THE FACTORS THAT MOTIVATE AND HINDER THE STUDENTS WITH HEARING IMPAIRMENT TO USE MOBILE TECHNOLOGY*

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ABSTRACT
This research which aims to find out the factors that motivate students with hearing impairment to use PDA (Personal Digital Assistant), a product of mobile technology, in instructional activities, interactions with their peers and instructors, and in their daily lives, and the factors that hinder these individuals from using PDA was designed as an action research. The research was conducted with 12 students with hearing impairment taking "BIL151Fundamentals of Information Technology-I" course in School for the Handicapped, Department of Applied Fine Arts at Anadolu University. The participants used the HP IPAO hw6915 modeled PDAs for education and social interaction purposes in the activities carried out in the scope of the research for 16 weeks. For data collection, reflections gathered with questionnaire and critic event method were employed. The quantitative data were analyzed with descriptive statistics while the qualitative data obtained from one sample t-test were analyzed with content analysis done in an inductive approach. The research was supported by TUBITAK, The Scientific and Technological Research Council of Turkey (Project Number: 107K022). This article presents the findings of the project that show the situations that motivate and hinder students with hearing impairment to use PDA.
Keywords: Mobile technologies, students with hearing impairment, motivators, barriers

INTRODUCTION

Children with prenatal or pre-language hearing loss face great difficulties in acquiring the speaking dimension of their mother tongue. The problems in their hearing and the differences in their speech cause the children with hearing impairment not to understand talks thoroughly, reduce intelligibility of their speech, or make them totally unintelligible (Brannon, 1986; Northern and Downs 199; Osberger and Macgarr, 1982; Tüfekçioğlu, 1989).

The inadequacy of the speech intelligibility in children with hearing impairment may make their communication through speech harder, and it may even cause them not to communicate at all (Kretschmer and Kretschmer, 1978; Sanders, 1971). These communication breaks of the child with hearing impairment may result in facing problems in social and emotional problems as well as problems in their future lives, education, and work (Sanders, 1971; Tüfekçioğlu, 1992).

Besides face to face communication we experience through talking in our daily lives, we can feel the need to reach previous or distance information, and communicate with the people far away from us. We can use tools such as telephone, fax and e-mail to meet our distance communication need. The widespread use of cell phones and their texting facility began to be an alternative way of communication for individuals with hearing impairment. However, the importance of reading and writing, another dimension of oral communication is undeniable for the individuals with hearing impairment to use distance communication tools. In this sense, mobile technology environments that offer opportunities of teaching and learning free from time and place serve as a very effective option for the education of children with hearing impairment.

However, concerning the effective use of above mentioned distant communication tools, the importance of reading and writing, which are the other dimensions of oral communication, is undeniable for the individuals with hearing impairment. As a result of the civilization of the humankind, the written discourse becomes more popular means of communication. Today, the increase in the publication of books, journals/magazines and similar written media as well as wide spread use of Internet ease the availability of information which in turn contribute to the rapid development of the civilizations. By means of written media and computer environments, the written discourse not only provide communication but also ease to access the information and convey this information to our next generations. Beyond all question, students with hearing impairment continuously need some innovative approaches and methods which might have an effect on their cognitive and socio-emotional

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developments as well as their academic achievements. In this respect, the mobile technologies, which provide learning and teaching opportunities without any time and place limitations, come to scene as a significant educational tool/option in the education of the students with hearing impairment.

The rapid developments in the information and communication technologies accompanied various vital opportunities for the constituents the information society. Considering the daily life dynamics of the modern societies, it can be claimed that accessing to the sources of information without any time and place limitations and communicating with others become an essential need of individuals. The common ground of such a consideration, which was handled within the technological frame of accessing information and establishing communication, is the Internet technologies. The Internet provides very fruitful opportunities for learners and teachers in the information societies where the concepts such as lifelong learning and time and place independent learning are on the rise.

