctorate, 14.2% . The target population consists of 10,730 university students, of which 4,211 men 39.2% and 6,519 women, equal to 60.8%. Within the respondents shows a predominance of women in humanities and also occurring in the School of Medicine and the legal-economic sector. The gender gap in favour of women was found among those enrolled in the first year, this is confirmed within the three programs of study, reaching over 16% for those enrolled in a course of three years, reaching nearly 30% for those attending an undergraduate degree in one cycle and 37% for students who attend a Master of Science from the second level. Respondents with an average age of 21 years are mostly under 25. Specifically, 56.5% are under 20 years, 33.6% are within the range between the ages of 20 and 24 years. The remaining portion, close to 10%, is composed of those who are 25 years old and over. Students enrolled in an undergraduate program or Master's course are on average 20 years old which rises reaching 25 for those who follow a degree course in the second level. The students are almost all Italians, while foreigners constitute only 1.3%: Albanians, Montenegrins and Romanians are the most represented ethnic groups.

FINDINGS

As for the survey, we raised the question whether those starting a three-year Bachelor or Master's course, had contemplated, among the future projects, international mobility. The attitude to the movement for education cuts across the student population, for the most part they are aware of the importance of broadening their horizons with a view to better career prospects. In fact, the most common profile is that of students motivated to expand their education with a stay outside the country: 85.9% would be willing to leave Italy for study or research, compared with a reticent limited minority. Although in terms of desire the choice of a composite and multilingual academic education clearly wins, in terms of student mobility behavior it proves an opportunity that few benefit from. Specifically, the university students who have already completed a course of study at the University of Bari, almost all did not participate in an international mobility program nor have chosen other countries as a destination for other activities related to the academic experience. In contrast, the share of those who have crossed national borders for the purpose of study or research is low, 5.5%. Europe is the most popular destination, indicated by 90.4% of those who stayed, for the most part, in Spain, the UK and Germany. Experiences in America, particularly in the United States, Oceania and, most recently, in Asia, enrich the curriculum by 9.6% of mobile students. For more than a third of those who chose to acquire foreign skills, stay took place over a period of between four and six months. The stay lasted from one to three months for more than a quarter of the same and the percentage a little lower of those who have left the University of Bari for less than a month. The toughest choice of a departure for more than six months has involved the 13.7% of respondents. The contribution of such activities across the border may be regarded as "fruitful", as demonstrated by the large share of those who reported a positive opinion: about three-quarters are completely satisfied compared with 20.6% who, while expressing satisfaction, recognize the main economic limitations that the stay abroad has brought. Only 8.2% expresses, however, lack of appreciation because of the inadequate support received and the slowing down of studies due to the experience. If for most, student mobility is an opportunity of great enrichment, both in terms of skill, and life experience, this limited participation is perplexing. Such a discrepancy between intentions and behavior is explained by the persistence of a number of obstacles to mobility within and outside the European Higher Education Area. In this regard, the Mobility Strategy 2020 includes, in view of overcoming the most common obstacles to student mobility, a number of interventions that is to say funding, the recognition of degrees or credits earned abroad, issuing visas, residence permits and permission to stay in the higher education environment, in addition to strengthening the teaching of foreign languages (Bucharest Ministerial Conference, 2012). However, obstacles relating to the subjective realm will always remain, and personal and family motivations, emotional ties and work commitments. Returning to those involved in the investigation, the main criticism leveled by the students of the university of Puglia that have not been abroad, was the slowing down of the studies (30.9%). The economic possibilities have been a hindrance to 23.8% of dropouts and the percentage of those who have recognized priority to the family, children, friendships or other aspects of personal life is a little lower (19.8%). For 14%, it was not a choice conditioned by external impediments but rather of a lack of interest in the opportunity and, albeit a small minority (1.7%), a lack of appreciation for the countries of destination proposed. Perplexing misinformation 8.3% is an expression of, on the one hand, low resourcefulness, personal and symptomatic curiosity and on the other, the need to improve communication about the possibility of benefitting from similar opportunities for educational and human growth. Among the other reasons given, include work commitments, the fear of not seeing validation, once back in Italy, examinations carried out abroad and, most recently, the compulsory attendance rate stipulated in their syllabus, incompatible with a departure, albeit temporary.

CONCLUSION

The achievement of a degree can serve as a master key to enter the working world or be an intermediate step towards a completion of training. As for the position of members of an undergraduate program at the University of Bari it emerges that the uncertain, that is, those who cannot project themselves further in time, represent a percentage not at all negligible, amounting to 41.9%. However, more than half of the members have a clear idea: 53.3% intend to continue their studies with a Master of Science and a minority, close to 5%, report of stopping the three-year degree. The planning also includes the context of future studies. Students can confirm the location of which to follow their first qualification or move onto other universities, within or across national borders. Due to a united convergence of higher education, the student who comes from a country involved in European Higher Education could consider the opportunity to train or at least specialize abroad. With the latter possibility, Erasmus, for example, provides part of the international mobility for learning titles of joint Master Erasmus Mundus, namely high-level integrated international curriculum, provided by a consortium of Higher education institutions in different countries and possibly other partners, students must have at least a degree of the first cycle. Also in view of a more widespread dissemination of international education, Erasmus + also promotes an initiative for the economic support of the university, through a guaranteed loan. Specifically, those who intend to follow a path of comprehensive studies of the second cycle in another country participating in the program can apply for a loan to enable them to cope with the economic burdens that training abroad entails.

Given the importance of such an approach it has seemed interesting to analyze, among the respondents, the intentions of those who are aware that their university education will not end with the achievement of a three-year degree. One in five sees the frame of future studies in a foreign academic institution. National borders represent the upper limit for the movement of more than half of the recipients of the question: namely, the University of Bari will willingly confirm by 29.9%, the other Italian universities collected 26.5% of respondents' preferences and there are those who have not yet identified the location in which they will obtain their Master's degree. Whether they complete a three-year program of study, whether they achieve a degree, the acquisition of the doctorate degree is preliminary, for most people, integration into employment: This is created to acquire functional skills to perform their dream profession. In this way it is hoped that the next step to graduation, degree or master's, is represented by the occupation or, for those who are already employed, from a professional growth. New doctors, who often find themselves confronted with a less than optimistic employment situation and not in line with personal expectations, are forced to leave their cities and, sometimes, their own country, for a job that enhances merit and competence. In fact, thanks to the economic crisis of recent years, Italy continues to "export" graduates. A clear example of this trend is the so-called phenomenon of skills- drain. Also known as brain drain, literally "brain draining", it implies the loss of qualified human capital through the migration of those who, despite having trained in Italy, find employment abroad. In this regard, comprehensive analysis on aspects relating to the planning, a question directed to detect the prospects of the respondents about their professional career, from which emerges a widespread attitude to mobility. Specifically, more than half of those surveyed were determined to seek work without posing spatial limits. The European borders represent the boundary of functional transfers for work at 10% of the student population. The attachment to Italy belongs to 14.9% of students and the grounding in their region covers 4.5% of them. Very few would give up their careers rather than relocate. If it does not constitute a significant discriminator for university projects, gender instead, influences professional plans. In particular, there was a greater willingness to relocate for men; they are more likely, than women, to go anywhere, but to pursue professional satisfaction, an important factor on which to reflect is that the globalization of knowledge and work do not see gender difference as a discriminating factor for their professional achievement.

Note: (The abstract, the findings and the conclusion was written by Giovanna Damolin; the introduction and the study by Alberto Fornasari)

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Updating Of Programming Lessons For Students Of Computer Engineering

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ABSTRACT.

The computer science and programming have been widely developed and increased; many different applications have raised developing new areas and bringing the need for specialization; so the present work is dedicated to evidence the importance of a good agreement and sequence between the programming courses for the students of computer engineering. Thus, some modification on the original courses have been done in order to maintain updated and for improving the student performance focusing the importance of computer courses towards an specific area, moreover new courses have had to be created for other engineering students in order to improve their training. After five year of application, the improvement of the students abilities have been notorious, nevertheless the need for reviewing again the courses remains.

KEYWORDS:

Updating topics, Creation of new courses, Computer sciences, Programming, Programming concepts, Student orientation.

INTRODUCTION.

Programming has been quickly changing since the computer science was created; the limited capacities of the computers, the complicated work and the high cost of the computers equipments in early years made nearly impossible to think on the integration of computer to our life; although binary systems were limited, some problems like the payment of the employers in industries or others related with the data management such as the register and control of the customer activities for banks awoke up the interest of some enthusiasms on numerical methods, the computers and its applications. The development of numerical methods and mathematical models was essential in order to obtain responses to complex problems quickly (Du Plessis Johan P., et al.1995). Nowadays computers have been totally incorporated to our life with many gadgets very easy to use. The improvement on programming techniques and the inclusion of graphical facilities allowed the development of sophisticated models for deeper analysis. Fortunately not only the computer capacities, the programming methods and tools have been also improved; else the manufacturing processes have also been improved and the production costs have been reduced becoming the computers and the electronic devices more accessible to everybody.

Nowadays it is nearly impossible to imagine a world without computers, laptops, tables, internet or cell phones; the development and integration of new methods and technology have become the computer science complex but in contrast, the use of computers became easier, eliminating the need to be an expert programmer; nevertheless these facts have also arise the need to teach the engineering students in specific areas of computer science.

The programming of computers has also been changing, the beginners used only a limited number of lines and specific rules to solve problems in the classroom or use cards to control machines with specific works in industries, after this the programming languages were integrated to make possible that the users created their own programs for particular problems and purposes (Doornekamp B. Gerard 1993); many of these languages were supported by DOS and it was necessary to know the commands and rules to make a program and run it; then the next jump was to create more sophisticated and friendly programming environments and then the visual versions of the programming languages appeared, Graphical User Interfaces (GUIs) and Programming Oriented Objects (POO) were incorporated to show results making very easy to place windows, pop ups, icons and menus; then powerful tools for save and load information were added and data bases theory were also incorporated; finally the access to internet and the possibility to communicate and update any data or function of any programming process was provided as a new facility becoming the modern friendly environments we use today. Nevertheless the programming lessons have had to be modified according with this new requirements (Glenn W. Rowe and Peter Gregor, 1999). In 70s and 80s the professors usually taught computer theories related with the use of command and functions, data types to be used, theories about loops, processes etc. Nowadays some of these lessons remain in classrooms but it is complicated for the students to understand how these basic processes can be employed in a world where everything seems to be easier, where everything can be solved only touching a key or a screen. The Apps which are downloaded to solve almost any common problem or to access any service is an example of how short but useful programs can be widely used. these have become very popular in

our cell phones and mobile devices; the fact is that these are quick smart applications dedicated to solve a particular necessity; these are not sophisticated systems these programs have only a few lines of code but many of them have been compiled including with the required libraries that let them to work online or interact with other kind of resources or data bases or data types such as images, documents, maps, searching process etc. but, although the apps can be used by all the people only developers and programmers can create one.

PROGRAMMING LESSONS AND PROGRAMMING LANGUAGES.

According with the facts mentioned previously the programming courses must be updated to confront these new necessities but without forgetting the basic principles (Cox Kevin R. and Clark David 1994) . Moreover the programming area in computer science has increased and has been expanded in other areas of knowledge (Milne Iain & Rowe Glenn, 2002). In the ITAM the courses for the engineering students have been updated to satisfy the new industrial requirements since 2000 after 5 years periods. Actually the students of engineering have to take 2 courses of programming. These courses include all the old principles about how to make a program (Woodhouse D., 1983). (Rodríguez Corral J.M. et al 2014) Nevertheless these courses also remain been considered as basic courses for all the engineering students. But the need for updating the topics and create new course for the students of other engineering remains due to all the engineering studies have incorporated the computer science to their own necessities.

The basic courses are focused to rewind the basic concepts of programming; a brief history about the evolution of programming is presented, then the students are introduced to different programming languages; so the structure of a basic program is taught, the use of flowcharts to represent operations and the theory about the sentences, loops and commands, definitions of data types and operations are taught; finally some brief lectures about programming oriented objects is also taught. Exercises about how to read a value or how to include libraries, how to compile and execute a program are included in the course. The basic courses have been updated every five years according with the evolution of the programming languages but a deeper updating has not been necessary. So the programming environments are updated but the related exercises are modified to obtain different points of view from the students (Ramirez-Lopez A., Muñoz D.F., 2015).

Although the students of computer engineering continue taking other additional programming courses, these courses are advanced. The students of computer engineering learn the data base management and the development of more sophisticated algorithms for any specific necessities which involves complex management of big data; but the application of these kind of works are frequently related with administration and rarely with any engineering application. In the other hand the students of industrial engineering and mechatronics are focused to take other different computer courses (Schmitz Bernhard, 2006).

DEVELOPMENT AND APPLICATIONS OF PROGRAMMING AND COMPUTER SCIENCE.

The necessity of new programming and computer courses focused to solve problems on any engineering area is evident. (Tan J.et al., 2014) Nevertheless the creation of new courses according with an specific engineering study is complicated, reason why additional lessons have been included in courses for industrial, telecommunication and mechatronics students according with the inclusion of computer science on all engineering areas as is explained following:

Computer aided Manufacture (CAM) is an specific area for the mechanic and mechatronics engineering which use computers code for programming machines to make any particular mechanical component, here flow charts to program activities for manufacturing are frequently used; moreover commands, working loops, working conditions and an appropriated sequence of ordered operations must be established in order to obtain a good quality components. The programming principles must work in concordance with mechanical tolerances, dimensions and the geometrical designs, and with the selection of materials and the right machining tools.

Artificial intelligence is another new application area of computer science; this is focused on the development of algorithms; here the main purpose is to create system capable to take decisions or solve problems automatically and without a human intervention. Moreover the application of the developments in this area can be employed on other applications.

Robotics is another area derived from the union of manufacturing machines and electronic control, here the mechanic and electronic are joined to create a new generation of machines with some characteristics similar to the human arms, hands etc. to make specific, complicated or risky delicate works. This area involves mechanical design frequently aided by computer design (CAD) tools and the programming of systems.

Control design is another area; due to many electrodomestic devices require an improvement on control systems; these devices have also included many computational facilities in this new digital age. Nowadays every domestic machine has a remote control or maybe can be controlled directly from a cell phone; mainly the signal interpretation and the development of integrated systems to work are joined to create more efficient furniture controls.

Computer design and simulation are new areas where the students use and develop models to design products. Here the computer auxiliary design (CAD) methods are taught. This area is very special due to many industries require to build virtual prototypes to be tested and allow reducing cost.

DEVELOPMENT OF NEW COMPUTER COURSES.

Some computer courses have been developed for the rest of the engineering students focused on specific areas to solve needs as is explained next:

Mechanic of solids (MS). This course is dedicated to analyze forces, vectors and employs physical theories to model machine mechanisms. The purpose is that the students understand the locomotion and kinematics of the machines.

Computer intergrated manufacturing (CIM). This course is dedicated to teach the student on the use of the milling, lathes, 3D printers and other machines for special manufacturing which involves de CAD-CAM principles. The purpose is that the students learn about different advanced manufacturing techniques and methods.

Automation (Auto). This course is dedicated to teach the theory about machines communication and how to replace the human operation by autonomous systems. The purpose is that the students understand about the control systems.

These courses are opened for the students with specific interests on any computer area and are recommended for students of machatronics and industrial engineering. These courses were recently created in 2010 due to the mechatronic is also a new specialization.

