EDUCATIONAL TECHNOLOGY FOR THE INCLUSIVE CLASSROOM

Andreja Istenic STARCIC,
University of Primorska, Faculty of Education Cankarjeva 5, SI-6000 Koper, Slovenia
University of Ljubljana, FGG, Jamova 2, 1000 Ljubljana, Slovenia
andreja.starcic@siol.net

ABSTRACT
This paper presents and evaluates the development of an educational technology curriculum aimed at pre-service, primary education and undergraduates; the focus is on the incorporation of ICT competences for inclusive education. The framework was the introduction of SEVERI e-learning environment in Slovenian schools. Students were able to monitor the development and implementation of SEVERI tools for special needs pupils in Slovenian schools, and plan teaching and learning in SEVERI within their course project work. Within an educational technology curriculum, a competence framework was developed for fostering the use of ICT in the teaching of, and learning by, special needs pupils. This was achieved against the backcloth of the baseline learning objectives of autonomy, inquiry, creativity and innovation. In pre-service teacher education in educational technology, the focus is on inquiry based learning, and on planning and incorporating the innovative use of ICT into teaching; the emphasis is also on enhancing the student teachers' competences for his/her own professional development. In focussing more specifically on the use of ICT for special needs pupils, the aim is to carry into effect the principles of equality, diversity and inclusive education. The research was designed to evaluate the candidate students' learning and to consider the alignment of learning objectives and activities with learning outcomes in the new curriculum. The research questions considered within the paper are: (1) How the new curriculum assists mutual development of ICT didactical and technical competences? (2) How the project work based on SEVERI foster the learning objectives of autonomy, inquiry, creativity, and innovation in ICT implementation in inclusive classroom? (3) How is the project idea based on needs assessment in pedagogical practice? (4) How were the procedures of lesson planning conducted and how were lesson plans used in lesson performance?

Key words: educational technology curriculum, pre-service teacher education, inclusive education, special educational needs, e-learning environment for special educational needs, competences

INTRODUCTION

Inclusion or integration is an important part of equal opportunity in education. Demands for inclusive education have increased and fostered major changes to schooling and education. Students with disabilities are educated alongside their peers within the local community therefore mainstream schools are required to adapt to accommodate a diverse group of students with a variety of needs (O'Gorman, 2005, p. 377). Approaches to the inclusion of children and young people into mainstream classrooms, and the identification and recognition of special educational needs, is an integral part of daily school work. The well being and actualisation of developmental and learning potential within a diverse student population is challenging the organisation of learning settings. In the European context, educational policies have tended to be proactive with regard to the challenges and demands. Standards and competencies for all teachers are defined in The Joint Interim Report by the Education Council and the European Commission on Progress towards Education and Training 2010 (ibid.). Teacher education programmes, specifically, have responded to the needs and challenges of inclusive education within the Bologna Study Programme Reform. Within the new teacher education curriculum, the Tuning Report (González & Wagenaar, 2003, p. 83) refers to key generic competences which provide the basis for inclusive education. These include: a) the appreciation of diversity and multiculturalism in the process of identifying learner disadvantages; b) team work and skills which enable the teacher to collaborate with professionals, parents and fellow teachers in dealing with special education needs; c) sensitivity about ethical issues and ethical commitment and d) inter-personal and communication skills.

Against the background of these competences, it is my argument that educational technology and information communication technology play an important role in creating an effective and adaptable learning environment, especially when teaching pupils with special educational needs and inclusive classrooms. However, the use of ICT in addressing special educational needs has, to date, been inadequate so far. Most hardware and software is designed for the mainstream population and does not pay sufficient attention to a wide range of capabilities and to people with disabilities (Wong et al., 2009, p. 109). Despite the current emphases on inclusion have stimulated much interest in using various ICT applications for integrating students with disabilities into the mainstream school environment, the review of existing literature indicates a lack of attention to the application of ICT for people with special educational needs (Williams et al., 2006). ICT for special educational needs assists the different types of disabilities with assistive technology (Turner-Smith & Devlin, 2005). The main gap is within development of learning environments and systems which facilitate inclusion of persons with different types of

disabilities. Teachers are not aware of e-learning environments and their potentials for individualised instruction, exploratory environments, collaborative learning and facilitating social skills, individualised study plans, classroom management for accommodating students with disabilities in the inclusive classroom (ibid.). Research findings show that the use of online communication by young people has become a most common activity, and that the internet and virtual environments have been highly integrated in the young people's lives, where young people with special needs are vulnerable and marginalised (Söderström, 2009; Livingstone & Helsper, 2007). Learning environments and systems which prepare young people with special needs for participation in information society foster implementation of *the developing ICT competences based on equal opportunities* which is highlighted in The Concrete Future Objectives of Educational Systems ("The Concrete ...", 2001).