The mobile technology concept is generally used to refer to mobile information-communication tools and standards such as cell phones and PDAs (Personal Digital Assistant) (Çuhadar and Odabaşı, 2004). Since the mobile devices are portable, ubiquitous and easily accessible, many people use them for different purposes, especially for enhancing the learning with mobile devices (Özdamar Keskin and Metcalf, 2011). The small size properties of the mobile technologies enable the individuals to carry those tools while they are maintaining their daily life activities. Similarly, a new concept called "m-learning", namely, mobile e-learning appeared in literature with instructional use of these tools which are easy to carry in daily life activities, and suitable for wireless communication. There are various definitions of the m-learning in the literature. For instance, while Quinn (2000) defined it as an e-learning activity that can be facilitated through portable computers, Fagerberg, Rekkaedal and Russell (2002) defined it as the use of mobile technologies in the world of education. Similarly, Georgiev, Georgieva and Smrikarov (2004) defined m-learning as the new form of existing e-learning and distant learning applications. The common point of these definitions is originated from the fact that the content of learning is transmitted to the learners through wireless networks by means of mobile instruments (Al-fahad, 2009; Odabaşı et.al. 2009).

Learners can interact with their peers either on the course related or on extracurricular subjects without any time and place limitations in student center m-learning applications where PDAs are used. One of the important contributions of PDAs, which are used for the purpose of education, is that, they could prolong the teacher-student or student-student discussions that occur during the class hours to the post lesson sessions through using various Internet tools such as blogs, discussion forums or chat rooms. The PDAs could be used at any time by the teachers for feedback purposes, since they provide communication without any time and place limitations and include various communication means such as e-mail, voice call, and SMS (short message), etc. Similarly, PDAs also enable students to ask questions to their teachers or friends and get answers to their questions whenever and wherever they want.

Furthermore, since PDAs have Internet access in and out off the school contexts, they could also enable the use of Web-based applications in the courses. The interactive Web pages, which are also called blogs, can be used to provide social interaction among the students and to provide learners a richer interaction environment with other stakeholders. Recent educational studies and theories that focus on blogs highlight the importance of social interaction in the field of teaching and learning (Ferdig and Trammell, 2004).

Although PDAs are assumed as tools that can fill an important gap in education and social interaction areas of both hearing and hearing impaired students, this function of technology can only be fulfilled when individuals with hearing impairment accept and use mobile technologies. It is supposed that recognition of the possible factors that can motivate or hinder individuals with hearing impairment to use mobile technologies for instructional and social interaction purposes, or organizing the learning environments so as to solve the possible problems, might lead acceptance of the technology and motivation for their use by the hearing impaired individuals.

PURPOSE OF THE STUDY

The purpose of the present study is to define the possible factors that can motivate or hinder individuals with hearing impairment to use mobile technologies for instructional and social interaction purposes. The present study employed PDAs as the mobile technology. It is hoped that the findings of the present study might contribute to the further studies in the field and guide the researchers who might design mobile technology based learning environments for the individuals with hearing impairment. Along with this purpose, the present study posed following research questions;

1. What are the motivational factors that might lead to use mobile technologies by the hearing impairment students in their instructional activities, interactions with their peers and instructors, and in their daily lives?
2. What are the hindering factors that might prevent the use of mobile technologies by the hearing impairment students in their instructional activities, interactions with their peers and instructors, and in their daily lives?

LIMITATIONS OF THE STUDY

- In terms of the content, the present study is limited to the course materials and face to face and online activities that were structured along with these course materials throughout 16 weeks.
- In terms of the mobile technology, the present study is limited to the hardware and software characteristics of a PDA which is commercially known as HP iPAQ hw6915.
- In terms of the online activities that were offered to the students, the present study is limited to a blog environment which was supported by WordPress software.