ACCEPTANCE OF THE NEW COURSES.

The students of the advanced computer courses felt happy with the updating of these, they told it is good to modify exercises, test and homework to make a break and follow the steps the new programming languages and the evolution of the computer systems.

The new courses were offered to all the engineering students in 2010; since the student evolution has been monitoring; a questionnaire has been asked to the students in order to know if they felt satisfy with the course the evolution on the satisfactory evolution was evident as is shown in figure (1). Here “0” means absolutely unsatisfactory and “10” is the highest satisfactory. The curves indicate that the new courses tends to be accepted for the students but many suggestions have been incorporated.

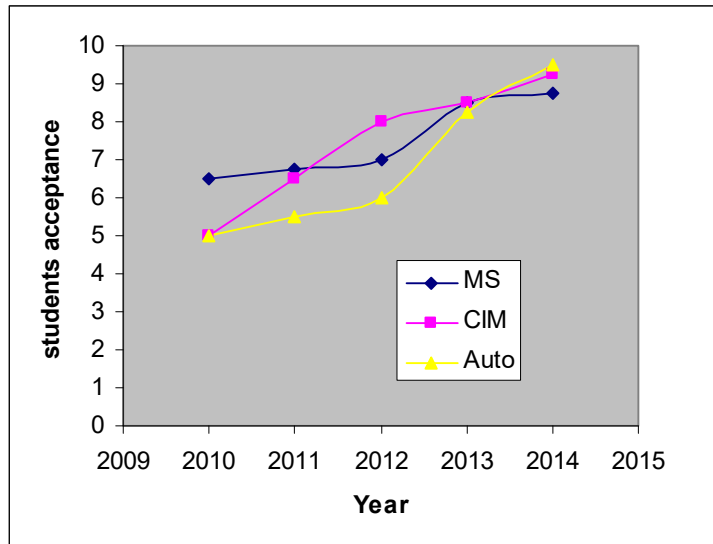


Figure (1) Improvement on the student acceptance and satisfaction with the new courses.

Not only the students have improved their abilities, the professors who teach the courses have also become more professional. Their told that the early years were hard and complicated for them but the rest has been absolutely satisfactory.

The improvement on the students performance can be appreciated on the figure (2), here the average of the final scores is shown.

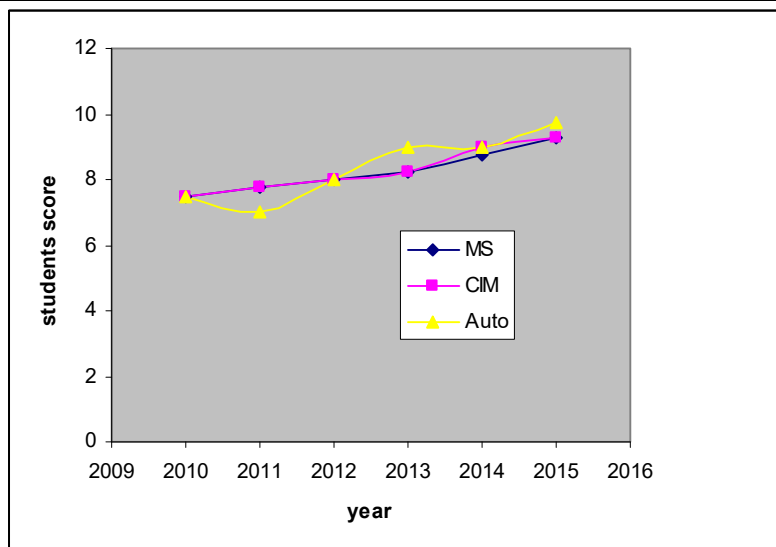


Figure (2) Improvement on the student performance on the courses.

CONCLUSIONS.

The improvement of the students' performance after five years of establishment of the new courses was evident due to they present better projects every new period.

It is necessary to teach the student using problems they will find in the real world to solve a real necessity. Nevertheless the need for updating the courses remain; moreover the evaluation method must also be reviewed to be improved.

Professors of mechatronic and industrial engineering who teach the courses developed are agree in the fact that the courses are in a right way to be developed but there is a long way for ride.

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Use Of Interactive White Board For E-Learning: An Innovative Better By Far Idea

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Abstract

The installation of interactive whiteboard in each of the Faculty of the university is considered an innovative better by far idea and of course has turned the University of Ilorin to be one of the pioneer universities in Nigeria that embark on this initiative. It is in the light of this that this chapter attempt to look at: the issue of interactive whiteboard, in terms of what it is, its usefulness in teaching and learning generally and in the University of Ilorin, its possible educational uses and technical considerations, theoretical and empirical cases on interactive whiteboard locally and internationally, what the University of Ilorin stands to gain, achieve or benefit from the installation of IWB, etc. are some of the issues discussed in the chapter. The chapter has provided information that will enable other universities in Nigeria and abroad to think about the essentiality of implementing and installing interactive whiteboard to facilitate their learning and similarly add to the existing literature in e-learning integration and activities in Nigeria and Africa as a whole. The chapter concluded that use of IWB at the University of Ilorin look very promising in terms of its combination with Tablets, all of which promote learning and makes it interactive and enable learning anytime and anywhere.

Keywords: ICT, E-learning, Computer based learning, Interactive White Board, Tablet, University of Iloin, Nigeria

Introduction

Information Communication Technology (ICT) which paved way for e-learning has provided and still providing a number of opportunities and innovations thereby taken learning and instructional delivery to another levels. The revolution in ICT has resulted to the use of several technologies to facilitate teaching and learning. From time to time new technologies to promote e-learning keep emerging. And to get along with others and to keep pace with the trend and development in e-learning around the world, many universities the world over are now acquiring different technologies as they are emerging, the University of Ilorin Nigeria otherwise known as ‘Better by Far’ University is inclusive. To facilitate her e-learning activities, the university started with a Computer Based Test Center or arena in which 6 buildings that housed up to 300 computers were set aside for taking and conducting tests and examinations particularly for crowded courses that have up to 200 and more registered students. The university has developed courseware system in which there are course wares for every course and these are readily available on the university website. In addition to this, some Faculties in the university e.g. Communication and Information Sciences use online forum and different internet learning tools to facilitate e-learning. There is also an Open Distance Learning centre (ODL, directly under the Educational Technology Department) and currently use to flag off a programme tagged Post-Doctoral Degree in Education (PDDE).

As part of the efforts to continue the development of the e-learning in the institution, the use of interactive white board (SMART Board) has just been introduced. An Interactive White Board has just been installed in each of the Faculty of the university to kick start its use in the university. This interactive whiteboard is a large, touch-sensitive panel that connects to a digital projector and a computer, displaying the information on the computer screen. Interactive or electronic whiteboard technology first emerged in the early 1990s; its uses and impacts in K-12 education, teacher preparation and professional development have grown significantly in recent years. Interactive whiteboards (IWB) enable one to control the computer by touching the board by hand or with a special pen. Educators are increasingly using IWBs in conjunction with other tools such as personal response systems that enable educators to rapidly assess their students’ comprehension of the topic at hand. Internet connectivity that allowed educators to blend web-based materials with other digital resources, and wireless slate and tablet computers that permit control of the IWB by a teacher or student from any location in the classroom (McLaughlin, 2010).

The installation of interactive whiteboard in each of the Faculty of the university is considered an innovative better by far idea and of course has turned the University of Ilorin to be one of the pioneer universities in Nigeria that

embark on this initiative. It in the light of this that this chapter attempt to look at: the issue of interactive whiteboard, in terms of what it is, its usefulness in teaching and learning generally and in the University of Ilorin, its possible educational uses and technical considerations, theoretical and empirical cases on interactive whiteboard locally and internationally, IWBs initiatives, what the University of Ilorin stands to gain, achieve or benefit from the installation of IWB, etc. are some of the issues that will be discussed in the chapter.

It is expected that the chapter will provide information that will enable other universities in Nigeria and abroad to think about the essentiality of implementing and installing interactive whiteboard to facilitate their teaching, learning and research and similarly add to the existing literature in e-learning integration and activities in Nigeria and Africa as a whole.

Background to the University of Ilorin

The University of Ilorin is located in the ancient city of Ilorin, the capital of Kwara State. The state shares boundary with Kogi, Oyo, Ekiti and Niger states. The University of Ilorin is one of the seven third generation Universities established by the Federal government of Nigeria in August 1975. Following an entrance examination, 200 foundation students were admitted into residence on Saturday, October 23rd, 1976 and academic activities commenced on Monday 25th, 1976.

In October 1977, the Institution attained full autonomous status and has since then developed by leaps and bounds. The student population of 200 in 1976 has increased to 20,084 by the 2014/2015 session, while the total staff strength of the University stood at approximately 3,476 as at 2013/2014 academic session. The senate decided to adopt the use of Interactive Whiteboard (IWB) for teaching and learning in various Faculties. They started the installation of the Interactive whiteboard (IWB) on the 28th October, 2014. The various Faculties, Colleges and Offices that makes use of this IWB includes, Art, Communication and Information Sciences, Engineering, Education, Law, Life Science, Agricultural Science, Management Science, Social Science, Physical Science, Veterinary Medicine, Pharmaceutical Science, College of Health Science, Library, Directorate of COMSIT, Senate. The University is striving to improve in her e-learning capacity building, part of this effort is the installation of interactive whiteboard into various classrooms which serve as a platform for students to be motivated and enhance the quality of teaching and learning. This new development has boosted the image of the school within and outside the country.

Interactive Whiteboard

According to Shi, Chen and Tsai(2012), an interactive whiteboard (IWB) is a touch-sensitive board, linked to a computer and a digital projector. The computer can be commanded by touching the board, directly also with a particular pen. The projector can then show images from the computer on the board. The operation mode of IWBs is shown in Fig. 1.

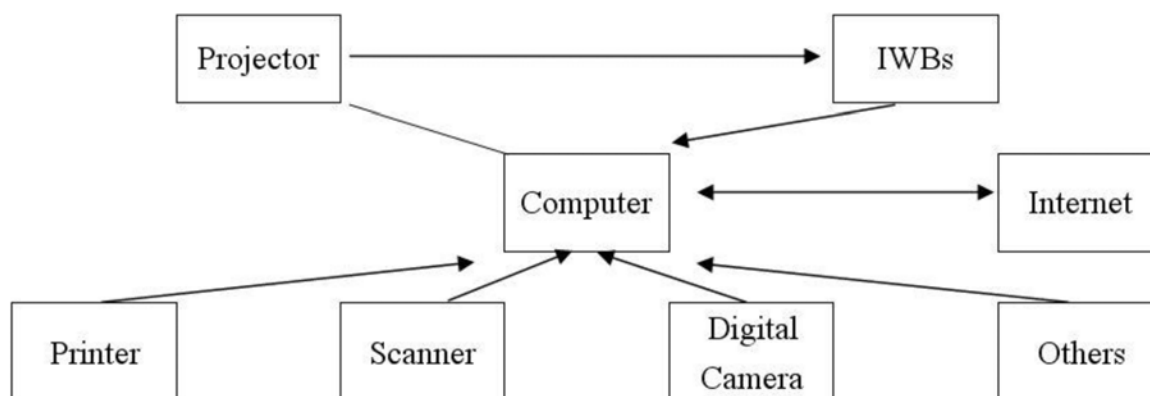


Fig 1: Operation Mode of IWB (Shi, Chen and Tsai, 2012).

According to Bell (2002), interactive applications are in demand for educators who want to involve their students in learning with technology. The electronic interactive whiteboard is a device that combines both of these attributes; offering shared learning experiences for large or small groups, as well as for distance learning. Among the possible applications are (Lin, 2010): using web-based teaching materials in whole-class teaching, playing video clips to help students understanding concepts, displaying a piece of software, presenting students' work to others in the classroom, creating digital flipcharts, manipulating text and practicing handwriting, saving notes recorded on the board in the cause of future use, and quick and seamless revision.

There are several different brand names and makes. However, all interactive whiteboards carry out the same function including: enabling the teacher or students to control the computer from the board itself rather than using a keyboard and mouse, although these can be used as well (BECTA, 2004). Becta (2004) explained by pointing out that, in a simplest term, a multimedia projector allows the user to display anything that is on their computer for an audience, and to control the computer from the interactive whiteboard itself instead of having to return to the computer. This allows even a novice user to run applications such as CD-ROMs, word-processing documents, spreadsheets, presentations and the internet simply by 'clicking' in the right places on the board without losing engagement with a class. With a little bit of practice, teachers can then start to use 'floating tools' to add notes or comments and highlight sections of these pages.

Available Types of IWB

There are three key types of technology and then variations upon these:

- Infra-red/ultrasound kits Infra-red or ultrasound kits fix to any standard whiteboard or any hard surface via clips or suckers. They use special pens (or pen housings to hold standard marker pens). This technology can also be used without a projector for simple save/print functionality. These kits are less expensive than a dedicated whiteboard, but not as robust or flexible. Some whiteboards can be purchased with this technology already installed and secured.
- Passive whiteboards- these have a dual membrane resistive board which is touch sensitive. They can sense pressure on the whiteboard from any object from a standard whiteboard marker to a finger. On a very basic level, these can be used without a projector to save/print the content on the whiteboard. Note that some passive boards do not advise the use of standard whiteboard markers as these could permanently mark the screen.
- Active whiteboards - These solid-state impact-resistant whiteboards are operated with an electronic or cordless stylus to detect the content being drawn to the whiteboard. They are more accurate than passive whiteboards, but have the disadvantage of needing a projector to 'draw' the image on the whiteboard as the pen does not physically mark the board. They are also more robust than passive whiteboards. There are also various types of alternative technologies such as graphics tablets that allow pupils to make changes to the displayed image without touching the whiteboard, as well as numerous 'add-ons' such as voting pads, and personal or mirroring devices which may assist with access issues (BECTA, 2004).

Common Features of IWB

Most interactive whiteboards come with their own software, which will generally offer a range of functionality, including:

Pages: All whiteboards have a design area, or blank pages to create teaching materials. In most instances, the number of pages that can be used is almost unlimited. Teachers can either prepare these before a lesson, drawing on a wide range of digital assets such as images, video or audio clips, or they can be generated during the course of the lesson whilst the learning is taking place – again, using text, images and sound already saved, or starting with a blank page. The teacher and pupils move backwards and forwards through the pages at a suitable pace. This is useful for presenting and representing work. The flipchart can be run at the same time as other applications (web browsers, word processors, spreadsheets, and so on), allowing users to swap between the flipchart and other programs. All pages can be saved.

Pens and highlighters: These allow the user to handwrite on the board. This is not possible with a mouse on a computer screen. Different pen colours are available, which can be used to enhance the teaching and learning process.

Interactive activities: The whiteboard software allows teachers to create resources which pupils will find motivating and fun. Being able to 'drag and drop' text, images and sounds on screen allows for a variety of sorting, categorizing and sequencing exercises. Hiding and revealing text, images and sound is also possible, allowing pupils to hypothesize and make suggestions, before confirming or re-assessing their original ideas. Reviewing work in progress through peer review and discussion allows pupils to reflect on their own and others' work in order to make improvements.