Training teachers for the new roles and tasks in society, including the use of ICT in teaching and learning and in developing their own professional competences, is a priority within the EU and national policies (Buchberger et al., 2000, p. 30). *Competences in using ICT* (González & Wagenaar, 2003, p. 83) in a teacher's professional work and learning constitute one of the main drivers of change when creating powerful learning environments and applying new approaches to teaching. (Buchberger et al., 2000, p. 39). Certain studies have shown that integration of new technologies into classes has been slow in progress, and they warned of a discrepancy between the innovation objectives and the current level of ICT integration (Hermans et al., 2008, p. 1500). Two respective studies conducted among teachers in Australian and Dutch primary schools showed that integration of ICT, were performed using the traditional approaches, failed to bring about changes in approaches to teaching, which would have been required in order to set up powerful ICT-assisted learning environments (Hayes, 2007; Smeets, 2005).

Teachers' conceptions, beliefs as also their technology related attitudes are linked to self-efficiency (İşman, 2009) in technology acceptance process, and ICT experiences (Cavas et al., 2009) and are preconditions for decisions and actions regarding professional learning, teaching improvements and change. To measure the impact of teacher training, the focus is on the influence of training on teachers' attitudes, self-efficacy, enjoyment, usefulness, and behavioural intention towards the use of internet (Akpinar & Bayramoglu, 2008). In teacher training, the need for a shift from technical competences to competences in directing one's own professional development is needed (Istenic Starcic & Brodnik, 2005, p. 165) in order to equip teachers to respond to changes and incorporating innovation in teaching (Buchberger et al., 2000). Professional development in ICT has to address professional needs and cultures and not primarily focus on training for ICT skills (Triggs & John, 2004; Watson 2001 cited in Loveless et al., 2006, p. 5).

Approaches applied by teachers in teaching are based on their own experiences gained during their own pre-service education. Models and methods of ICT use in pre-service teacher education by teachers-educators across the curriculum impact on the use of ICT in teaching (Potter, 2006; Istenic Starcic, 2007; Drent & Meelisson, 2008, p. 188; Baslanti, 2006; Gülbahar, 2008). Teachers-educators in pre-service teacher education, with their understanding of technology potentials and impacts in primary education and their adjustment of their own teaching approaches and methods, provide a model for students – future teachers (Baslanti, 2006).

Educational technology curriculum

The reformed *Educational Technology* curriculum, within the reformed Bologna study programme of primary classroom teaching, was developed in the period 2008 – 2009 and accredited in 2009 as the compulsory course for all the first year students of the First Bologna Cycle (Istenic Starcic, 2009). The course consists of three ECTS credit points, and comprises lectures (totalling 15 hours) and tutorials in the IT laboratory (totalling 30 hours). Since 2005, its implementation has been embedded in the e-learning environment, thus facilitating the linking of lectures and laboratory exercises with the remote activities done by students (Kljun et al., 2006). The *Educational Technology* curriculum analysis identified the need for incorporating topics into ICT use within inclusive education. To this end, curriculum renewal took place within the *Equal e-Learning* project in the same academic year of 2008/09 when Bologna Reform took place. The curriculum included the SEVERI e-learning environment to prepare students to apply ICT for individualisation and differentiation for assisting diversity of students, their abilities, experiences and interests (Cotic & Valencic Zuljan, 2009). The discussion of topics took place within the development and incorporation of the SEVERI system into the Slovenian schools, which facilitated learning in the context of pedagogic practice and field experience (Baslanti, 2006).

The renewal of the curriculum aims at acquiring experiences, stimulating inquisitiveness and inquiry-based learning, autonomous selection, accommodation and testing, planning and incorporating the creative and innovative ICT use into teaching, and increasing the awareness of the importance and role of a teacher's activity in his or her own professional development. The course contributes transferable competences, as *learning to*

learn, *cooperation* in distributed-teams on the Internet, and includes the *organisation of work and time management* (González & Wagenaar, 2003). The main objective of the course is to assist the process of teachers' professional dimensions. Teachers' **autonomy** in applying the specific skills in different situations, adopting decisions, and contemplating their own practice constitute the important teachers' professionalism dimensions (Darling-Hamond, 1985). Research orientation and **inquiry** in conjunction with reflection enables the teachers' **creative** and **innovative** pedagogical work (Fullan, 1992). Stimulating teachers' creativity by using ICT is the subject of pre-service teacher education studies (Loveless et al., 2006; Potter, 2006; Istenic Starcic, 2007), providing students with competences to go beyond the current boundaries, of technology, knowledge, social norms or beliefs (Ettlie, 2006, p. 55). Creative and innovative ICT use in teaching and learning is preliminarily about changing approaches to teaching and learning (Drent & Meelissen, 2008, p. 188). Creative practices of teaching, using ICT, include three interlinked factors: creative processes of imagination and originality, the features of ICT for multimodal presentation and communication, and ICT capability as an expression of elements of higher order thinking-finding things out and developing ideas (Loveless et al., 2006, p. 5).