METHODOLOGY

Research Design

The study was designed as an action research which is one of the qualitative research methods. Action research is a pre-planned and well-organized research process, which intends to improve or understand the current actions or teaching procedures that exist in real classroom environment and inform other parties about the current phenomenon (Johnson, 2002). The nature of such kind of research designs necessitates figuring out a problem that exist during the practice process and providing solution to that problem through gathering and analyzing the data systematically (Yıldırım and Şimşek, 2005).

Participants

The students with hearing impairment at tertiary level form the scope of the study. Criterion sampling technique, which is one of the purposeful sampling methods, is used when determining the participants of the present study. The purposeful sampling enables researchers to scrutinize the cases which were supposed to have wealthy information. In this respect, in most of the cases, purposeful sampling techniques are functional to figure out and explicate the events and phenomenon in detail. The criterion sampling, on the other hand, is the way of examining the cases which meet a series of predetermined criteria (Patton, 2002). The criterion used in determining the participants was choosing the students with hearing impairment at tertiary level who hold preliminary information and skills for computer use. Thus, the participants of the study were 12 students with hearing impairment taking "BIL151 Fundamentals of Information Technology-I" course in the Research Institute for the Handicapped Students at the Department of Applied Fine Arts at Anadolu University. The students' participation to the study was on volunteer basis. Additionally, all of the participants signed a written confirmation (consent form) about their volunteer participation to the project prior to the beginning of the research.

Data Collection Instruments

The action research process requires collecting research data systematically in order to identify and solve potential problems that might occur in the teaching environments. It is expected that the collected data should describe the setting (context) sufficiently and in detail. Thus, the data of the study was collected through a questionnaire (survey) and reflections which were performed as critical event analysis technique. The data gathering instruments of the study were explained in detail in the following sections of the paper.

PDA Use Questionnaire

The "PDA Use Questionnaire" is developed and used in the present study in order to identify the possible factors that can motivate or hinder participants to use PDAs. Basically, the questionnaire consists of two separate sections. The questions in the first section inquire the demographic information about the participants, whereas, the second section includes items related to the possible factors that can motivate or hinder participants' use of PDAs for their instructional and social interaction purposes. The second section of the questionnaire includes total 48 items and participants responded each of the items through selecting one of the stated options which are "agree", "neutral" and "disagree".

Regarding the fact that different PDAs have different hardware and software features, 37 of the items in the second section were formed on the basis of the technical features of HP IPAQ 6915 which was the model of PDA used by the participants throughout the research process. Thus, participants stated their opinions through

selecting one of the options ranged from "agree", "neutral" to "disagree" in order to identify the factors that can motivate or hinder participants' use of PDAs for their instructional purposes.

The (Practice of) Critical Event Approach

In the last week of the study, participants were asked to write reflection reports and describe the favorable and unfavorable moments that they have experienced while they work with PDAs. The questions were delivered to the participants as two separate forms where they could write their opinions. At the beginning of the practice (study), each of the participants was delivered the first form in which they were asked to write their opinions related to their favorable moments while using the PDAs. The participants were given a plenty of time to write their opinions on the forms. During this process, when the participants gave their forms to the instructor, he examined the forms and guided the participants to write their feelings in detail. However, the instructor paid attention while guiding them so as to not have any effect on the opinions of the participants. Subsequent to students' returning the first forms, they were given the second form in which they were asked to write their opinions related to their unfavorable moments while using the PDAs, and the similar procedures were followed in this phase as well.

The Data Analysis

The descriptive statistical analysis methods were used in the analysis of the quantitative data that obtained by means of questionnaire and percentages, frequencies, means and standard deviation values were identified. Since every parametric tests require the normal distribution of the data (Pallant, 2001), prior to making any parametric test, all of the data were examined by using SPSS 15.0 software regarding the normality of the distribution of the data, thus, Q-Q, P-P diagrams and histograms were analyzed, skewness and kurtosis values were examined, and Shapiro-Wilk and Kolmogorov-Smirnov (k-s) tests were used in this process. Additionally, one sample t-test was used in order to examine the difference between the mean score that obtained from qestionnaire and the hypothetical mean score.