Templates or backgrounds: Using templates available in the software provides a structure (for example, graph paper or a music staff) or a framework (for example, PE pitches, flowcharts, and brainstorm templates) for teachers to manage the work on the board. These resources are time-saving and visual, enabling pupils to access resources which could be more difficult using traditional methods.

Shapes: Some whiteboard software provides visual functionality, particularly useful for mathematics and scientific subjects when dealing with abstract concepts or physical phenomena. Rotating, flipping and mirroring shapes can all be carried out by clicking on a button. This allows teachers to demonstrate these functions at the board. Pupils can predict and immediately confirm, or reassess, their own understanding.

Educational Uses of IWBs

The integration of the interactive whiteboard encourages teachers to manipulate the technology in order to encourage and develop active learning. Effective use of an interactive whiteboard encompasses and extends a range of teaching styles. It also supports and extends a wider range of learning styles – but, as with any ICT tool, its success depends on effective use.

The key feature of this technology is that it emphasizes whole class teaching strategies. These include teacher modeling and demonstration, prompting, probing and promoting questioning, managed whole-class discussions, review of work in progress to reinforce key points emerging from individual and group work, and whole-class evaluation in plenary sessions. Interactive whiteboards are powerful teaching tools. They have the potential to:

- enhance demonstration and modeling
- improve the quality of interactions and teacher assessment through the promotion of effective questioning
- redress the balance of making resources and planning for teaching
- Increase the pace and depth of learning.

These potentials are now discussed in turn as follows:

Enhancing demonstration and modeling - Teachers demonstrate in order to show pupils how to do something; modeling helps pupils to understand underlying structures, relationships and processes in abstract concepts. A good demonstration does not have to be supported by discussion as, for example, when a teacher demonstrates a 'cut and paste' technique on screen with little or no explanation. However, modeling without discussion is ineffective. The interactive whiteboard enables teachers to demonstrate in a clear, efficient and dynamic way. As pupils visualize the techniques or instructions, for example, they use the visual and kinaesthetic stimuli to develop and reinforce their understanding. Interactive software enables teachers to model abstract ideas and concepts. As pupils interact with a simulation, they respond to questions and pose others; they predict outcomes and learn 'what happens, and they experiment with the variables in the model, because they see the effects taking place. They use the stimuli to make new connections and deepen their understanding of the concept. In English, for example, the use of interactive whiteboards can support aspects of shared writing. The process of planning and composition is demonstrated by the teacher and writing is modified and adapted on screen through interaction and discussion with pupils.

Improving the quality of interactions and teacher assessment through effective questioning - The interactive whiteboard promotes increased interaction between the teacher, pupils, the subject and the technology itself. It allows all pupils to engage with the same central focal point in the classroom – something that is not easy to achieve with other types of technology. It also enables the teacher to easily refer back to previous learning and resources. Pupils use the dynamic representation of systems, images and text to explain their methods; to support their reasoning; to demonstrate their understanding and to teach others. The ability to physically interact with the software, by manipulating the text and images on screen, stimulates 'on-task talk'. Pupils talk for longer than otherwise in their responses and use an extended range of vocabulary in their explanations. These are all features promoted in accelerated learning theory and it is these qualities of learning that teachers point to when they talk of the benefits of using this technology. The interactive whiteboard encourages questioning and intervention at a range

of levels, including open, closed and uptake questions along with probing and evaluative responses, all as part of the general flow of the lesson.

As the teacher leads the investigation, she asks pupils how variables might be changed and how these changes might affect the model. She pitches questions at particular pupils or groups of pupils; assesses what they have learnt through their answers and then tests their understanding by asking them to demonstrate what they know through manipulating the model on screen. She is confident that they have understood the keypoints and then adapts the next set of questions in order to develop deeper understanding. She poses a series of ‘what if...?’ Questions and they are keen to try out new possibilities using the software to try out their predictions.

Redressing the balance between making resources and planning for teaching- There is now an extensive range of commercial and noncommercial digital resources that teachers can use to enhance teaching and learning, including the interactive teaching programs from the Primary Strategy-Learning credits are available to help schools purchase high-quality, curriculum-specific resources and the pedagogical quality of the packages available continues to improve. Teachers do not need to spend as much time creating their own resources but they do need to know where to find them, how to adapt them for their own lessons and how to develop their teaching strategies to exploit them.

Digital flipcharts and notebooks that come as part of the whiteboard’s software can be adapted and re-used by teachers according to the needs of the class. These resources can be shared not only with colleagues in the same school but also beyond, through saving work to the local network, emailing it or saving it as web pages on the internet.

Increasing the pace and depth of learning- The interactive whiteboard opens up new opportunities for presentation, re-presentation and communication. Information can be presented in exciting and engaging ways, creating more motivating outcomes. Interactive whiteboards allow collective engagement with learning problems at greater depth. They encourage creative and seamless use of materials including:

Websites, video and audio clips, internet and email exchange, interactive teaching programs, interactive and electronic texts, interactive software such as digital flipcharts and use of additional peripherals such as electronic microscopes or digital cameras and scanners.

Texts can be written or created, and data and information presented in electronic and multimedia formats. They can be re-presented in ways that further explore, unpack or explain the content, and communicated through e-presentations, email and on the internet. This not only provides a medium for presentation and communication, but also opens possibilities of new, ‘authentic’ audiences and learning communities. The software enables the teacher to quickly change and reconfigure information, to provide opportunities to engage with pupils at a higher and/or deeper level. Pupils are encouraged to deepen their level of enquiry and generate their own questions and hypotheses, which they can then easily test and confirm.

Effective use of the interactive whiteboard incorporates a variety of teaching techniques that support a range of preferred learning styles. Effective use of interactive whiteboards can also support visual, auditory and kinaesthetic learning. The use of the technology can undoubtedly increase learning opportunities; however, the technology does not replace effective teaching. In order to take full advantage of benefits of the technology, the teacher needs to combine knowledge of the subject, an understanding of how pupils learn, and a range of teaching strategies along with skillful manipulation of the technology. Schools should not underestimate the time needed for teachers to become confident with the technology and to develop their teaching style and strategies. Headteachers should consider a long-term plan of training opportunities for teachers in order that they can develop effective practice.

The interactive whiteboard (IWB) has been used in many contexts in various ways. Effective use of IWBs in classrooms promises numerous advantages in terms of learning and instruction (Türel, 2010). However, to better understand how we can effectively use IWBs in classrooms, several questions should be considered: What instructional strategies can teachers use with IWBs and what kinds of benefits do IWBs have on teaching and learning. Successful instruction may be a result of various IWB features along with sound instructional strategies (Brown, 2003; Glover et al., 2007). Teachers can put a variety of strategies and techniques into practice using IWBs by considering the characteristics of the learning context including students’ needs and interests, and technical facilities (Türel, 2010). Several IWB instructional strategies that have a positive effect on student learning include:

- Highlighting, coloring, or annotating important content (Türel&Demirli, 2010)
- Flipping back and forth to review previous content providing reviewing techniques better understanding (Levy,2002; Smith et al., 2005)
- Using pictures for discussion and brainstorming, collaborative writing, shared reading, peer-teaching, and collaborative problem solving (BECTA, 2006)
- Hiding and reveal, drag and drop, and matching items activities (Türel, 2010)
- Observing different media—essential for visual learners (Bell, 2002)
- Touching and feeling the material—good for tactile learners (Bell, 2002)
- Accommodating lower ability and special needs—zoom feature for visually impaired students (Smith, 2008)
- Presenting ideas and reflections about the course content
- Finding hidden part of a picture with spotlight or screen-shade (Beauchamp & Parkinson, 2005)
- Capturing screenshots from web pages synchronously and manipulating them
- Correcting mistakes in the materials (Beauchamp & Parkinson, 2005)
- Playing games (Smith et al., 2005)

The benefits of IWB technology could be summarized to include: enhanced social interaction (Türel & Demirli, 2010), reformed learning environments—teachers may facilitate student's involvement, interaction, and collaboration(Smith et al., 2005), draw the learners' attention (Türel, 2010), facilitated learning and remembering using visual media (Türel, 2010), enlarged computer touch screen, interactions can be recorded and saved—Acrobat (PDF) document, PowerPoint slides, or record whole lecture as a movie file and using with voting systems, document cameras, and electronic microscopes (Bell, 2002).

Turel and Johnson (2012) suggested that in order to have IWB technical competencies and skills, teachers should also be aware of such pedagogical implications in order to provide effective instruction to their students using IWBs (Türel, 2010). Although research suggest that an ideal use of IWBs may have a positive impact on learning and instruction, it is important to investigate how teachers in classroom settings are using IWBs. However, this is not the subject of this chapter but rather left for the future researcher.

Global Interactive Whiteboard Initiatives

UKSchools Interactive Whiteboard ExpansionInitiative

The Schools Interactive Whiteboard Expansion (SWE) project is an expansion of the primary pilots (see below). Speaking at the London Education Show (Olympia, September2003), Stephen Twigg, Parliamentary Under Secretary of State for Schools, announced a £25 million interactive whiteboard project which will help revolutionize teaching and learning, and raise standards. He said: "Interactive whiteboards are revolutionizing teaching and learning in schools, and have seen that they have a significant impact on standards."The initiative aims to increase the provision of interactivewhiteboards in schools to improve, develop and enhance effective pedagogy using ICT and demonstrate that interactivewhiteboard technology can make a significant positive contribution to embedding ICT in the classroom, raising standards through improved teaching and learning.

In 2003 Becta managed a procurement exercise to identify and award a number of framework contracts to suppliers who would provide a range of interactive whiteboard packages(board, projector, delivery, installation and basic operationaltraining and software, telephone and email support and threeyearon-site support) to a minimum specification at acompetitive price and to a reliable quality standard. An online catalogue has been developed as a result of this exercise which, whilst supporting the expansion of existing primarypilots, can also benefit LEAs and/or schools which decide to adopt this technology. See the purchasing section underwhole-school management issues, and the section entitled Further information, advice and guidance for further details.

Other UK initiatives

A two-year pilot (2002-04) was all about the use of electronicwhiteboards in teaching and raising standards of literacy and mathematics in primary schools.The Interactive Whiteboard Pilot is running in six LEAs (with approximately 15 schools in each LEA taking part) and 30 associate LEAs focusing on Years 5 and 6. The pilot was extended to five additional LEAs in2003/04, targeting Years 2 and 3, to enhance curriculum continuity and encourage liaison between Key Stage 1 and Key Stage 2.From April 2004, a National Whiteboard Network is being

established to support all LEAs that wish to participate in providing dedicated support to schools on making best use of interactive whiteboards.

Taiwan

In Taiwan, the central government announced a national project in 2009 called “Creating equal digital education environment in elementary and secondary schools”. The purpose of this plan is to build more than 6,500 e-classrooms with IWBs and overhead projectors in all secondary and elementary schools (Taiwan Ministry of Education, 2009). IWBs have become new ICT tools adopted into classrooms for many schools. Therefore, the government has arranged a series of trainings to help teachers to get conversant with this new technology. However, the successful use of IWB in classrooms relies on the teachers’ viewpoints about IWBs. In recent years, many theses has been written in different subject areas about the use of IWBs in Taiwan schools (Schmid, 2008; Kennewell et al., 2008; Zevenbergen&Lerman, 2008; Quashie, 2009; Troff&Tirota, 2010), and pedagogic benefits and disadvantages of this new tool (Glover et al., 2005; Smith, 2005; Slay, 2008), but little theses and papers is available focusing on teachers’ acceptance particular.

Interactive Classrooms Initiatives in Africa

South Africa

Ron Beyers of the Meraka Institute at the Council for Scientific and Industrial Research (CSIR) was the project director of Interactive White Board initiative in South Africa. He initiates a research component using SMART’s Brigit conferencing software that allows a quick, easy and effective way to share voice, video and data over the Internet. The original project was initiated in 2003 in association with St Alban’s College and has subsequently been adopted by the Meraka Institute. Interactive whiteboards were a major component of the infrastructure from its inception. An interactive whiteboard is a large touch-sensitive screen that works with a computer and a data projector. Interactive whiteboards engage students by providing immediate access to a wide range of digital materials and a common focus for the entire class. Using a finger or a pen on the screen, teachers and learners can access and control any computer application, file or multimedia platform, including the Internet, CD-ROMs and DVDs. They can also write over applications in digital ink and then save their work for future study and review.

Five schools in the Pretoria area of South Africa’s Gauteng province were linked by Motorola’s broadband Canopy radio connections to enable virtual interactive collaborative lessons using SMART technologies. The project has now entered its second phase with the inclusion of ten Dinaledi schools in a geographic area called the Mpumalanga Radio Corridor, which spreads to the northeastern borders of South Africa. The last of these schools to be connected was in the town of Middleburg at the end of April 2008.

This expanding radio network installed by Motorola stretches over a distance of 400 km, with the last being a single hop over 180kms from Bushbuck Ridge to Lamahasha, a NEPAD e-School close to the Swaziland-Mozambique border. The primary purpose of the network will be to link the schools in Bronkhorstspuit, Witbank and Middleburg to the original Ulwazi network in the Tshwane area. The aim is to supply all the Ulwazi schools with interactive whiteboards as an essential component of the interactive, online education process. Other technology in the mix includes five-channel sound card speakers, webcams, microphones and video conferencing software.

Khanya Technology in Education Project

The Khanya Project is an award-winning Western Cape Education Department initiative using technology to enhance teaching and learning in one of South Africa’s most diverse provinces. *Khanyais* derived from the Xhosa word “ukukhanya,” meaning enlightenment. Launched in April 2001, Khanya’s aims are to have a computer facility in every school in the Western Cape by March 2012 and to empower every teacher to use technology in delivering lessons to every learner in the province. The Western Cape’s demographics vary dramatically, from affluent schools in major urban centers, such as Cape Town, to impoverished schools in isolated rural villages with inadequate infrastructure. Instruction is delivered in the province’s three official languages – Afrikaans, English and Xhosa.

Khanya's implementation plan

The project's goal is to use technology to enhance teaching and learning at foundation, primary and secondary school levels. Its first phase involved installing computer laboratories, enabling educators to become comfortable using technology as a teaching and learning tool. However, from the outset, Khanya program me director Kobus van Wyk realized that technology would achieve its full potential only when brought into the classroom. "This became possible about five years ago, when interactive whiteboard technology became available – and affordable – in South Africa," he says. "Khanya tested several brands of interactive whiteboards, and the SMART Board interactive whiteboard proved to be superior, particularly in terms of lesson content and support."

The pilot project, begun in 2006, was conducted in five schools, where interactive whiteboards were used for different grades and subjects. Positive experiences coming out of the pilot included the following:

- In the foundation school level, students aged five to seven benefitted from colorful presentations, which are important in perceptual development
- Science, geography and math educators found the technology effective when used with subject-specific lesson content, such as the CAMI Language and Reading System, Master Math and lesson activities for SMART Notebook™ collaborative learning software Teachers could create lessons once, and then use them to teach the same topics to different classes
- Using the interactive whiteboards with closed-circuit television cameras and wireless audio, two classes could be taught simultaneously while students could collaborate with others remotely

Khanya subsequently set up similar installations in a variety of subject classes in over a hundred schools across the province. Instruction in geography, science, business, arts and culture, as well as other subjects, is now enhanced by the skillful use of interactive whiteboards.