Prior to the Bologna reform, *Educational Technology* used to be part of the *Didactics and Educational Technology* course that was compulsory for all the students within the primary classroom teaching study programme. The programme was accredited in 1995. In terms of teaching and learning time, the *Educational Technology* according to the old programme is comparable with the course within the new programme (15 hours of lectures, and 30 hours of tutorials). There are three Pedagogic Faculties in Slovenia, which are all educating and training teachers in the preschool and primary classroom teaching. The Bologna reform was gradually instituted within all the three faculties, following the prearranged common guidelines (Zgaga, 2005), based on the Community document Common European Principles for Teacher Competences and Qualifications ("Common ...", 2005), and on the Tuning project with the cooperation of one of the Slovenian faculties (González & Wagenaar, 2003). The comparison of the renewed curriculum from 2009 with the curriculum from 1995 is presented in Table 1.

Table 1: Comparing the Educational Technology curriculum of 1995 and 2009

Didactics and Educational Technology - 1995	**Educational Technology - 2009**
Focus on study of literature with observation in practice, and theoretical seminar work on the computer use in education.	"Living practice" with focus on planning, development and testing, with project work, and studying cases of ICT use in education.
Study methods do not facilitate empirical experience of technologies within one's own learning.	Study methods facilitate gaining experiences to students so as to integrate them into their own pedagogical work.
Fragmentation of study contents.	Process- and product-oriented integral approach to dealing with study contents.
Summative evaluation and assessment.	Process evaluation; project work is a composite part of final course assessment.
Direction to technical competences in using technologies.	Technical competences in ICT use are obtained indirectly by students through developing the pedagogically didactic generic and subject-specific professional teaching competences.
Special educational needs are excluded.	Preparing student teachers to use ICT in the process of dealing with diversity in classroom accommodating a diverse group of students with variety of needs and integration of special educational needs students.

SEVERI e-learning environment for special educational needs

The *"Equal eLearning – Students with Learning Difficulties Using ICT and Learning on the Web"* project was aiming at further developing, localising and implementing the SEVERI e-learning environment. Originally, the SEVERI system was developed for students with special learning needs in vocational education. The *Equal eLearning* project facilitated its further development, localisation and implementation in the various learning and training environments of Finland, Slovenia, Hungary, Lithuania, Portugal and Romania. The main challenges include a more extensive implementation in special schools, its integration into regular primary school and training environments for the improved integration of students with special educational needs. In Slovenia, the introduction of SEVERI e-learning environment and methods was also focused on teacher pre-service educational curriculum and its testing on part-time students at the University of Primorska Faculty of Education. The SEVERI e-learning environment (Figure 1) caters for students with special educational needs which include

a range of physical, communicational, emotional and cognitive disabilities, causing learning difficulties in reading, writing and perceiving. SEVERI provides the working environment, where tools are designed according to students' abilities. Clearly structured activities are focused on attracting learners and enhancing the students' motivation and autonomy providing the tracing and monitoring of one's own progress. Graphic interface design is provided in large and clear fonts, colours, symbols, pictures and speech so as to assist a variety of disabilities and special educational needs. Audio-instructions are included as well. The student interface is presented in Figure 1. In 2008, the *Equal e-Learning* project was awarded within the Handinnov competition for innovations which positively affect the lives of young disabled people and help them adapt to education, working life and society. The competition is organised by ONISEP (French National Office for Information on Education and Professions), European Disability Forum (EDF) and Droit au savoir (Right To Learning). In 2009, the *Equal eLearning* project was awarded the ACCESS-IT 2009 Good Practice Label in the field of e-Accessibility and inclusive ICT.