The expert opinion was also taken in order to establish the reliability of the quantitative data that obtained by means of questionnaires. In terms of the reliability issues, Cronbach alpha internal consistency coefficient was used and 0.70 internal consistency coefficient value was regarded as the baseline (Huck, 2000; Pallant, 2001). As the result of the reliability estimations, the reliability of the first section was calculated as (cronbach alpha) α= .86, whereas, it was calculated as α= .84 or the second section of the questionnaire.

Inductive content analysis was performed with the qualitative data, which obtained by means of the written responses of the participants on the first form that inquires their opinions related to their favorable feelings while using the PDA, and on the second form that inquires their opinions related to their unfavorable feelings while using the PDA. The main aim of the content analysis is to figure out the findings of the study out of the frequent, dominant and/or meaningful themes that emerged from the raw data (Thomas, 2003). Inductive content analysis requires in-depth analysis of the data, which helps to figure out the themes and dimensions that were not predicted beforehand (Patton, 2002; Strauss and Corbin, 1990).

The reliability and validity calculations of the obtained themes were performed by the field experts and the reliability of the data that obtained by critical event analysis of the first form was computed as .94, whereas, it was computed as .95 for the data that obtained from the themes in the second form. In order to establish the trustworthiness, transferability, credibility and confirmability (Guba, 1981: cited in Shenton, 2004) of the qualitative data, following actions were performed; selecting purposeful sampling, recording and reporting every details througout the research process, objectivity in the identification and interpretation of the data, colecting suficient data, using real data sources, prolonged interaction, perspective based data colection, data triangulation, getting expert opinion and descriptive narration.

FINDINGS

The findings related to motivating and hindering factors that affect the use of PDAs by hearing impaired individuals were presented in the following section along with the research questions. The findings of the quantitative data, which were obtained by means of participants' responses to 48 items in the first part of the questionnaire, concerning the opinions of the participants related to the motivating and hindering factors that affect the use of PDAs by hearing impaired individuals, can be summarized as follows;

As the first step, the participants' total scores that they have attained from the first part of the "The Use of PDA questionnaire" were computed. In order to test whether the data match the requirement of normal distribution, which is the prerequisite of the parametric tests (Pallant, 2001), the total scores of the participants were examined by means of Shapiro-Wilk and Kolmogorov-Smirnov (k-s) tests through using SPSS 15.0 software.

The test statistics for K-S test was computed as D=.129, and in the .05 significance level, the findings were regarded as significant p>0.05. The Shapiro-Wilks statistics of the data was computed as W=.94 and in the .05 significance level, the findings were regarded as significant p>0.05. Additionally, the Q-Q and P-P diagrams were examined. It was observed that the computed skewness value of the distribution (.021) and kurtosis value (-1, 20) were within the normal distribution criteria. Thus, the distribution of the data was regarded as normal distribution.

The mean score of the first part of the "Use of PDA" questionnaire was computed as 118,25. There are 48 items in this part of the questionnaire. Thus, the minimum mean score that can be obtained from the questionnaire is 48 whereas the maximum score is 144. The hypothetical mean score that can be obtained from the questionnaire is 96. According to the results of one-sample t-test, which was performed to examine the difference between the mean score and hypothetical mean score, the mean score of the items in the questionnaire was found statistically significant at .05 significance level (t=5.66; p<.05), thus, having higher mean score (118, 25) than the hypothetical mean score (96), revealed that the motivation levels of the participants in using PDAs in their instructional activities is also high. When the mean scores of each participant were examined further, it was found that none of the participants get lower mean score than the hypothetical mean score. Thus, it can be claimed that all of the participants have higher motivation in using PDAs in their instructional activities.

The mean scores and standard deviations of each item in the questionnaire were illustrated in Table 1 in descending order.