By the end of July 2011, 90 percent of the 1,570 government schools in the Western Cape had acquired computer technology, with a total of 46,120 computers in use. Just over 28,000 educators have been trained to use technology for curriculum delivery, and more than 900,000 learners are reaping the benefits. Khanya realized early on that one or two isolated SMART Board interactive whiteboards in a few schools would not achieve the desired results – the project had to reach a point of critical mass. This has now been attained, with approximately 1,700 SMART Board interactive whiteboards in 534 schools, serving 22,000 learners. With a continuing focus on best practices and professional development, the Khanya Project is on track to achieve its goals by March 2012.

World's First Solar Powered Interactive Whiteboard in Senegal

Senegalese elementary school is providing students with a unique learning opportunity with the help of a ground breaking solar-powered interactive whiteboard, part of Cyber Smart's affordable solution to bring 21st century learning to even the poorest schools in the world. Recently, Cyber Smart received a grant from the US Agency for International Development (USAID) in Senegal to implement its innovative learning solution to extend the Senegalese national curriculum in the areas of math, science, and social studies. Cyber Smart collaborate with teachers and experts to create and implement locally adapted training and lessons designed to spark a more active, real-world classroom experience.

The Cyber Smart program started in 2011 with a partnership between The Millennium Villages Project and the digital learning company, Cyber Smart. Operating in Potou Elementary School and Leona Secondary School, Cyber Smart introduced a highly innovative digital learning solution using the world's first interactive whiteboard powered by a small, solar-charged battery, and created especially for classrooms with poor infrastructure. The interactive whiteboard functions just like a large touch-screen computer display, and is easily moved between classrooms, over rocks and sand. Most importantly, this technology enables an entire school – including those off the electric grid – to benefit from a global store of knowledge, such as virtual science experiments, interactive encyclopedias, and a variety of software programs and Internet resources.



Fig. 2: The Cyber Smart Platform in Senegal

Interactive Whiteboard at the University of Ilorin, Nigeria: An Innovative Better By Far Idea

Why is the use of IWBs at the University of Ilorin, Nigeria considered an innovative better by far idea? This university has been known for the past years to be a pace setter university. Currently, the university is No.4 in Nigeria going by the latest 2015 Webometrics Ranking of Nigeria's Best 100 Universities released **12:15pm On 13th January and the one release by 4icu.org which is located at: <http://www.4icu.org/ng/>**. Before this time, the previous ranking of universities in Nigeria by these two organization have seen University of Ilorin, occupying No. 1 position for three different times in 2012, 2013, (July 29, 2014: <http://www.myschoolgist.com.ng/ng/4icu-latest-ranking-unilorin-nigerias-1-varsity/>) and Dec. 2014. University of Ilorin is known to be a university with the most stable academic calendar in Nigeria and pioneer in some academic activities and initiatives notably the use of Computer Based Text (CBT) and some other stuff.

As part of her efforts to continuing playing this leadership role and improve her academic activities to realize her vision which 'to be an international centre of excellence in learning, research, probity and service to humanity' and to achieve her mission statement which is 'to provide world-class environment for learning, research and community service'.

The university, in realization of these, the university wants to make sure that all hands are on deck to make sure that learning become interactive and effective in the university. Another innovative better by far idea introduced by the university is the launches of mobile application on android platforms to making learning and teaching effective and enhance research. This is in its bid to retain its position as among the best Nigerian universities.

The university pioneered the integration of Mobile application in learning. The Unilorin mobile apps have 30 applications that bring the best experience in learning to students and the University community. The applications include Unilorin e-learning portal, Unilorin Map, Unilorin Cloud, Academic Publications, and Unilorin Journals. It also features apps such as Academic Programme, Students' Portal, Unilorin Videos, VC's Speech, Unilorin Face book and Twitter among others. The apps would ensure the full utilization of the PC Tablets made available to new

students. Through the deployment of the mobile applications on the android platform, the mobile learning can be accessed anywhere and at the exact moment learning is required. The mobile learning at the university will enables training to be ‘situated rather than stimulated’ making learning possible at the point of need. The university assumed that the “always-available” nature of mobile learning empowers learners to take the initiative and direct their own learning activities. Reading (text and graphics), video, animation, working through decision trees, listening to podcasts, contributing to discussions (forum or sms), researching on the internet, choosing correct answer (text or photograph), rating skills on diagnostics etc., are all opportunities for offering learning on mobile devices in the university. Students can download the Unilorin mobile apps from the university website or by simply searching through the google play or android market. The apps can easily be assessed by scanning the QR code. All of these efforts are for the University of Ilorin to continue to improve its ICT facilities to “make learning and teaching effective and fun”.

Partnership with one of the giants telecommunication companies in Nigeria Glo, to stream students’ lectures online is the latest innovative better by far idea by the University of Ilorin. The technical partnership with the biggest home-grown telecommunications network, Globacom, will be to place the university’s curriculum and academic work on the network’s telecommunications infrastructure. This gesture will take education in Nigeria to a higher level as students will be able to access their lectures and lecturers from anywhere in the world. The platform will be accessed through students’ hand-held devices or computers. The plan to revolutionize the classroom experience of Nigerian university students ride on Globacom’s vast and modern voice and data technology.

Globacom has an electronic learning (eLearning) template that can put all faculty curriculum, lecture notes and cached teaching sessions for up to five years on the intranet or internet for the academic community to access at will and from anywhere. This is in addition to video streaming, local intranet and extranet, web-based learning plus teleconferencing facilities which can make a live connection between students in a class and a lecturer from anywhere in the world. Through this partnership, Globacom offered to also provide the University of Ilorin community with internal communication solutions including Closed User Group (CUG), fixed wireless connections and Bucket GPRS services which provides bulk data bundle for the entire community and PABX connections.

From these analyses, the University of Ilorin has introduced a combination of tablet and interactive whiteboard to facilitate teaching and learning. This is because interactive whiteboards and tablets have become portable and much more flexible in their use. With easy-to-use whiteboard software, the creative and engaging lessons created by lecturers using them are nothing short of amazing and are being used to teach topics in a fun, interactive way. A step into a lecture room where students are learning with an interactive whiteboard at the university will enable the feel of the increase of energy and motivation in the classroom.



Fig. 3: The Author and the Interactive Whiteboard Platform at the University of Ilorin

The Benefits/Gains of Installing IWB by the University of Ilorin

The benefits of interactive whiteboards are both practical for teachers and motivating for students. IWB's promising benefits to learning and instruction have led to its increased popularity and attractiveness as expressed by a number of researchers (Bell, 2002; Levy, 2002; BECTA, 2003; Brown, 2003; Beauchamp & Parkinson, 2005; Smith, Higgins, Wall, & Miller, 2005; Slay, Siebörger, & Hodgkinson-Williams, 2008). No doubt, the University of Ilorin, Nigeria stand to benefits and gain a lots from the installation and integration of IWB into her teaching and learning in the University.

It is asserted that IWBs can enhance the functionality of existing ICT such as computers and projectors by adding interactivity to these media that make it distinct from traditional PowerPoint presentations (Hall & Higgins, 2005; Smith et al., 2005; Torff & Tirotta, 2010). Considering the possible advantages of IWBs, University of Ilorin teachers can enrich their instructions with various instructional strategies and techniques and, therefore, increase students' attention, motivation, participation, and collaboration by means of an IWB. Although, researchers (e.g. Hall & Higgins, 2005; Glover, Miller, Averis, & Door, 2007) strongly emphasize the positive effects of this technology when appropriately integrated into classrooms, the true success of IWBs depends on how they have been used by teachers in a learning context. As reported in the literature, teachers who used IWBs through appropriate instructional strategies and resources, learned to incorporate the IWB with their course content. Hence, researchers, who have attempted to evaluate IWB use, have relied on perceptions of teachers as the main data source (Slay, Siebörger, & Hodgkinson-Williams, 2008), to determine the effectiveness of this technology in school settings.

The use of IWBs at the University of Ilorin, Nigeria will afford the lecturers the ability to prepare and access saved workgraphs, charts, diagrams and text, all of which can be prepared in advance in a suitable software package and accessed during the lesson. This allows teachers to provide models and demonstrate work quickly and

efficiently. Access to multimedia files sound, moving and still image files are readily accessible using whiteboard technology. This can be useful to the University of Ilorin lecturers as an additional presentation of a concept or scene setting and helps to bring topics to life. In this sense, for some types of multimedia, audio and video facilities of the IWBs might be very useful.

As it has been observed, the range of software available for curriculum subjects is growing and specialist software supports learning in a variety of ways. For many topics, University of Ilorin lecturers now have access to a wide variety of materials, which can be explored on the whiteboard. An increasing amount of software and content is designed specifically for use with interactive whiteboards, such as the interactive teaching programs (ITPs) being developed to support the Primary Strategy. These can be downloaded free from: <http://www.standards.dfes.gov.uk/numeracy/publications/>.

It is possible to already have software and contents that can be used effectively with an interactive whiteboard. As a result of Involvement in the lesson, University of Ilorin students will seem to enjoy using the whiteboard technology and quickly acquire the techniques to manipulate the software and actively participate in their learning.

In terms of rapid response, University of Ilorin students can now receive immediate feedback on activity on the board and as a result of this, the fear of committing errors and making mistakes have been reduced. The students now become confident and take risks knowing that the flexibility and functionality in the software means that they can learn through trial and error, making 'mistakes' along the way and learning through the concept of 'what happen. This allows the students to test and confirm ideas and work collaboratively among themselves in the class to make decisions. The use of IWBs at the University of Ilorin, now enable students to enjoy the key features of effective whole class teaching. These are discussion, debate, articulation of contents, understanding and demonstrating knowledge that has been acquired.

Interactive whiteboards, such as the Mimio Mobile or the mobile Tablet/Palmtop allow lecturers to display interactive content which can be easily manipulated by both teachers and students. Mimio's mobile solution, Mimio Mobile, is a downloadable iPad app that allows the teacher to use the iPad to control their computer, student clickers, and whiteboard software, as well as sharing Mimio lessons with individual groups or students.

Now, a very important question is why the university considered installing or integrating IWBs? The answer to this question is not far-fetched considering the under-listed.

Interactive whiteboards are Knowledge magnets: Some lecturers may feel pressured to adopt an interactive whiteboard in their lecture room and do so often times with pressure from the administration. However, when that teacher sees the enthusiasm in the students the first time he/she implements a whiteboard activity in the lecture room, there is no turning back. This happened to be the experience of the author of this chapter. The enthusiasm of students is nothing but contagious. Even those students who were absent during the first one meeting will be the first to come for the lecture the next time.

Lesson organization is easier with media incorporation: Interactive whiteboard software is a fabulous planning tool, allowing the lecturer to lay out the framework of the lesson or unit within the software, making sure to incorporate all the necessary components for different learning styles within the lesson. That lesson can then be easily broken down into activities, lessons, days, etc. Mimio Studio allows providing fun drag-and-drop simulations that make teaching certain concepts a breeze. The interactive whiteboard software allows easy pull of websites and screenshots of many different resources into a file that can be provided easily to students who were absent or need to be retaught.

Enable students Interactivity with lesson contents: No more does the teacher have to be the "sage on the stage" as the interactive whiteboard makes it easy for students to do just that - interact. They can discuss as they group, solve, or create at the interactive whiteboard.

In relation to the above, Bell in (2002) was asked the reason for using interactive white board. The following were given as response to the question by the research:

- i. The interactive electronic whiteboard is great for demonstrations. Many technology teachers and specialists reported enthusiasm for the board to show students how to use a particular application. The presenter can run the application from the board, using his finger like a mouse; it is easy to show the important features of particular software. The ability to mark on the board by writing with the stylus or using one's finger makes it possible to point out important features of the program.
- ii. The interactive electronic whiteboard is a colorful tool. Research has indicates that students respond to displays where color is employed, and marking can be customized both in the pen and in the highlighter features to display a number of different colors. Width of lines can also be adjusted to add flexible marking choices.
- iii. IWB can accommodate different learning styles. Tactile learners can benefit from touching and marking at the board, audio learners can have the class discussion; visual learners can see what is taking place as it develops at the board.
- iv. Students at all levels respond favorably to board use. Interactive whiteboards were originally used in the business world for group meetings. As they have gained popularity in schools especially universities, teachers have reported success through students in academic settings. As Bell (2002) stated, 'my present use of the board for demonstrations with graduate library science students has been as satisfying as my previous use with junior high learners'.
- v. Distance learning is an excellent setting for interactive whiteboard use. Since they can be connected for distance communication, they have value to users at more than one site concurrently.
- vi. One-computer classrooms can maximize the use of limited computer access by using the whiteboard. Students can work together with individuals contributing at the board, other participants at the computer, and the group as a whole discussing the activity. While it is true that acquiring the board and the projector is an expense, the use of this set-up can be viewed as a cost-cutter when it makes it possible for one computer to serve multiple students.
- vii. The interactive whiteboard is an excellent tool for the constructivist educator. Some authors describe devices or applications which encourage use of technology to encourage critical thinking in students. Attributes of mindtools include ease of use, group interaction, and ready availability of software to be used. Since the boards can be used with any software, they are extremely adaptable for numerous uses and do not require acquisition of additional software. Their creative use is limited only by the imaginations of teachers and students.
- viii. The boards are clean and attractive tools. There is no messy chalk dust or other by-product, which can limit use. While the board can be used with regular dry erase markers, it is more likely to be used with the electronic marking feature, which employs either stylus or finger, and thus requires no cleanup.
- ix. Students with limited motor skills can enjoy IWB use. Because of large format, it may be easier for students to run programs by tapping on the board rather than mouse clicking. Also, teachers with young students report success having them write on the board with their fingers rather than the stylus.
- x. Interactivity. Users can be contributing directly by input both at the computer and at the board. The combination I liked best was for the teacher to be stationed at the computer, with students at the board and in the class offering suggestions and physically contributing ideas and actions. The interaction that transpires between the person at the computer, the users at the board, and the computer itself is a unique and very adaptable arrangement.
- xi. It can interface well with other peripherals. I have used the board to display images both from a document camera and a video camera. With the document camera, the presenter can show an object such as a specimen and then mark on the board to point out features or label parts. We used the board with videotape of a sports activity, with the coach marking on the display as it occurred to show when and where players should have completed certain actions. Scanned images can also be shown to great advantage on the board and then written text added.
- xii. The board is great for meetings and lessons where the participants need printed copies of the proceedings. At the end of a brainstorming activity, for example, copies of the resulting document can be printed and distributed, as well as be saved for future work.

Challenges of Using Interactive Whiteboard at the University of Ilorin

There is never a perfect technology without a shortcoming. IWB is not an exception. There are number of challenges associated with its use anywhere including University of Ilorin, Nigeria.

On the part of the lecturers, it is not easy to bring about a change in teaching and learning styles. According to Guskey (2002) in order to succeed one must be aware of the fact that lecturer only change their way of teaching when they have experienced that the “new” style is more effective in reaching their objectives. Inviting interested lecturers into a participatory action research project might help them to explore, master and develop a new teaching and learning style which exploits the interactive potential of the IWB (Kemmis & Mc Taggart, 2005). Still on the part of the lecturers, there is a big gap between teachers’ practice and pedagogical framework of the interactive whiteboard. They use teacher-centered approach and Presentation Practice Production (PPP) format of lesson with IWB. Teachers use IWB as a presentational tool for teaching classes. Teachers adhere to conventional approach (teacher-centered approach). Most teachers face difficulties to manage IWB.