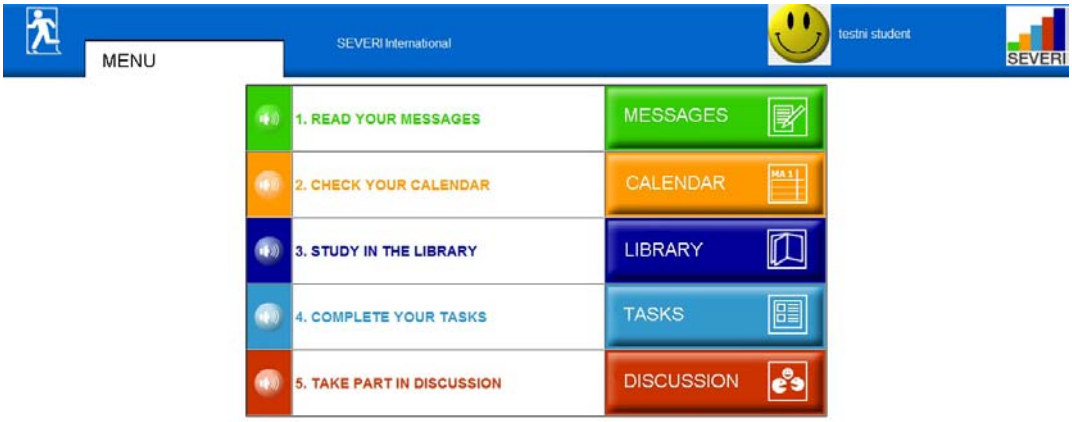

Figure 1: SEVERI e-learning environment – student interface

ICT for Inclusive classroom Project work structure

The project work is incorporated within the new Educational technology curriculum. The basic scope of the curriculum is to develop an autonomous teacher, who shall autonomously choose between options and tools, and adopt decisions on introducing creative and innovative solutions during lessons, taking into account the needs of individuals as well as groups. The structure of the project work is shown in Table 2. During tutorials, the students work on projects. At the beginning of the Project work, authentic cases from pedagogical practice are presented. Tutorial structure consists of the familiarisation with learning objectives, introductory motivation, discussing a topic or issue, working in groups, and completing the reflection journal at the end of every tutorial. The tutorial work is followed with practical work which is conducted by full time students during their teaching practice in schools. The part-time student teachers have a good opportunity to apply the project work during their normal professional work. For final assessment of the course, students write an essay on ICT use for special needs pupils and ICT in teacher's professional development and learning.

Table 2: Project work structure: Creative & Innovative ICT integration for inclusive classroom

1	Authentic cases	Integral treatment of processes was based on the authentic cases from practice. Teacher-educator included and treated topics, presenting cases from practice. Students linked the topics to their own experiences during presentation and discussion.
2	Idea development	The students developed an idea for ICT use for inclusive classroom, aiming at autonomy, inquiry, creativity, and innovation.
3	Idea communication	Students presented and discussed the idea with the other students in the group and with colleagues in their school environment.
4	Lesson planning	Students designed lesson plan including learning objectives, teaching and learning methods, cross-curriculum application, participatory production of learning materials with pupils.
5	Learning material design	Students designed the learning materials required for dealing with the topic and incorporated them into the SEVERI learning environment. They involved their pupils into the preparation of materials.

6	Lesson performance	Lesson performance took place during the regular lessons in classes taught by part-time students – teachers.
7	Project exchange	Lesson plans and learning materials were opened in SEVERI system for teacher exchange.

The research was designed to evaluate the students' learning and to consider the alignment of learning objectives and activities with learning outcomes in the new curriculum.

The research questions considered within the paper are:

(1) How the new curriculum assists mutual development of ICT didactical and technical competences?
(2) How the project work based on SEVERI foster the learning objectives of autonomy, inquiry, creativity, and innovation in ICT implementation in inclusive classroom?
(3) How is the project idea based on needs assessment in pedagogical practice?
(4) How were the procedures of lesson planning conducted and how were lesson plans used in lesson performance?

METHOD

Research methods and procedures

Evaluation study was undertaken to determine the value (merit and worth) of the Educational technology curriculum, so as to improve it and assess its impacts. Evaluation was process-oriented, consisting of formative evaluation aiming at improvement and summative evaluation for assessment of impacts. (Lincoln & Guba, 1986, p. 550). The purpose was to capture the process and collect information on teaching and learning activities and characteristics (teaching and learning approaches and learning objectives related to learning outcomes). Students were engaged in authentic tasks solving real problems. These were authentic representations of problems encountered in the field of study and in the real life of participants of study (Nevo, 2006, p. 447). The students were evaluated according to their active performance in using knowledge in a creative way to solve worthy problems (ibid.) during the learning process and final essay assessment.

A case study with qualitative research methodology (Stake, 1994) was used to investigate educational process in its natural environment (Denzin & Lincoln, 1994, p. 2), emphasising context (Greene, 1994, p. 538). The case study involved in-depth data collection from the multiple sources. The triangulation of data and resources from various points of departure, supporting all research questions was provided during the research process. For the validity, credibility and trustworthiness peer examinations and member checks were also applied. The qualitative data analysis was conducted in three stages: data description, analyses and summary, interrogation and identifying patterns.

The information was gathered and transcribed from:

- students' reflection journals (electronic, paper based),
- focus groups,
- students' project work products (lesson plans, learning material),
- students' essays for assessment.