Table 1: The Motivating factors in the use of PDAs in instructional activities of participants

No	Aspects	Item	N	Mean	SD
24	1	I was able to follow the course even when I could not attend the course	12	2,92	0,29
25	1	I was able to access to the information that I sought whenever and where ever I want.	12	2,92	0,29
27	1	I have learned the issues that I do not know from my friends	12	2,92	0,29
35	1	I got information from my friends about the issues that I have missed	12	2,92	0,29
9	3	I was able to get in touch with my friends through SMS	12	2,83	0,58
17	3	I was able to get immediate responses to my messages	12	2,83	0,58
20	3	My friends able to provide me immediate help to solve my problems related to the course subjects.	12	2,83	0,39
43	3	I was able to ask questions and get answers from my friends whenever I want.	12	2,83	0,39
46	1	I was always able to carry my course materials (Word document, power point presentations, etc) with me.	12	2,83	0,58
2	3	The discussions helped me to learn better	12	2,75	0,45
11	3	I was able to express my opinions better when I wrote them in the discussions	12	2,75	0,45
13	1	The information that was provided through PDAs reinforced what I have learned during the course	12	2,75	0,45
28	4	The instructor encouraged me to use PDAs in the course.	12	2,75	0,45
33	4	The instructor helped me immediately to solve my course related problems.	12	2,75	0,45
41	3	I was able to express myself better in the written discourse (SMS, Blog, e-mail) than that of classroom discussions.	12	2,75	0,62
3	2	The use of PDAs enhanced my vocabulary knowledge in my social life.	12	2,67	0,49
10	2	I felt prestigious when I was given the PDA	12	2,67	0,65
16	3	I was able to ask questions and get answers from my friends whenever I want.	12	2,67	0,65
22	3	I was able to organize social activities with my friends	12	2,67	0,49
30	3	PDAs improved my sincerity with my friends.	12	2,67	0,78
39	4	I was able to get immediate feedback to my homework that I have sent.	12	2,67	0,49
1	1	I was able to ask questions and get answers from my instructor	12	2,58	0,79

No	Aspects	Item	N	Mean	SD
		whenever I want.			
14	2	My friends' use of PDAs encouraged me to use PDA in the course.	12	2,58	0,52
29	2	PDAs increased my interaction with my milieu.	12	2,58	0,52
36	4	I was able to reach to my instructor through e-mail.	12	2,58	0,79
38	4	I was able to reach to my instructor through SMS.	12	2,58	0,79
48	4	I could not reach to my instructor when I need.	12	2,58	0,79
42	1	The use of PDAs enhanced my vocabulary knowledge in the technological issues.	12	2,50	0,67
23	3	I could not reach to my friends when I need them	12	2,42	0,67
31	2	PDAs enabled me to establish a continual communication with my family	12	2,42	0,90
32	2	I was able to record the interesting events around me by PDA.	12	2,42	0,79
44	4	I was able to get information from my instructor about the issues when I have missed the course	12	2,42	0,79
8	2	I was able to get in touch with my friends through e-mail	12	2,33	0,99
34	2	I was able to know my friends well.	12	2,33	0,89
15	2	It was difficult to carry out my PDA with me regularly.	12	2,25	0,97
18	3	I thought that I might bother my friends with my messages.	12	2,25	0,75
7	1	I had difficulties in reading the lecture notes	12	2,17	0,94
19	4	I thought that communicating with my instructor might cost me some extra expenses.	12	2,17	0,84
6	4	I did not participate to discussions since my instructor did not participate in the discussions sufficiently.	12	2,08	0,79
26	4	I thought that I might bother my instructor with my messages.	12	2,08	0,79
37	3	I did not participate to discussions since my friends did not participate in the discussions sufficiently.	12	2,08	0,79
40	3	I thought that communicating with my friends might cost me some extra expenses.	12	2,08	0,79
47	1	I had difficulties in accomplishing the tasks in the activities.	12	2,00	0,95
12	2	I made new friends by using PDA.	12	1,75	0,75
45	1	Supporting the course with PDAs cost me extra expenses.	12	1,75	0,87
5	1	I felt that I must use PDA continuously for my course.	12	1,67	0,89
21	2	The others' curiosity while I was using PDA disturbed me.	12	1,67	0,89
4	1	I had difficulties in sending my homework.	12	1,58	0,90