The school authority does not have a clear vision concerning IWB. They have not provided periodical pedagogical support concerning the use of interactive whiteboard in the university. The university authority has not provides sufficient interactive learning materials (software) - Schools suffer from shortage of supporting materials. Most especially, IWB has not yet being installed in sufficient quantity. It is currently one per faculty.

In terms of technical support, the majority of lecturers currently using the platform usually emphasize that technicians are not available when IWBs problems occur. The number of technicians is small to deal with all classrooms demands. Technicians are not helpful in training teachers to diagnose and eliminate problems of the IWBs. IT departments do not train students on how to utilize the IWBs.

On the part of the students, it is observed that learners’ motivation is low. This factor affects learning generally. Learners choose not to participate in interactive whiteboard’s activities. Observation also revealed that more than thirty percentages of learners do not utilize IWBs and tablets given to them for learning. The majority of the students do not access educational websites. Considerable percentages of learners know better than teachers do about technology. They are competent users of technology. They can change IWBs setting to disrupt the classes. They do not help teachers in troubleshooting too.

In relation to the above, Jang and Tsai (2012), identified some challenges associated with the use of IWBs. These are lack of time- where there is an IWB in the classroom, it is not been used due to lecturers lack of time to design teaching materials. Lack of sources, there is an IWB in the classroom, however; lecturers complain about limited sources of related teaching software. Lack of training, there is an IWB in classroom, there is complain about lack of professional training for the IWB’s functions and operation. There is also complain about the frequency of unresolved problems in the use of IWB in the classroom.

Synopsis of Related Studies on the Use of Interactive Whiteboard

Al-Faki and Khamis (2014) investigates the difficulties that teachers in Jeddah schools experience when they use the interactive whiteboard in English language classes. Although, the interactive whiteboard is easy to use, difficulties occur when teachers use it. While ICT presents new challenges for teachers, it also offers great opportunities for teacher education. ICT’s media can improve training through providing access to educational resources, breaking the traditional isolation of teachers, and enabling individualized training opportunities. There are a few research studies, which investigate the drawbacks of IWB. This study focuses on the difficulties, which teachers face in the classrooms in the Saudi contexts. Those difficulties are categorized into four groups. These are: teachers', school administrations', technical support's and students' factors. Each factor entails a number of challenges. The findings of the study have revealed that there are many challenges that teachers face when using the interactive whiteboard. Those challenges interact together to hinder IWB integration into teaching and learning.

In Taiwan (Jang and Tsai, 2012) examined the reasons for using or not using interactive whiteboards (IWBs) by elementary school mathematics and science teachers. It also considered whether there were any significant differences in the reasons according to teaching subjects, teacher gender, and teaching experience. The survey was developed based on an overview of the discussions from prior research related to the benefits and drawbacks in using IWBs. Percentages were high on all six reasons for using IWBs. Of the five reasons for not using IWBs, budget constraints appeared to be the most important reason why the teachers did not use IWBs in their classroom. Male teachers using IWBs showed significantly higher ratings than female teachers for getting students’ attention and increasing interaction. Experienced teachers’ ratings were significantly higher than novice teachers for getting students’ attention, helping teachers explain complex and abstract concepts, and helping the teaching process.

Among the group of teachers who reported not using IWBs, male teachers showed significantly higher ratings for the lack of time to design teaching materials, and limited sources of related teaching software. Research implications of this study were provided along with suggestions for future study.

However, other researchers found some challenges in using IWBs, including the cost of installing an IWB, the time it takes teachers to prepare classroom lessons, and inappropriate use of the IWB causing students' confusion on learning contents (Miller & Glover, 2002; Schmid, 2008). Miller and Glover (2002) examined benefits and problems of using IWBs with 35 elementary teachers. The data were obtained from a questionnaire including closed and open-ended questions, and participating teachers' comments, classroom observations and interviews. Limiting the benefits of using IWBs, teachers reported that they did not have sufficient time to design classroom lessons and materials to help them successfully use IWBs in teaching. In addition, teachers reported the difficulty of not having a technical consultant available to help with their immediate needs in solving technical problems when using IWBs in their classroom.

In prior studies on the use of IWBs, benefits and drawbacks have mostly been discussed on the basis of qualitative data analyses. The author reviewed the research related to the benefits and drawbacks of the use of IWBs from prior empirical studies, and incorporated the reasons for using or not using IWBs into a survey. This was used to examine Taiwanese elementary school mathematics and science teachers' ratings for their reasons.

Schmid and Whyte (2012) in Germany secondary schools tested the prediction that the hegemony of this paradigm may not extend beyond well-researched university and private ESL contexts by examining the integration of interactive whiteboard (IWB) technology by non-native speaking teachers of EFL in state schools in France and Germany. Teachers' cognitions were investigated via longitudinal qualitative empirical data, involving classroom observations, video recordings of lessons, in-depth interviews and video-stimulated reflections. Findings suggest that in spite of communicatively oriented, socio-constructivist training, teachers used IWB technology to implement a variety of different approaches. The paper traces teachers' use of different models, from traditional grammar-translation to more communicative and constructivist models of task and project-based learning. It shows how individual teachers' approaches are shaped by a variety of factors, such as teachers' teaching and learning experience, pedagogical beliefs and institutional demands. These findings illustrate the complexities of technology integration in CALL and show how teachers often adapt or ignore hegemonic pedagogies to construct their own representations of the technology which are more in line with their curricular and personal goals.

Murcia and Sheffield (2010) studied four elementary science teachers' classroom discourse through their integrative use of IWBs in an inquiry-based learning environment. Participating teachers received expert input from the researchers and technology consultants, as well as three sessions of professional trainings at the initial stage of the project. These sessions covered implementing instructional skills in the inquiry-based science learning environment, development of IWB skills, and discourse to support learning through scientific inquiry. Researchers also developed an online resource site to continue supporting teachers' professional learning and to provide sources for technology use. A mid-point meeting was held for teachers to reflect on their actual practices and adjust their teaching approaches if necessary. A final meeting was held with participating teachers, technology consultants, and representatives of the schools to provide opportunities for participating teachers to share their interactive teaching approaches with IWBs and the learning process of practicing the approaches in their classroom. Video data was collected before and during the use of IWBs in scientific inquiry lessons. Video-recorded lessons prior to the project served as a baseline for data analyses. Comparisons of the data on the pre-IWB and post-IWB use indicated that the use of IWBs increased interactive discourse in students' communication. When teachers used IWBs, they were more likely to require students to participate in discussions, use more open-ended questions, and extend waiting time for their students to think and process the information. In this particular learning environment, students produced higher quality discourse as they increased their discussion related to argumentation-reasoning and exploration in science learning.

Other researchers further examined how the integration of IWB in teaching can enhance students' comprehension of mathematical thinking (Merrett & Edwards, 2005; Taylor, Harlow, & Forret, 2010), motivation (Beauchamp & Parkinson, 2005; Hall & Higgins, 2005; Miller & Glover, 2002; Schmid, 2008) and performances (Lopez, 2010). Therefore, the use of IWBs has been evidenced to positively influence teachers' integrative skills, with developing their pedagogical approaches and students' learning as associated outcomes.

Beauchamp and Kennewell (2010) distinguish between interactive technology and interactive pedagogy: while the former might require pupils simply to “press buttons and drag objects across the screen” (Beauchamp & Kennewell, 2008, p. 313), the latter is more challenging for both teacher and pupils. Beauchamp and Kennewell (2010) stress the role of the teacher in using the IWB to promote interactivity in its pedagogical sense, establishing a scale of interactivity ranging from none (the IWB is no more than a “suitable surface for a projected image” p. 763) to synergistic interactivity (the IWB is used to store, retrieve and amend ideas), involving a change in ownership (of the board, and thus of learning). The authors particularly value synergistic interactivity, which they concede requires high ICT skills, but they consider it more effective in producing learning. These researchers value the potential of the IWB in fostering communal work and learning from mistakes, two key aspects of current second language teaching.

The literature extends these findings by showing how teachers generally start by developing technical mastery of IWB functionalities, often experiencing Fullan’s (2001) “implementation dip” in pedagogical effectiveness as they adjust to the new technology. In research into IWB use among mathematics and modern languages teachers, Glover, Miller, Averis, and Door (2007) find that only once technical competence is achieved do teachers look for pedagogical advantages. Cutrim Schmid (2010, p. 169) documents a similar evolution in a German EFL teacher who first asked “what she could do with the technology,” but then “how the technology could support her teaching.”

Hennessey, Ruthven, and Brindley (2005) found that teachers generally adopted the IWB tools and affordances which fit with the subject culture, rather than adapting practice to fit new tools. Similarly, Gray (2010) contests the claim that UK modern language teaching would necessarily benefit from transformation via technology. While acknowledging the value of the IWB for second language needs and practices such as multimodal input, noticing, and CMC, Gray contends that UK foreign language teachers are already expert in whole-class interactive teaching and rejects the assumption that “technology can transform any teaching, anytime, anywhere, and that transformation is always good.” For Gray, when these teachers use the IWB to increase rather than devolve control of the learning process, their response is both appropriate and effective in that particular context:

From the synopses of related studies, it could be deduced that IWB is very promising in its use for teaching and learning as it improves learning outcomes, promote interactivity in class, saves time and cost among others. However, literature revealed a number of challenges associated with the use of IWBs. These vary from technical problems, to administrative, to teachers/lecturers and the students at large. Meanwhile, it is expected that, University of Ilorin, who is just putting in place, the IWBs platform; will maximize its potentials and at the same time develop modalities to cope with its associated challenges.

Conclusion

This chapter has examined the use of an interactive whiteboard for learning at the University of Ilorin, Nigeria. The chapter has been able to trace the background development of the university and discuss some concepts that are germane to the chapter including IWB itself, the available types of IWB, common features and educational uses of it. Furthermore, the chapter identified some global initiatives on interactive whiteboard and narrows it down as well to Africa and to the University of Ilorin Nigeria which is a university pioneering the use of IWBs in the context of Nigerian universities. The benefits the university will derive from putting in place this learning platform, the challenges associated with it and some synopses of related literature on the use of IWBs were all unraveled in the chapter. From literature and some documentary evidence, it was revealed that the use IWBs is prominent in Europe, America, United Kingdom, Asia and Africa. However, very limited countries in Africa have taking giant stride in the use of this platform. Such include South Africa, Senegal and Kenya while Nigeria is excluded. The synopses of related studies have also confirmed that IWBs have a number of potentials including improve learning and making learning interactive. Some challenges were also discussed associated with IWBs. These range from technical, administrative, teachers and students factors. In addition, the better by far idea and innovation by the university of Ilorin in terms pioneering learning initiatives among Nigeria universities include use of CBT, Open Courseware, distribution of Tablets to new students, the new installation of IWB to promote e-learning and partnership with the telecommunication giant in the country (Glo) for streaming students lecturers online. In the light of this, it can be concluded that use of IWB at the University of Ilorin look very promising in terms of its combination with the use of Tablets, all which promote learning and makes it interactive and enable learning anytime and anywhere.

Recommendations:

Based on the discussion in this chapter and findings from the analysis of the documents, this chapter recommends that technology such as IWB should be used accurately in order to facilitate teaching and provide fun opportunities for learners. The responsibility should be shared between schools' administration and lecturers themselves to integrate the IWBs into teaching and learning and reduce the challenges when they occur. To do this, it is recommended that: Lecturers have to start with acquiring basic ICT skills and that IWBs should be installed in all available lecture rooms. Lecturers should prepare themselves for the use of technology such as IWB in particular and ICT in general in the lecture rooms and should have a clear idea of how a traditional classroom is different from classroom equipped with IWBs. Lecturers are encouraged to share ideas, resources and experiences to help develop professionally. Lecturer should upgrade their knowledge and skills of using computer to minimize challenges when they occur inside the lecture room. In addition, technical team should always be steady to respond promptly to whichever challenges emanated in the use of IWBs in the university.

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Use Of Technology In The Application Kitchens Of Vocational Education Schools

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ABSTRACT

Transformation is one of the main features of the twentieth century. Alterations in science and technology change the education as well. These alterations cause changes in the aim and content of vocational and technical education, learning and teaching strategies, and the methods applied by the usage of teaching tools and materials. The main function of vocational training is to raise individuals harmonious with the demands of the labor market. Compatible labor with market demand might significantly contribute to the promotion of Turkey's competitiveness in the international markets. Changes in the world create an economic growth and wealth environment on the one hand, and on the other hand, technological advancements reveal the fact that individuals and society are needed to be prepared for the new forms of working environment by education. It has been thought that the quality of vocational training is increased by advancing the usage of technology in education. In this context, it is expected that replacing the traditional approaches with the novel technologies enrich the training kitchens located in the vocational education schools. Therefore, technology needs to be integrated in to the training kitchens.

INTRODUCTION

Vocational education institutions are among those for which expectations are high regarding the meeting of new requirements and the management of changing values within the transformation process. Hence, institutions that provide educational services have to provide the necessary knowledge, skills and behaviors required to meet the continuously changing individual and social demands. No matter how sufficient the capital is, it gains meaning and value as a production factor only when combined with qualified labor. The change in technologies that is ongoing today has also changed the attributes of the labor required by different sectors thus resulting in the formation of new work areas. The development of educational systems has become a necessity for developing new quality labor and for closing the gap in the new lines of work developed.

Traditional educational environments/methods are insufficient in this process. Because it is not only technologies that are rapidly changing. The learning habits of students who make up the target population of educational systems are also changing rapidly. Various changes are being made in the curriculums of schools during this time of change that is ongoing because of various new demands. The main objective in this period is educating individuals with high self-confidence who question instead of memorize, who have the skills of free, creative and critical thought, who know how to reach knowledge, who can actively use technology when they need to and who produce knowledge. This in turn places significant responsibilities on the shoulders of the educators.

Kitchen education has an important place as part of the vocational education system with regard to both cultural and economic aspects. It is very important that the knowledge, skills and behaviors that will be provided to the individual during kitchen education are related with the requirements of the job. Thus, it can be put forth that the fundamental reason for the popularity of studies for making use of technology in education-learning processes is the developing importance of the requirement for high quality globalization and global labor. It has now become obligatory for educational systems to keep pace with this transformation as is the case for all other systems in order to benefit from opportunities and to provide a better future to individuals.

THE USE OF TECHNOLOGY IN EDUCATIONS

Teaching has developed as a necessity with the curiosity of people for learning. People have tried to find the answers to the questions of what they can learn where and how when faced with the need for learning. They have understood the necessity of various other elements as they learned what they want to learn via other people and objects and as they taught what they learned to other people when they realized that it is not sufficient for them to provide knowledge. Various other elements such as supplementary references and tools-materials are required in order to ensure that what they want to learn or teach are more effective. Today, the concept of technology is another element that is important to ensure that the activity of learning takes place during the process of teaching and to make sure that what is learned becomes permanent.

Technology aids individuals in making use of the information and skills they acquire via education in a more effective and efficient manner. Technology serves both the teacher and the student in and out of the classroom.