Focus groups were used to address topics, which had not been considered by students prior to the evaluation study, and had turned up in project work. The aims were to identify new topics and deep understanding and interpretation of individual actions and attitudes within the given context. Focus groups are most effective where a large volume of information is to be gathered in a short period of time (Morgan, 1998, p. 45-54). Focus groups were implemented during lectures and tutorials.

With regard to the preset learning objectives of autonomy, inquiry, creativity and innovation, there is in the forefront in teaching and learning, according to Loveless (Loveless et al., 2006): the interplay of creative process and the use of features of ICT. Students explore their own process of creative work with ICT at the stage of planning and preparing materials for pupils, and at the stage of implementation. Reflection is crucial for the process of learning and development (students keep a reflection journal throughout the process) as is cooperation in a group, which facilitates interaction, exchange of experiences and positions (students cooperate with other students; students cooperate in the school working environment, students cooperate with the teacher-educator). The extent of compatibility between the preset learning objectives, learning activities and learning outcomes (Biggs, 1999) was monitored by analysing the students' reflection journals, students' project work, and students' essays for assessment.

The participants

The participants selected for testing were all part-time students in the second semester of primary classroom teaching course in the academic year of 2008/09 according to the old study programme. Part-time students involved in testing were teachers with a completed post secondary non-tertiary education degree, being educated for university education degree. The group of 43 persons consisted of 41 female and 2 male students. The students' age profile (Table 3) was as follows: 49-53 rage - 8 students, 46-48 range - 9 students, 43-45 range - 14 students, 40-42 range - 9 students, 36-39 range - 5 students. All the students had experiences in pedagogical practice. Analysis showed that they all had experiences in teaching of special needs pupils, either through involvement in regular classes or within departments intended for special needs pupils.

Table 3: Age profile

Age	36-39	40-42	43-45	46-48	49-53
Number	5	9	14	9	8

The data

During the course, students were writing electronic and paper based reflection journals based on open questions: "Are the learning objectives clear and to which extent you are able to fulfil them?" "How is the group work helpful in your learning process?" "How do you connect your normal professional work and the project work within the course?" "How would you describe the competences you developed in a project work?" "Are you facing any problems in doing project work, (if so please describe them)?" At the beginning of the course all students were asked to write one reflection journal focused on their ICT use for teaching and their own professional development. They were given open questions: "What experiences with ICT you have in your lesson planning and teaching?" "How do you use ICT in your professional learning?"

Students were asked to work in small focus groups (3-5 members) to discuss the ICT use for special educational needs. The focus groups' interaction was analysed. The project work products were lesson plans and learning material which were included in final assessment of the course.

For the assessment essays, students were asked to write about the ICT use for special educational needs and for the inclusive classroom and also about the role of ICT in teacher's professional development.

The data was processed according to the research questions. Coding sheets were used for analyzing the data for specific research questions. The coding frame is presented in Table 4. The codes for the research questions listed and the corresponding source from which data has been collected is mixed. The data was transferred to the coding sheets according to research questions, so that all comments on the particular question could be analysed together highlighting trends and issues. Frequencies are presented for students on the scale from 5-high to 1-none in Table 5.

Table 4: Coding frame

Source/ Research question with codes	**Journal**	**Lesson plan**	**Learning material**	**Focus groups**	**Essay**
How the new curricula assist mutual development of ICT didactical and technical competences?					
Technical skills	X			X	X
Shift in teaching	X			X	X
Shift in professional learning	X			X	X
How the project work based on SEVERI foster learning objectives?					
Autonomy	X			X	X
Inquiry	X			X	X
Creativity: Multimodal presentation and communication	X	X	X	X	X
Creativity: imagination, originality	X	X	X	X	X
Creativity: high order thinking-finding	X	X	X	X	X
Innovation	X	X	X	X	X
How is the project idea based on the needs assessment in pedagogical practice?					
Based on own teaching practice	X				
Shared experiences with other students	X				
Based on literature	X				
Teacher educator's advice	X				
How were the procedures of lesson planning conducted and how were lesson plans used in lesson performance?					

Changes in teaching and learning methods	X	X			X
Changes in learning contents	X	X			X
Cross-curricular connections	X	X			X
Co-creation of learning material with students	X	X			X

Table 5: Frequencies

Source/ Research question with frequencies	**5-high**	**4**	**3**	**2**	**1-none**
How the new curricula assist mutual development of ICT didactical and technical competences?					
Technical skills	6	0	0	0	37
Shift in teaching	34	3	0	0	6
Shift in professional learning	34	3	0	0	6
How the project work based on SEVERI foster learning objectives?					
Autonomy	0	0	39	4	0
Inquiry	0	0	30	13	0
Creativity: Multimodal presentation and communication	34	7	2	0	0
Creativity: imagination, originality	10	6	27	0	0
Creativity: high order thinking-finding	0	0	24	4	15
Innovation	17	3	0	0	23
How is the project idea based on the needs assessment in pedagogical practice?					
Based on own teaching practice	32	0	11	0	0
Shared experiences with other students	7	0	36	0	0
Based on literature	4	0	12	27	0
Teacher educator's advice	0	3	0	0	40
How were the procedures of lesson planning conducted and how were lesson plans used in lesson performance?					
Changes in teaching and learning methods	34	3	0	0	0
Changes in learning contents	20	5	6	0	6
Cross-curricular connections	40	3	0	0	0
Co-creation of learning material with students	0	11	2	30	0

FINDINGS AND DISCUSSION

The findings based on the data presented in the table 5 are discussed within research questions.