Access to knowledge, selection of the required information, its analysis and the organization of the sources of information via technology are important skills for people. Change has become inevitable as technology started to spread within the community and as it started to be used more and more. Since one of the objectives of education is to bring up individuals in accordance with the requirements of the society, it has become obligatory to train students by considering the unique attributes of information societies. Technological developments bring new information and technical tools to all occupational fields. This innovation and change should be supported in education by suitable lesson techniques. The use of this technology in the education environment has contributed to the increase of the quality and quantity of education technology products. Education technology is defined as enhancement of learning, development, application and evaluation of systems methods and tools. In other words, education technology can be expressed as a scientific discipline that aims to enable people to use the tools and materials most effectively which have been developed when people started to question how they will teach what they know to others by the application of various methods for providing permanent knowledge in the learning-teaching process.

According to these definitions, the following four properties are important;

- Defining the goals that are the objectives of students,
- Analysis of the topic to be taught according to principles of teaching and its restructuring accordingly,
- Konunun aktırılabilmesi için uygun ortamın seçilip kullanılması,
- Using proper evaluation methods to evaluate the effectiveness of the course as well as the tools used during the course in addition to the success levels of students.

Education technology includes products such as slides, projections, boards-pictures-graphs, computers, television, tele-video, smartboard, laptop, databases, modems, developed networks etc. Establishing multimedia in the classroom is important for the effectiveness of the teacher as well as the teacher – student interaction. Pictures, graphs, sounds and words acquire greater strength to encourage participation to the activities, increase enthusiasm, attract attention and increase activity in the group more than when they are successfully incorporated than when they are used separately. Hence, the use of technological devices that appeal to both the eye and the ear is important in educational services. That is why, teaching equipment are among the most important elements of education.

The problem in benefiting from teaching equipment is not being unfamiliar with how to use various tools and equipment. The real problem is being unfamiliar with determining the arrangement in which they will be used to enable students acquire certain behaviors in educational activities as well as the precautions to be taken prior to, during and after their use. The real important factor when using materials in education and classroom activities is determining the method and technique for using them.

BENEFITS OF USING EDUCATIONAL EQUIPMENT

Most information is acquired by seeing. Students learn better and forget less as the number of sensory organs that participate in learning increases. The best method to follow in teaching is the path that leads from the concrete to the abstract and from the simple to the complex. The equipment used which are among the elements of education technology have significant benefits in ensuring that education is effective and permanent. These are;

1. Making learning permanent,
2. Attracting the attention of students,
3. Enhancing learning,
4. Providing ease of teaching and enhancement of meaning,
5. Saving time in teaching,
6. Having a stimulating effect in learning,
7. Ensuring the continuity of thought,
8. Strengthens the process of teaching and makes it more effective,
9. Contributes to sentence development.

The linear relationship between learning and sensory organs increases the importance of using equipment in education. % 83 of our learning takes place by seeing, % 11 by hearing, % 3,5 by smelling, % 1,5 by touching and % 1 by tasting. In addition, people remember % 10 of what they read, % 20 of what they hear, % 30 of what they see, % 50 of what they see and hear, % 70 of what they say and % 90 of what they apply and say. Education becomes more effective as the number of sensory organs appealed to during teaching increases while ensuring that teaching is more meaningful, permanent and fast. The place of use, time and method are important with regard to educational equipment in addition to their properties. Even though the effectiveness of these equipment

depend mostly on conditions of use, it is required that the number and quality of these equipment are satisfactory.

TECHNOLOGY IN VOCATIONAL SCHOOLS

Teaching can be defined as the arrangement of knowledge and the education environment in order to enable learning. The education environment is defined as the environment where the process of transferring knowledge takes place in education which is made up of the staff, equipment, facility and organization. Today, educational activities are mostly carried out at schools in a planned-programmed manner. There is a need for educational institutions in our age which can keep up with the advancements in technology. The keeping up with advancements in technology attribute of educational institutions is used in classical classroom environments to ensure that the individuals educated there acquire these gains in addition to being used in laboratories, libraries, gyms, painting rooms, music rooms, auditoriums. Application kitchens are included within the scope of laboratories of Vocational and Technical Education Schools, 2 year Culinary departments of vocational schools of universities along with Gastronomy departments of tourism faculties and technological equipment is used predominantly. These kitchens are special environments with the required equipment and tools. Students have the chance to apply and learn in these environments thus ensuring permanent experiences related with the subject area. It enables the acquisition of behavior in the application area and their transformation into skills. It develops the power of thinking as well as hand skills. It enables the student to acquire the required knowledge via observation or trial and error in the accompaniment of the educator and the acquisition of the required knowledge and behavior via applications. The objective is to enable the students to get to know and use the current technological equipment at the application kitchens of these schools while having the opportunity to share the best application examples in their sectors via the web environment that will be established.

However, it is observed that the technological infrastructure of the educational institutions in our country is insufficient. Private schools are better in this regard. Whereas state schools try to overcome these difficulties with the efforts of school administrations or parent-teacher associations. It has been observed that the current equipment is not sufficient to meet the demand with respect to the number of students and it has also been observed that various problems have been experienced related with the periodic off their maintenance and repair. Hence, the equipment standards should be reviewed and these standards should be prepared again in accordance with the number of students.

In addition to educational equipment (videos, slides, projection, computer etc.) gas stoves, workbench, ovens, refrigerator, deep freeze, sinks, dough bench and other workbenches as well as steel wares are available in application kitchens. These equipment can be replaced with other tools and equipment in line with the developing technology. In recent years, kitchen devices have also become technologically modern as is the case in almost every field. These tools equipped with the latest technology have attracted the attention of users thanks to their different shapes, colors, control elements, digital screens and programming features. The technological developments in kitchen equipment used in our day have brought with them many positive results. In addition to the positive effects of state of the art technological machines that enable savings in both time and energy, they also provide high quality and continuity of the final products.

Thanks to advanced technological ovens, foods can be cooked right before service time and they can be ready in a timely manner. Making food ready for service in a short amount of time also increases the quality of the food. In addition, waste control is now much easier. Combi ovens that enable steam cooking help us in cooking our food much faster with the options they provide such as nutritional value awareness, better hygiene, different cooking methods.

It is important for water saving to mount devices for increasing the volume of water to the faucets used in kitchens. These devices spray the water thus enabling the washing and drying operations to be carried out with less water consumption. It is important that electrical equipment enter stand-by mode when not in use in order to provide energy savings. Putting a frying machine to stand-by mode when not in use enables the use of the frying oil for longer periods of time while also providing energy savings. Cutters and shredders make difficult tasks easier in the kitchen while also enabling us to save time. Food processors, electrical knives, mixers, juicers, are frequently used in kitchens. Kitchens have also undergone various changes as a result of the rapid advancements in technology. In the past, people had to spare time and energy to cut and shred foods such as fruits and vegetables, meat, bread etc. Now, these can be carried out much faster and without tiring.

Thermomix is a device that provides countless options in kitchens such as weighing, chopping, grinding, shredding, mincing, mixing, whisking, dough kneading, cooking and steaming thus reducing your need to use many other devices for different purposes while also enabling you to save time. It can also cook creamy soups and sauces without the need to add any additional cream since it has a heating function as well.

Vacuum machine prevents the contact of foods with oxygen thus increasing their shelf lives.

Sousvide machine which means cooking under vacuum is a method that cooks our foods in water under vacuum with heat and time control. One can cook with a sensitivity of up to 0.1 °C with this machine.

Smokegun enables fuming operation to be completed in a few hours. Smokegun enables us to save significant amounts of time since it can be used on demand per orders.

Shock cooler Blastchiller freezes or cools food products in much shorter periods of time by blowing cold air at very low temperatures (down to -35 °C). This also increases the shelf lives of products.

Smart pan is very beneficial since it has built-in recipes it can use via mobile applications. The pan knows the correct amount to be added when you start adding the ingredients and warns you with its measurement scale while also showing you the required time for the proper cooking method according to the temperature and moisture level.

Smart thermometers measure the cooking temperature and can connect to your a smartphone application and you can also connect to your iPhone or iPad device to learn the temperature of the food during the cooking process and view the notifications related with cooking. The application also provides graphs related with the cooking process.

Mellow food processor: The cooker Mellow uses sous-vide technology to cook the ingredients slowly and in a controlled manner inside a water filled cup. The application enables you to start the cooking procedure automatically. For example, if you want to cook salmon, you can let the fish stay in the water all day long and make the device start cooking at a desired time. The device allows cooking for 6 portions in one go.

Crock-Pot smart pot: This strong pot is very much suited to kitchen use. You can connect to the BelkinWeMo application to adjust the cooking time and temperature.

Drop kitchen scale: This kitchen scale only has a single on/off button and enables you to measure the real weights of materials thanks to its application. In this way, you can monitor the added quantity from the screen instead of using spoons or cups for measurement.

Perfect Bake: The product scales recipes and also includes videos that show you how particular foods should be cooked. There are 3 mixing cups in the product as well as an LCD screen which displays what you have to do.

As you can see, smart kitchen equipment make all tasks easier, faster and more controlled than before. On the other hand, the failure of a single device in such technology dependent kitchens can lead to significant delays which is a disadvantage. Indeed, it is seen in various schools spending significant amounts of money to build such kitchens using smart technologies that such equipment do not guarantee success. Because it is the people who make use of these technologies that make the real work, not the smart devise. That is why, it is necessary to regulate vocational education and the technological equipment necessary for educational institutions of our day with an innovative perspective in order to increase the skills and competence of the students who are educated in these institutions and to educate quality labor.

CONCLUSION

The roles played by schools providing technology based education continues to change in our day and age when technology based global societies are dominant in every area. It is necessary to invest in continuously changing and emerging technologies as well as adapting these to the classrooms and to the education in order to increase the education, evaluation and organizational effectiveness of schools.

It is necessary to transform schools into institutions that provide modern education by increasing the use of technology in this age of information society. Raising future generations as individuals in information societies is one of the objectives of schools. Schools have to be equipped with technological devices and equipment in order to ensure that students can adapt to the changes in science and technology. This can only be possible by transferring sufficient resources to the education sector as well as ensuring the participation and contribution of the different segments of society.

Vocational schools should present new technologies to individuals who are educated there and make them acquire the skills for using these new technologies in order to increase the interest in vocational education while strengthening vocational education with an innovative perspective as well as developing the relationships of vocational education institutions with the society and the business world.

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Using Touchscreen Technology To Support Basic Numeracy Learning Process For High Functioning Children With Autism

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ABSTRACT

Touch-screen technology has gained state-of-the-art research interests as brain impairment becomes critical issues globally and locally. However, research on touch-screen assistive learning as intervention approach for children with autism spectrum disorder (ASD) is still at its experimental level. Research showed that it is essential for children with ASD to obtain fundamental skills in order to achieve certain level of independence. In spite of gigantic enhancements in early diagnosis and interventions, most children diagnosed with ASD are implausible to live independently when they grow up. With the emergence of touch-screen technology, the researchers saw the need to conduct research on touch-screen technology based interventions with the aim of disseminating numeracy learning skill among children with ASD as basic numeracy skill is essential for them to gain self-independence when they grow up. This research also looked into the behaviour, engagement and motivation of children with ASD towards the touch-screen application. Twenty high functioning children with ASD and their respective teachers from two primary integrated schools and two from Autism centres in the Klang Valley, Selangor, Malaysia participated in this research. A basic numeracy learning application was developed that operates on touch-screen technology such as tablets, smartphones and laptops. Based on the experiment and direct observation, the children with ASD showed enthusiasm and positive attitude towards the application. Therefore, it is hoped that this basic numeracy learning application will be able to foster a better quality of life for children with ASD in the future.

INTRODUCTION

Autism Spectrum Disorder (ASD) is a neurodevelopment disorder in the category of pervasive developmental disorders, and is characterized by severe and pervasive impairment in reciprocal socialization, qualitative impairment in social interaction, and repetitive or unusual behaviour (Speaks, 2015). According to Turnbull, Huerta, Stowe, Weldon, and Schrandt (2009) in the Disabilities Education Act 2004, autism is defined as a developmental disability that affect verbal and nonverbal communication and also social interaction which give impact on the children academic performance. There is an impairment that occurs during the development of the brain. Children with ASD display significant problems in the area of communication, emotion recognition, empathy, and social skills (Kamaruzaman & Azahari, 2014). Children with ASD regularly fail to process subtle transient stimuli such as express feelings and besieged by the complexity of social setting (Grandin, 2010; Volkmar, 1998). Children with ASD usually affected the ability to communicate, understand language and interact with other people. Hence, these children encounter intricacy to make friends with other children of the same age. The usage of touch-screen assistive technology in the 21st century seems very promising. There has been a rapid rise in interest regarding the use of touch-screen assistive technology as an intervention in the prevalence of children with ASD. State of the art has shown that by using touch-screen technology to provide pragmatic macro contexts that replicate the natural environment in which the knowledge will be used, allows the teachers to provide various models related to learning skills (Kamaruzaman & Zainol, 2012; N. M. Rani, Yusoff, & Kamaruzaman, 2015; Simpson, Langone, & Ayres, 2004). Hence, this may increase many areas of independence for children with ASD. In addition, many children with ASD have intricacy with their psychomotor. Therefore, the pervasiveness of various interactive technologies that allow the growth of intricate environments can be manipulated through different method such as touch screen, voice, text, and motion tracking (Kamaruzaman & Azahari, 2014) to enhance the psychomotor skills. According to Ganz, Earles-Vollrath, and Cook (2011) Razali, Toran, Kamaralzaman, Salleh, and Yasin (2013), it can also provide the edifying advantage of bestowing consistent response that can be repeated numerous times to fortify learning skills.

In this study, basic numeracy learning application was developed to ameliorate basic counting skill for children with ASD with an emphasis on understanding number, coordination of number, forming the number as well as addition and subtraction. The researcher also have adopted the touch-screen tablets as a platform to assist

face to face activities. The numeracy application has been designed with the input of autism experts, special education teachers and instructors as well as children with ASD. This research could provide a better alternative for the children with ASD to enhance their cognitive and psychomotor skills. Understanding basic numeracy is crucial in children with ASD. They need the basic knowledge to cope with the challenging environment in and throughout their life.

LITERATURE REVIEW

With the hasty development of digital technologies, various researches have applied its benefit to the design of assistive learning technology for intervention and rehabilitation especially for individual with autism. For children with ASD, computer aided learning application has acknowledged and facilitated their learning environment, which could enhance the learning motivation and performance. Social interaction is also being inspired through the utilization of the touch-screen tablet application. Hourcade, Bullock-Rest, and Hansen (2012) designed a computer-based intervention that comprises of four tablet applications. Each of the applications targeted different kinds of cognitive and psychomotor skills. Based on the advised of Grynszpan, Martin, and Nadel (2008), the applications were designed as simple as possible. According to Grynszpan et al. (2008) typical children learn easily with the aid of a rich design interface. On the other hand, children with ASD learn better with simple design interface. Participatory design experiment have proved the application have influence the children with ASD to participate in synchronization. It also increased their understanding of social activities and provided them with novel forms of expression. Hence, the researchers used this treatment to form a basic numeracy learning application for children with ASD in Malaysia. It is strongly hoped that the application will benefit and improve the quality of life of these children.