How is the project idea based on needs assessment in pedagogical practice?

Altogether 32 students made needs assessment strongly based on their **own teaching practice** with analysis of their classrooms. Almost 7 students had selected the topics almost exclusively based on **sharing experiences in a collaboration and discussion** with fellow students. Illustration from the student's journal is presented to support this factor: *"learning collaboratively and sharing when discovering and inventing provides me with a good insight in problems when dealing with special needs".*

36 students reported collaboration as important when discovering and selecting the idea. In the process of idea development some students (4) had predominantly used **information from the literature.** Student who made decisions strongly based on literature had written: *"examples from literature were very illustrative when showing approaches in teachers work for special needs education".* 39 reported the modest use of the literature. Only in extreme circumstances would the **teacher educator's advise** students (3) about an idea development process.

A qualitative study by Williams explored the working environment of teachers to identify what needs are to be addressed when developing an ICT learning environment for special educational needs. It considered the main issues in everyday work, the information needs of teachers, new experiences with ICT and knowledge of ICT impact upon the special educational needs learning environment, facilities and tools within environment (Williams, 2005, p. 540). During their daily work, teachers need most: familiarisation with the administrative procedures and policies, lesson plans and ideas, how to evidence work undertaken, and current level of areas in the curriculum that every individual student still needs to cover (ibid.). Project work was focusing on lesson plans and ideas, which form an integral part of teacher's daily work. Project topics were selected exclusively by students, which is a prerequisite for quality learning that is based on the motivation and interest of every individual student. Students prepared projects which included the deliberation on and proposals of creative ICT use in resolving different problems and dealing with different topics in inclusive classroom. How students

created their project idea was observed from journals. Student teachers mostly decided to work on specific topics needed in their classrooms.

How the project work based on SEVERI foster the learning objectives of autonomy, inquiry, creativity, and innovation in ICT implementation in inclusive classroom?
The realisation of the learning objective **autonomy** 39 students acquired level 3 and 4 students acquired level 2. For the **inquiry** all together 30 students acquired level 3 and 13 students acquired level 2. The **creativity** was highly achieved by 34 students regarding multimodal presentation and communication. 7 students achieved level 4 and 2 students achieved level 3. Creativity as imagination and originality was achieved by all students: 10 students at level 5, 6 students at level 4 and 27 students at level 3. Creativity as high order thinking-finding was achieved by 24 students at level 3. The **innovation** component was identified by 20 students.

Educational technology course aims at assisting the development of teachers' professional dimensions, which was captured within four learning objectives. The realisation of the learning objectives of autonomy, research, creativity and innovation were reflected in journals. The creativity and innovation was analysed from lesson plans and learning material. In focus groups students discussed the dimensions of professionalism. Focus groups were intent in particular, on exploring the unknown and on addressing the potential experiences which a teacher may expect in the future, using ICT for pupils with special learning needs. In their essays, the four learning objectives were analysed, regarding ICT use in inclusive classroom and teachers' professional development for ICT. In the Project work students were asked to look for and to expose the issues of discussion in their own pedagogical practice, and to include their pupils in the preparatory operations. At idea creation stage, they created the idea, using the different methods. Ideas were focused on the learning contents and on the learning method aimed at integrating children with special learning needs into the instructional environment of the regular classroom. At the subsequent stage, they evaluated their ideas in consultation with their student colleague and fellow teachers in school environment. At this stage, they further developed the idea, modifying it, where applicable. On having fully created the idea, they designed the lesson plan. Within the lesson plan, they planned the learning objectives, methods of teaching and learning, teaching sources, and methods of knowledge assessment. All the students incorporated into the process of preparing learning materials their own pupils who, within the scope of the different subjects, prepared products to be subsequently incorporated into the learning materials and into the SEVERI system. There was a multidirectional cooperation between the teacher and his/her pupils in a single class, as well as the cooperation between the different classes. Topics discussed, and for which the pupils prepared products, were in compliance with the topic of the Project task. Performance of lessons took place during their normal professional work. At certain schools, it coincided with other projects, which the teachers applied as the context within which they implemented their respective projects. The last stage, Project exchange, enabled the students to mutually exchange lesson plans and learning materials. The last stage had involved a consensus of all the persons involved, who agreed with the publication of products and with the mutual exchange and incorporation into teaching of all participating teachers (part-time students) within the SEVERI system.