TECHNOLOGY ENHANCED LEARNING AND PARTICIPATORY DESIGN

The state of the art on design technology-enhanced learning (TEL) has been thrived. According to Hannafin, Land, and Oliver (1999) and Savery and Duffy (1995), various TEL hypothetical frameworks have been proposed, especially individuals based on cognition technology group. TEL are technology-based guided learning which learner obtain skills by the help of learning support tools (Aleven, Stahl, Schworm, Fischer, & Wallace, 2003). TEL have generated considerable enthusiasm within the special needs group of people. At present, treatments for autism have even been adapted into technological-based (Avramides et al., 2012; Daley & Sigman, 2002). For example TEL has been used as a supporting instrument to improve skills in children with ASD such as social communication. There are researches indicating how individuals with ASD widely favour computer instruction that they were often reported would rather use computer instructions than tangible toys (Kamaruzaman & Azahari, 2014; Sorensen, 2009). Furthermore, it has also been reported that many children with ASD are immersed with and have more tendency to learn from visually based media such as computer (Kamaruzaman, Rahman, Abdullah, & Anwar, 2013; Mineo, Ziegler, Gill, & Salkin, 2009; Simpson et al., 2004). The challenges in developing TEL for autism are crucial. In designing interactive technologies for children with ASD, Frauenberger, Good, Alcorn, and Pain (2012) as well as Benton, Johnson, Ashwin, Brosnan, and Grawemeyer (2012) proposed the idea of using participatory approach that is known as Participatory Design. Participatory design (PD), is an approach of including end users in the design process development, it is a method that has been used in constructing tablet application design technology (De Leo & Leroy, 2008; Frauenberger, Good, & Keay-Bright, 2011). Involving teachers or children with ASD as design partners through PD offers a number of potential benefits. Therefore, the researchers have engaged participatory design by using special education teachers as proxies to comprehend the children with ASD. The design model was structured according to the cast of children with ASD needs and constraints. A total number of five teachers from various public and private schools in the Klang Valley, Selangor, Malaysia have given their ideas, opinions and suggestions regarding the content background, music synchronization and design through semi-structured interviews.

USING INFOGRAPHICS TO LEARN BASIC NUMERACY

Every single child in this world needs a fundamental calculation skill to use in daily life. The ability to count is essential for them to gain self-determination when they grow up. According to Kamaruzaman et al. (2013), calculation is very important aspect in the development of figure perception especially for high functioning children with ASD. Furthermore previous research also noted that, counting skills are indispensable prerequisite that can lead toward individual self-independent when they grow up. Pellicano, Maybery, Durkin, and Maley (2006), Kamaruzaman and Azahari (2014) and Mejia-Figueroa and Juárez-Ramírez (2014) mentioned, individuals with ASD may easily learn and remember information that is obtainable in visual format. In addition, a major advantage of using info-graphics support is that they may be able to be used everywhere and anytime to process the information. Autism experts also believed that most of high functioning children with ASD are able to understand better through visuals.

RESEARCH DESIGN DEVELOPMENT

Children with ASD display qualitative impairments in areas of communication, social interaction, and repetitive behaviour (Dodd, 2005). A lot of children with autism faced difficulties during the transitions from activity to activity (Meadan, Ostrosky, Triplett, Michna, & Fetting, 2011). Based on this necessity, the researchers were determined to use touch-screen technology to take advantage of the strong interest of children with ASD toward the devices. Touch-screen devices such as the Galaxy Tablet, Galaxy Note, iPad, and their corresponding applications have the potential to support children with ASD by increasing the accessibility of educational materials, enhance the presentation of concepts, and improve self-determination as well as giving the children a way to communicate in different modalities. The device are also widely recognized and used by children of all age. According to Muhamad Fairus Kamaruzaman (2016), Whalen, Liden, Ingersoll, Dallaire, and Liden (2006) touch-screen platform are easier to use compared to normal computer, as the practicality and usability of the touch based sensory that has been offered by the devices are easier to handle by children with ASD.

Requirements related to the embedded and imbedded rules of numeracy subjects have been emphasized by the special education teachers and often in agreement with the literatures. Before initiating the application model, the researchers conducted semi-structured interview that resulted with four segments in developing the design on basic numeracy learning application. The early phase was recognizing number with the support of visual images and voice over. Children with ASD had to touch the next button in order for them to go to the next numeral. This learning environment was assisted by their teachers or instructors. The second phase was identifying numbers, which include guided learning consisted of series of numbers that needed to be connected through the dots. This section was also guided by their teachers or instructors. The last phase of this model involved add and subtract numeral activities. In order to strengthen this study, the researchers pilot tested the application among the special needs school teachers before the application can be used by the end users. This was also recommended by the experts.

NUMERACY LEARNING DESIGN APPLICATION

In order to form the basic numeracy design application, the researchers needed to identify thoroughly the needs and wants of children with ASD. Interviews with autism teachers and autism experts were done in order to understand the cognitive and social interaction gap and factor that possibly contribute to the success of building the application. According to N. M. Rani, Rahman, and Kamaruzaman (2015), N. Rani, Legino, Mudzafar, and Kamaruzaman (2014) the researcher also need to choose the right colour schemes for the interface design, typeface, background music and voice over in order to determine the right harmony for the high functioning children with ASD to use the application. In reference to Figure 1, the application model structure consists of four sections namely - About (basic information regarding the apps), Recognizing Number (be familiar with numbers), Identify Number (guided learning which consist series of number that need to be connected through the dots and; Calculation (add and subtract training activities). English language was used as a medium in the numeracy learning application, as it is the common language used by most children with ASD in Malaysia.

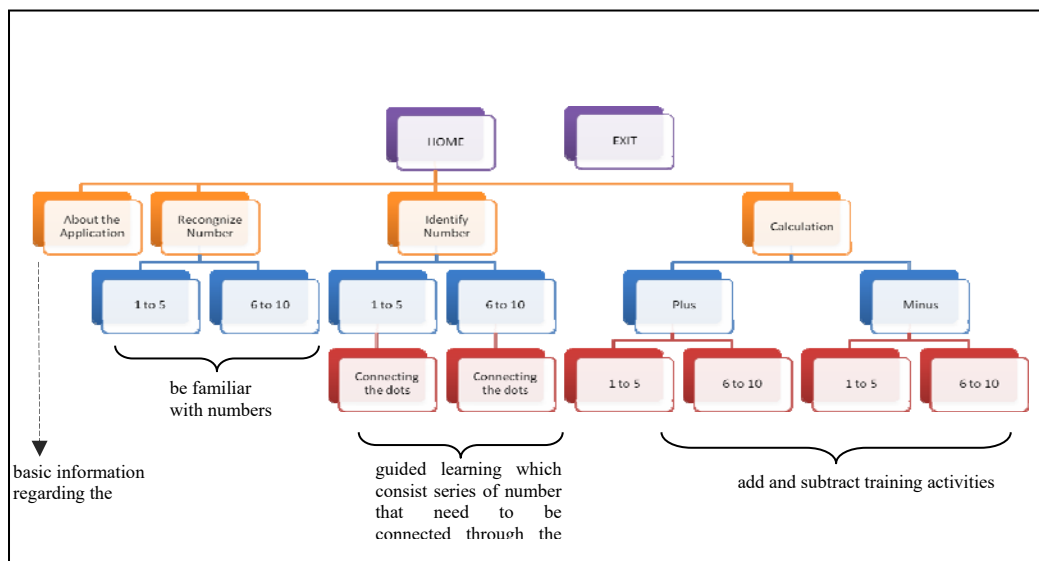


Figure 1. Numeracy learning application structure

USER INTERFACE (UI) DESIGN AND NAVIGATION

In the first stage of the application development, storyboard was created to identify the appropriate interface design for the said application. The visual layout has been designed neatly to ensure the end user would benefit when they use the application. An extremely simplified UI and navigation structure was designed in order to emphasize the content of the basic counting skill application. Consistent arrangement of the UI elements also helped in ease of use of the application. Figure 2 illustrates the flow of the basic numeracy learning application.



Figure 2. A linear flow for the basic numeracy learning application

NUMERACY APPLICATION EXPERIMENT TOWARDS CHILDREN WITH ASD

To identify the acceptability of the basic numeracy application towards children with ASD education development, the numeracy application was tested among the special education teachers, instructors and high functioning children with ASD. Twenty high functioning children with ASD from two integrated schools and two Autism Centre in Klang Valley, Malaysia were involved in the experiment. All participants were protected by agreements with their school principle and Centre manager to ensure the research ethics had been followed accordingly. The high functioning children with ASD were directly observed. Their behaviours, responses and performances were also recorded when they were given the touch-screen device. This was to further analyse and to investigate the interaction levels with the touch-screen technology. The experiment was conducted in a classroom with good surroundings and atmosphere. Before the experiment began, the researchers explained all the numeracy application details to the instructors so that they could handle the apps appropriately. Once the instructors understood the apps, the touch-screen device was given to the instructors to lead and assist the experiment towards the high functioning children with ASD. The experiment tasks include all the activities proposed earlier in the theoretical framework that comprised of three activities. Activity one which is familiar with number, activity two consist of guided learning through series of number that need to be connected through the dots and activity three which is add and subtract training activities (Figure 3 and Figure 4). During the experiment, how the children control the instrument, gestures, emotions, communication and consistency were recorded (Figure 5). Each participant was given 15 minutes to complete all activities. Based on the direct observation and instructor feedback, majority of the high functioning children with ASD were motivated, excited and enjoyed operating the touch-screen numeracy learning application (Table 1). This was an alternative instrument for the high functioning children with ASD to learn and empathize about the basic numeracy skill. Technically this touch-screen learning application complemented the conventional approach to teaching that are still used in today's classroom.



Figure 3. Example of activity one – identify numbers

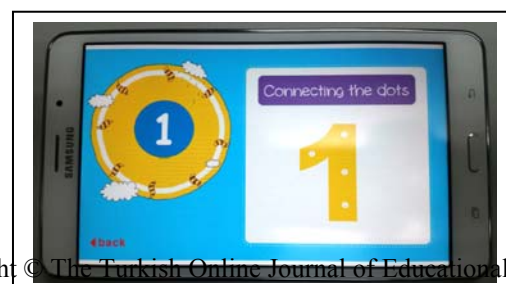
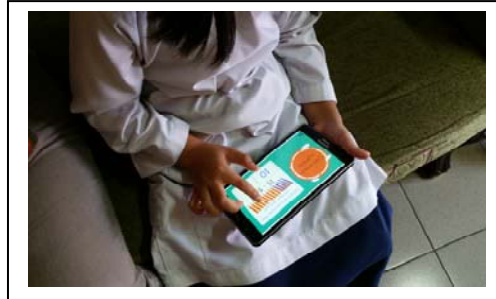


Figure 4. Example of activity



two – connecting dots

Figure 5. One of the high functioning children with ASD interacting with the touch-screen numeracy apps

Table 1: Participants' background and the experimentation observation analysis on basic numeracy learning application.

Number of Children with ASD	Age	School / Centre	High Functioning Children with ASD, behaviour, motivation and attitude respond towards the touch-screen apps	Engagement Level			Completion of Activities		
				Not Engaged	Partially Engaged	Very Engaged	Activity 1	Activity 2	Activity 3
1	5	Autism Lab Centre	Positive			√	√	√	√
2	7	Autism Lab Centre	Positive			√	√	√	√
3	9	Autism Lab Centre	Positive			√	√	√	√
4	10	Integrated School 1	Positive			√	√	√	√
5	8	Integrated School 1	Positive			√	√	√	√
6	7	Integrated School 1	Positive			√	√	√	√
7	9	Integrated School 1	Positive			√	√	√	√
8	19	Integrated School 1	Positive			√	√	√	√
9	7	Integrated School 1	Positive		√		√	x	x
10	7	Ideas Autism Centre	Positive			√	√	√	√
11	8	Ideas Autism Centre	Positive			√	√	√	√
12	5	Ideas Autism Centre	Positive		√		√	x	x
13	8	Ideas Autism Centre	Positive		√		√	x	x
14	6	Ideas Autism Centre	Positive			√	√	√	√
15	7	Ideas Autism Centre	Positive		√		√	x	x
16	7	Ideas Autism Centre	Positive			√	√	√	√
17	8	Integrated School 2	Positive			√	√	√	√
18	7	Integrated School 2	Positive			√	√	√	√
19	7	Integrated School 2	Positive			√	√	√	√
20	9	Integrated School 2	Positive		√		√	x	x

From the direct observation that has been made, the touch-screen numeracy learning application successfully keeps the majority of high functioning children with ASD motivated and engaged for 15 minutes. This is a good indicator that can lead towards technology-enhanced intervention. From the table 1 above, it indicate that 15 respondents appear to be very engaged with the touch-screen device, 5 respondents were partly engaged and none of the respondents were not engaged towards the technology device. Most of the high functioning children with ASD rely on visual stimulation for learning development. The expansion of touch-screen technologies allows the learning treatment approaches assimilate various sensory stimulation to draw the children attention as well as increase motivation level. A total number of 15 high functioning children with ASD, capable of doing the overall basic numeracy activities, while the remaining 5 of high functioning children with ASD just managed to completed only activity one. The outcome of the experiment indicates that, children with ASD who were experience the touch-screen basic numeracy application have gain more concentration and passion to discover more regarding the mathematical subject.

CONCLUSIONS

The application described in this research paper was designed to support teaching and learning of basic numeracy for high functioning children with ASD through touch-screen technology. Most of the instructors and teachers agreed that the touch-screen technology inspired and enhanced the mind, visual and psychomotor of children with ASD. Autism experts also reckoned with the new dimension of learning intervention, to reduce the duration of time to learn the basic numeracy and calculation skill is possible. Hence, it provides more flexibility and convenience way to study and acknowledge the conventional learning approach. Perhaps these children will survive the challenging adulthood, to be independent, and successfully achieve a better quality of life.

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**VIDEO GAMES, COMPUTERS, MOBILE PHONES & SOCIAL NETWORK USE AMONG
IMMIGRANT AND NATIVE ADOLESCENTS IN SOUTHERN SPAIN**

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Abstract

Video games, computers, mobile telephones, social networks and television are part of the lives of adolescents in globalised societies. On certain occasions, when used appropriately and for teaching purposes, these information technologies are good for the emotional well-being of individuals. Problems arise when healthy everyday habits are replaced by the excessive use of these technologies. In this article, we aim to find out whether *there are differences in the use and time that young people dedicate to technology, according to the gender and cultural group of origin: Spanish, Moroccans and Romanians*. To this end, we have used a sample of 2125 students from the south-east of Spain. This research belongs to the project entitled “*Education for Cross-cultural Health in Immigrant and Native Adolescents from Almería: Analysis and intervention for optimization and improvement*” supported by the National R+D Plan of the Ministry of Economy and Finance (Ref: EDU2011-26887).

Key words: Leisure and free time, video games, emotional well-being, cross-cultural health and gender.

Introduction

By way of an introduction, we must specify what we mean by the concept of Emotional Well-being. In 1947, the World Health Organisation defined Health as a state of complete physical, mental and social well-being, not just as the absence of diseases. This definition breaks away from the deep-rooted conception that being healthy was synonymous with the absence of disease.

If we break this concept down, Physical Well-being can be defined as when a person feels that their body is responding positively and that it possesses a physical ability to meet the various challenges of life activity. It also covers cases where the person perceives that none of their organs or functions are damaged. The next concept, Mental Well-being, is reflected in the proper control of people's abilities and competencies such as the ability to learn, process information, take steps to learn and thereby understand ideas, know how to take reasoned decisions and put them into action, and hold different values and beliefs. Social Well-being includes factors that form part of the quality of life of a person and that help human satisfaction. It is considered an abstract concept, with a strong subjective connotation, though it is also influenced by objective factors, such as the aspects that have a positive influence on a person's quality of life (access to education and healthcare, money, a home, a decent job, etc.) It is clear that these aspects may vary enormously from one individual to another or from one society to another, depending on their culture.

Although the World Health Organisation not specify anything regarding Emotional Well-being in its definition of health, various authors such as Arostegui (2002), Schalock and Verdugo (2003) and Vera (2006) underline the need to identify personal strengths and the factors that increase happiness in people and that have an impact on people's quality of life and health. Emotional Well-being is reflected in people through their different behaviours, such as feeling valued, appreciated by others, feeling that they are capable of overcoming obstacles and feeling self-confident (Bisquerra, 2013). If we transfer this idea to education, schools, teachers and families must create an environment where differences are accepted and respected, support is offered, they show interest in what they do and have affection by showing emotions. This environment fosters security and expression of feelings. One of the ways of creating it is through games, since this allows children to express their feelings, emotions and creativity. Through games, children start to use internal communication, which is so important for controlling, managing one's own behaviour, and planning; and external communication, to solve problems, reach solutions, negotiate, discuss, etc. Both types of communication facilitate learning, development and allow necessary emotional skills to be improved in order to control and manage one's own behaviour, plan, solve problems, negotiate, express emotions, etc.

Some studies suggest that parents who interact with their children with toys that allow them to express emotions and feelings, encourage them to feel more intelligent, more sure of themselves and make them feel happier and increase their self-esteem (Sher, 2013). Another study carried out by the California State University, in this case using video games with adults, showed that people who played video games, including those that played occasionally, obtained higher levels of emotional well-being than those that did not. The latter group displayed more negative emotions and depressive behaviour. Other studies in support of video games show that the use of video games in childhood has positive effects, such as the development of spatial and visual cognition and perceptive and motor strategies (Haninger & Thompson, 2004 and Green & Bavelier, 2003). Others highlight the advantages for pro-social behaviour or the therapeutic nature (Anderson & Bushman, 2001; Griffiths, 2003, 2004) of video games.

From an educational perspective, authors such as Din & Calao, 2001; Fontana & Beckerman, 2004; Kafai, 1995; Kankaanranta & Nousiainen, 2004; Merchant, 2004; Yelland & Lloyd, 2001 point out that the benefits of using video games as an educational tool are numerous, since they may help with learning or by improving certain disciplines such as communication, literature, languages, mathematics, etc. (Abramovich, S., Schunn, C., & Higashi, R. M., 2013;

Agarwal, V., & Dhanasekaran, S; 2012; Delacruz, G. C, 2012, and Mifsud, C. L., Vella, R., & Camilleri, L., 2013). As is the case of a teacher from the United Kingdom who was teaching a group of students that had failed in the educational system, he noticed that the only point of interest for his students were video games. From this premise, he developed two mobile telephone Apps, one of which consisted of making music through gaming, and the second, of a more professional nature, consisted of creating and selling Apps to companies and multinationals. Such was its success that the initiative spread throughout numerous schools. Another important characteristic is that through video games, children use internal language to plan their behaviour and to self-regulate their emotions (Scarlett et al., 2004), which may include excitement, anxiety, how to react to danger, control power and fear, and handle defeat (Goldstein, 1995). Furthermore, it allows for the development of imagination, since in each game the children take on different roles, explore the context that the game recreates and establish rules to be followed. These benefits as a whole are what Sutton-Smith (1995) calls the "*rhetoric of progress*".

Despite the advantages of video games, we can highlight some disadvantages (Report on the use of new technologies and the risk of addiction among adolescents and young people in Andalusia, 2015). One of the problems lies in the excessive time that is spent on these games, which takes it away from other activities such as going for a walk, studying, conversing, etc. Furthermore, families express concern about the fact that they cannot monitor their children's activity on the internet, i.e. the websites they visit. Addiction that it may create is another negative aspect. Addiction is defined as "*the subjective need to engage in a behaviour compulsively, with daily life being subordinate to the habit*" (Alonso-Fernández, 1996) resulting in the individual's loss of control, the dependency it creates and interference with ordinary life. Addiction should not be confused with being fascinated by the use of technologies such as social networks, mobile telephones, etc. With respect to gender, there are differences with regard to the use of video games (Salonius-Pasternak & Gelfond, 2005); for example, children use video games more frequently and for longer periods. Another difference lies in the choice of game, which follows gender stereotypes. Boys choose games based on action, individual ability and skill-based gain. Girls, on the other hand, play video games in which there is a predominating social character, such as games based on fashion and storytelling. Research by Cassell and Jenkins (1998) and Swanson (2001) reported that girls finished games simply when they became bored, whereas boys stopped playing when they won or lost, or they ran out of lives. In short, video games have a series of advantages that must not be ignored, such as the control of emotions (controlling and managing one's own behaviour, planning, resolving problems, negotiating, expressing emotions, excitement, anxiety, as well as reacting to danger, controlling power, fear, handling defeat, etc.), its influence on social well-being, improving cognitive, visual and motor development and, of course, their educational nature.

Not only young people spend their time playing video games. The amount of time they spend on the computer, social networks or a mobile phone is ever greater, leaving behind other more traditional games. A study by the Childhood Observatory in Andalusia (2010) on the use of the internet and ICT among young people shows that young people aged between 9 and 16 use their time at weekends to be with friends. This information does not mean that they do not use ICT; they use them as extensions to their social relations through social networks where they converse with friends, upload photos and videos and play online. This same study brought to light the fact that eight out of ten minors visit a website that contain gambling advertisements and games, betting pools or lotteries. Another piece of research by the Social Networks Observatory (cited by Romero and Díez, 2013) reported on the rise in the use of smartphones, which has given rise to "*social networks on the move*", meaning that we no longer have to wait to arrive home to log on to a social network – we can find the information at any time. We have become nomadic internet users: six out of ten people use internet on their mobile, of which 55% access social networks. We should remember the role that young people played in the dominance and popularity of the mobile telephone years ago through short messages (SMS) or "*missed calls*", as Castell & Jenkins (2008) points out. Young people have always had an excellent ability to familiarise themselves with technology, make them their own and use them in their own way. They also use them for such disparate purposes as organising a party or for protesting about one political issue or another. The numerous protests of the 15-M Movement or anti-establishment movement have been arranged using these resources. Thus, their use encourages the formation of cultural identities, the sharing of interests and concerns, the development of citizenship (in recent years the numerous protests of the 15-M Movement was arranged using messages on mobile phones or on social networks).

2. Objectives

To find out whether there are differences in the use and time that young people dedicate to video games, television and computers, depending on the gender and cultural group of origin: Spanish, Moroccan and Romanian.

3. Methodology

3.1 Sample

The sample is made up of 2125 students in the Primary Education and Compulsory Secondary Education (ESO) Stages in the south-east of Spain. Age varies between 10 and 19, the majority of which are girls, accounting for 51.3% of the sample, and boys 48.7%. Taking the year of study into account, 7.7% of students are in years 5 and 6 of Primary Education, and 95.2% in Secondary Education (40.4% are in years 1 and 2, 47.1% in years 3 and 4, and lastly, 4.9% in Upper Secondary). As for the cultural group of origin, the second variable that interests us, 62.4% are Spanish, 17.5% are Moroccan, and 7.5% are Romanian, followed by Ecuadorians with 2.7%, Guinea Bissau with 2.2% and finally, England and Lithuania, each accounting for 1.2%.

3.2 Instrument

A questionnaire was applied composed of ten dimensions concerning health, diet and physical activity, feelings, mood, self-knowledge, free time, family life, relationship with friends and school life. The questionnaire is made up of Likert Scale type questions with five response options. In this article we only present the results for the "free time" item.

3.2 Data analysis

The program we used was SPSS V.22 for Windows. The data show that the time that throughout the week, adolescents mainly spend their time watching television and using the computer at weekends, with 3.30 hours 2.83 hours respectively, and 2.45 hours watching more television on weekdays. Together, this makes 5 hours watching television per week. If we focus on the time variable, i.e. hours that they spend watching television, on the computer and playing video games on weekdays and at weekends, the results are as follows: during the week, adolescents spend an average of 2.45 hours watching television, 2.08 hours on the computer and more than an hour playing on the console. This reaches a total of almost six hours. With regards to the number of hours spent at weekends, an average of 3.30 hours is for television consumption, 2.83 hours for using the computer and 1.60 hours for playing video games, equalling total of more than 7 hours at weekends.

Focusing on gender, boys spend 14 hours on television consumption, using video games and on the computer. Girls, on the other hand, are progressively approaching the same figure as their peers, with 12 hours. Boys spend the most of their time on these activities at weekends, for example with an average of 3.26 hours watching television, 2.75 hours using the computer and 2.32 hours on video games. Girls consume an average of 3.20 hours on watching television at weekends, followed by 2.95 hours in front of the computer and some 90 minutes on the console. On weekdays, the figures tell us that both boys and girls spend the most of their time watching television (\bar{x} boys is 2.41 and girls with a \bar{x} 2.38) and to using the computer (\bar{x} boys is 1.97 hours and girls with \bar{x} 2.17 hours).

Table 1: Average hours of TV, video games and computer consumption according to gender

	\bar{x} Girls	\bar{x} Boys
Hours of TV on weekdays	2.38	2.32
Hours of TV at weekends	3.20	3.26
Hours of video gaming on weekdays	0.48	1.19
Hours of video gaming at weekends	0.91	2.41
Hours on the computer on weekdays	2.17	1.97
Hours on the computer at weekends	2.95	2.75
Total	12.09	13

In short, there are significant differences between the number of hours that boys and girls spend on the use of video games during the week ($p = 0.000 < 0.05$) and at weekends ($p = 0.000 < 0.05$). Boys present an average of 1075 (R_2) on using video games at weekends and girls an average of 717 hours (R_1). As regards weekends, boys show an average of 1087 (R_2) hours and girls an average of 684 hours (R_1). With respect to the female gender and the cultural group of origin, the data show that Moroccan, Romanian and Spanish girls spend most of their free time on weekdays and at weekends watching television and using the computer. More exhaustively, Moroccan girls spend an average of 3.73 hours in front of the television at weekends, 2.7 hours during the week and 2.60 hours on the computer at weekends. In the case of Romanian girls, they dedicate an average of 3.34 hours to using the computer and 3.15 to watching television at weekends, and finally, an average of 2.49 hours to watching the television during the week. In the case of Spanish girls, they spend 3.06 hours watching television and 2.99 hours on using the computer at weekends, and 2.26 hours on watching television during the week.

Table 2: Average hours of TV, video games and computer consumption according to Moroccan, Romanian and Spanish girls

	\bar{x} Moroccan girls	\bar{x} Romanian girls	\bar{x} Spanish girls
Hours of TV on weekdays	2.7	2.49	2.26
Hours of TV at weekends	3.73	3.15	3.06
Hours of video gaming on weekdays	0.63	0.42	0.45
Hours of video gaming at weekends	1.20	0.66	0.85
Hours on the computer on weekdays	1.93	2.50	2.18
Hours on the computer at weekends	2.60	3.34	2.99
Total	12.79	12.56	11.79

Boys display similar results. In the case of Moroccan boys, they spend 3.66 hours watching television and 2.66 hours on using the computer at weekends, and 2.61 hours on watching television during the week. Romanian boys spend 3.70 hours watching television and 3.28 hours using the computer at weekends, and spend 2.48 hours watching television during the week. Finally, Spanish boys watch television for 3.15 hours, use the computer for 2.69 hours at weekends, and watch television for 2.35 hours during the week.

Table 3: Average hours of TV, video games and computer consumption according to Moroccan, Romanian and Spanish boys

	\bar{x} Moroccan boys	\bar{x} Romanian boys	\bar{x} Spanish boys
Hours of TV on weekdays	2.61	2.57	2.35
Hours of TV at weekends	3.66	3.28	3.15
Hours of video gaming on weekdays	1.43	1.78	1.20
Hours of video gaming at weekends	2.24	3.09	2.27
Hours on the computer on weekdays	1.96	2.48	1.93
Hours on the computer at weekends	2.66	3.70	2.69
Total	14.56	16.9	13.59

There are therefore significant differences between the average range of hours of television consumption during the week ($p = 0.000 < 0.05$) and at weekends ($p = 0.000 < 0.05$) in the group of Spanish and Moroccan young people.

Young Moroccans encompass an average of 894 (R_2) and 897 (R_2) hours of television consumption on weekdays and at weekends, respectively, compared with an average of 790 (R_1) hours that Spanish young people spend watching television during the week, or 769 (R_1) hours at weekends. Similar data arise with computer usage, where there are significant differences between young Spanish and Romanian people in terms of their consumption at weekends ($p = 0.001 < 0.05$). Young Romanians have an average of 804 (R_2) hours and young Spaniards have 703 (R_1). There are also significant differences between computer usage among Moroccans and Romanians during the week ($p = 0.003 < 0.05$) and at weekends ($p = 0.000 < 0.05$). Romanians spend higher number of hours on the computer both during the week and at weekends ($R_2 = 282$ and $R_2 = 287$) than Moroccans ($R_1 = 240$ and $R_1 = 235$).

Discussion and Conclusions

Regardless of gender or cultural group of origin variable, adolescents are very much drawn to the television or to the computer. These data can be observed in all groups, where they specify the time they spend during the week and at weekends. Only boys start to show some differences with girls in what they do during the week and at weekends. We refer to the fact that boys spend more time on the console than girls. These data coincide with those gathered by Labrador and Villadango (2009) who specify that the use of video games is lower among girls but, on the other hand, they use mobile telephones and computers more. Gray and Klein (2006), Leung, (2004) and Kim et al. (2006) remind us that video games allow for experimentation, make the search for sensations easier and that boys become disinhibited, but it should be borne in mind that adolescence is one of the stages where addiction is more likely. Both girls and boys spend an average of 12.09 hours and 13 hours a week respectively on watching television, using the computer and video consoles during the week and at weekends. A study by Echeburúa, Labrador and Becoña (2009) specifies that adolescents dedicated an average of six hours to television, computers and mobile telephones. This is considered quite a lot of time spent on leisure and free time activities of a passive nature. By this we mean activities where the adolescent does not move, converse or socialise with their peers. Encouraging a sedentary lifestyle may entail consequences such as obesity and other quite unhealthy habits as Echeburúa and Corral (2009) point out. Focusing on the cultural group of origin, the Spanish, Romanians and Moroccans all present similar data, although the Moroccan cultural group spends more time watching television during the week and at weekends than the Spanish group. The same occurs with the Romanian cultural group, which spends more time than the Spanish and the Moroccans on using the computer.

Conclusions

1. Both parents and teachers should become involved in the use of video games as well as other technologies that favour the development of positive values and attitudes.
2. Awareness should be raised among both families and adolescents of the need to balance these activities with others of a more active nature throughout the week, thereby encouraging healthy habits. These might include going for a walk, trips, traditional games, volunteering, etc.
3. The use of social networks must be understood by adolescents as a way of prolonging communication with their friends, and not as the only way of meeting and establishing social relations with other young people.
4. Learning and playing traditional games should be encouraged.
5. Finally, teachers must bear in mind the psychosocial characteristics that may have an impact on technology addiction among adolescents.

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