The analysis shows that course work fostered students' development and understanding of the importance of **autonomy**. Student teachers are well aware that the field of ICT and inclusive education is the area where they feel weak and need the constant support of their professional colleagues and experts. They find the collaboration within the school environment as precondition for teaching an inclusive classroom. 39 students acquired level 3 and 4 students acquired level 2. They agreed that course work empowered them in acquiring a research orientation and **inquiry**. Although the inquiry strongly influences the professional lives of teachers, in Slovenian school arena hasn't been very popular (Cencic, 2006). Students expressed the concern that they have to work more in order to apply the research orientation and inquiry in their every day work. All together 30 students acquired level 3 and 13 students acquired level 2. Regarding **creativity** students showed good results as far as multimodal presentation and communication were conceived and also in terms of imagination and originality. Creativity with regard to high order thinking-finding was not well expressed. **Innovation** in teaching and learning was enhanced with Memorandum of lifelong learning (Cencic et al., 2008). The innovation component was identified in 20 students' lesson plans and learning materials and documented in journals. In journals and essays the innovation was augmented and supported with descriptions of teaching before Project work. The innovative approach within a Project work was dealing with inclusive classroom organisation, lesson ideas, and learning material. Students pointed out the conditions for innovative approaches in teaching at the system level, organisational level and as individual himself/herself. Among them they find most important individual's capacity for innovation, which depends strongly on competences teachers develop in their initial preparation and further professional training. In students' opinion innovation is strongly connected with creativity. Fewer students stated that innovation is connected with inquiry and autonomy. Within the project work the innovation capacity was identified by almost half participants (20 from 43 students).

How were the procedures of lesson planning conducted and how were lesson plans used in lesson performance?
Almost 30 students needed assistance of teacher educator and acquired level 2, 11 student level 4 and 2 students level 3. Cross-curricular lesson planning was well applied by all students. Changes in learning contents were applied by 37 students. Analysis of lesson plans and learning material showed that students which show capacity for changes in learning contents were able to identify the gaps in study contents and learning materials for pupils. Changes in teaching and learning methods were applied by 37 students. Students defined teaching and learning methods which foster the ICT use in classrooms and plan them in alignment with learning objectives and outcomes.

The link between lesson planning and lesson performance was crucial (Gülbahar, 2008). As early as in pre-service education, teachers need to be trained in planning and organising pedagogical activities which hold an important place in a teacher's daily routine. A major part of a teacher's decisions are adopted by him/her already in the procedures of lesson planning, before the actual teaching commences (Berliner, 1986). In lesson planning and performance, the teacher takes as basis the integral insight into a wider context, within which the teaching and learning of an individual with special educational needs takes place. The data was gathered from journals, lesson plans, and essays. With regard to the conduct of lesson plans, they were observed according to changes in teaching and learning methods, changes in learning contents, and cross-curricular connections. Special focus was on co-creation of learning material with students and how teachers planed participation of students in the process. During the process, the students kept their respective reflection journals, wherein they reflected on the set learning objectives and their realisation. Specific attention was aimed at linking the learning substance with the students' own pedagogical practice, and at seeking authentic ideas about incorporating ICT into instruction. In the light of the experiences gained, the students were able to effectively identify problems within the context of the school and class, by taking into account the systemic incentives and hindrances requiring ICT solutions. Among the five areas which were investigated, student teachers had most difficulties when applying co-creation of learning material with students.

How the new curriculum assists mutual development of ICT didactical and technical competences?
The data for this research question was gathered from journals, focus groups and essays. The coding sheet included the identification of activities in which students only developed on a **technical skills level**. 6 students were acquiring only technical competences with no didactical competences and shift in teaching, nor professional learning. When ICT was used for planning and conducting changes in teaching leading to transformation of teaching which was registered as **shift in teaching**. 34 students achieved level 5 and 3 students achieved level 4. If student teachers made a shift in their professional learning with ICT, a **shift in professional learning** was registered. 34 students achieved level 5 and 3 students achieved level 4.

Shift in teaching and shift in professional learning were linked; when acquiring shift in teaching also shift in professional learning was acquired. Technical skills level was strongly present at the beginning when students were having difficulties in adapting to the approach of project work. Gradually they were introduced to the comprehension of issues of creativity and innovation in using ICT. This approach stimulated integral treatment and solutions, aimed at overcoming technical hindrances. Some students encountered severe technical difficulties, which were resolved by harnessing a range of experts, as, for instance, computer science teachers at schools, pupils at schools or their own children in their home environment. Additional tutorials were made available so that teachers were able to get help in preparing the computer-supported materials. Study findings showed that this particular approach to teaching and using ICT in lessons – aimed at using ICT in inclusive education – was productive and facilitated a high level of transferring knowledge attained to the teacher's work. The shift in teaching was influencing lesson planning and teaching. From the students' journals some illustrations are extracted: *"introduction of ICT had changed my approach to lesson planning and conduction"*, *"ICT help me to fell empowered in daily routine", "the start was very demanding for me since I haven't got a computer for a long time ... after acquiring basic skills my feelings are good and I can clearly see the advantages ICT could bring into my daily work".*

The shift in professional development and learning was described by student teachers as *"positive channel for a change"*. Conditions for a change included: application of newly attained knowledge to the teacher's own teaching, taking as basis the teacher's own experiences, and stimulating motivation for inquiry and creative work (teachers themselves seek for study contents and develop creative solutions for their actual environment). This resulted in self-efficiency in technology acceptance process (İşman, 2009). In the essay prepared during the final knowledge assessment, the students demonstrated the thoroughness of approach to dealing with the issue of using ICT for special learning needs.

CONCLUSIONS

Digital literacy is considered as one of main enablers for the participation in the knowledge society (Istenic Starcic & Turk, 2010) and has to be provided based on the principal of equal opportunity. The educational technology has an important role in facilitating digital literacy of students and teachers. Within the renewal of the Educational technology curriculum, the ICT competences had been recognised as important in the process of the formation of teachers' professionalism which is based on autonomy, inquiry, creativity and innovation (Istenic Starcic, 2009). The project work had been applied to provide the learning environment of "Living practice" for students when developing didactical and technical component of their ICT competences. The implementation of the SEVERI e-learning environment for students with special educational needs took place at two levels: monitoring, observing and studying its introduction in Slovenian schools and planning and conducting lessons based on SEVERI.

The pre-service educational technology course has linked the theory and practice. The work in an IT laboratory was connected with teaching practice in schools. The group of part-time students who participated in the evaluation had a unique opportunity to transfer new knowledge to their day to day teaching practice of their normal professional work. Project idea, lesson and learning material design was based on the needs assessment of pedagogical practice. Evaluation was accomplished through the process of the project work and at final course assessment. The focus was on the lesson planning and lesson performance and on the learning material design and usefulness of the material in lesson performance. In the process of evaluation, students' learning was considered as was the alignment of learning objectives, activities and outcomes. Student teachers develop expertise in using ICT for their pedagogical work, both planning and teaching, were provided with the opportunity to contribute to increased equality, diversity and inclusive education. Inquiry-based learning within the work of the Project facilitated the use of ICT tools, with a follow on effect within the pedagogical context.

Key challenges of educational technology course are to prepare student teachers for:

- Autonomous planning and incorporation of ICT in lesson planning and performance;
- Inquiry and research approach when identifying ICT tools and systems and their application in teaching and learning;
- Creativity and innovation for teaching with ICT, designing learning material and learning environment, which foster creativity of all students assisting variety of individual approaches in creative communication and participation.

This study was conducted to speak to the question of educational technology in inclusive classroom and special needs education. The next step must be taken by teachers-educators providing students with curriculum opportunities to learn necessary competencies for the use of ICT and educational technologies. How they could recognise the conclusions of this evaluation study within their teaching and learning contexts and use them for their efforts within their own situations will impact the generalization of the study.

RECOMMENDATIONS AND IMPLICATIONS

For students to become teachers is essential to understand the potentials which educational technology offer in assisting teaching in inclusive classrooms and for accommodation of students with special educational needs. Students have to be facilitated for reflective action when taking up the role of a teacher:

- that digital divide of young disabled people can be reduced with improved access to computers and internet in the context of school work which could enhance digital literacy and e-participation of students in a society;
- that ICT assisted learning environments can be used for fostering student centred teaching and enhancing individualisation with tools for learning and evidencing students learning achievements and progress.

Educational technology curriculum has to incorporate the ICT competences, in conjunction with competences of cooperation, management, organization, and of other generic and subject-specific competences. ICT competences are developed as inter-subject result, as interface of generic and subject-specific knowledge (Istenic Starcic, 2007). Among key teachers' competences ICT competences and competences for inclusive education had been recognised as weak (Istenic Starcic, 2009). The educational curriculum course has to prepare future teachers for recognising ICT as enabler of own professional learning and development and as one of main drivers for change of pedagogical practice for student centred teaching in an inclusive classroom. E-learning environment in the inclusive classroom assists classroom management and facilitates the individual and collaborative engagement and activities in the process of development of abilities, experiences and interests of every individual student.

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