The 48 items in the first section of the questionnaire were examined concerning the four subsequent aspects of the research questions and they were listed as "aspects" in the table. Hence, 1 indicates the instructional activities, 2 indicates the daily life, 3 indicates peer interaction and 4 indicates the interaction with the instructor. When the Table 1 is examined concerning the highest scores, it was found that the most motivating factor for the participants' use of PDA is their use in instructional activities. It is followed by using the PDAs for interacting between the students. It can be seen in Table that five out of the first ten items were related the use of PDAs in the instructional activities and the other five of them were related the use of PDAs in the interaction with their friends. However, the items which are related to the instructional activities were placed upper parts of the questionnaire since those items get higher mean scores. While the use of PDAs for the purpose of interaction with the instructors was placed on the third rank, their use in the daily life was the least motivating factor for the participants.

When the findings of the quantitative data were reviewed in general, it was found that the most motivating factor which lead the participants to use PDAs (in their instructional activities) were; being able to follow the course even when they could not attend the course, being able to access to the information they sought whenever and wherever they want, being able to get information from their friends about the issues that they have missed or unknown, being able to get immediate responses to their messages, being able to get help from their friends on solving the course related problems and being able to carry out the lecture notes continually. Additionally, learning better through participating in online discussion forums by using PDAs being able to express their

opinions better when they wrote them in the discussions, and being able to access to the information on the Web through using PDA reinforce what they have learned during the course.

On the other hand, when the hindering factors that did not lead the participants to use PDAs in their instructional activities were examined, it was found that only five of the items have mean scores below 2.00; thus, it was supposed that those five items might be the factors which prevent participants' use of PDAs in their instructional activities.

Not making new friends through PDAs, having extra burden because of the PDA aided course, feeling obliged to use PDA for lessons all the time, feeling uncomfortable since other people get interested in them while using PDA, and the difficulties they experience in sending messages are the factors that hinder the participants from using PDAs. When the table was statistically examined concerning the four aspects, it was found that participants' using PDAs in interaction with each other was in the first rank with 2.65 mean score and the participants' using PDAs interaction with their instructor was found in the second rank with 2,52 mean score. Thus, it was found that the most important motivating factor was identified as "interaction" in participants' use of PDAs. Participants' using PDAs in the instructional activities becomes third important factor with 2,41 mean score, and using PDAs in daily life was found as the fourth important motivating factor in using PDAs by hearing impaired individuals.

The factors which motivate the participants to use PDAs in the interaction with their friends were listed in table below.

Tablo 2: The Motivating factors in the use of PDAs in interaction with their peers

Motivating Factors
Gaining instructional advantages through interacting with peers.
Being able to get in touch with their friends through SMS.
Gaining opportunities to express their selves better.
Making contributions to establish a better friendship with peers.
Providing opportunities to plan social activities with friends.

The factors which motivate the participants to use PDAs in the interaction with their instructor were listed in Table 3 below.

Table 3: The motivating factors in the use of PDAs in interaction with their instructor

Motivating Factors
Getting immediate feedback
Getting in touch with SMS
Getting in touch with e-mail
Able to ask questions and get answer whenever they want

The motivating factors for the use of PDA in instructional activities were summarized in the following table;

Table 4: The motivating factors for the use of PDAs in instructional activities

Motivating Factors
Enabling learning from their peers
Accessing to the taget information everywhere and every time
Providing chance to keep in touch with the information they missed
Continual access to the course materials
Contribution to the vocabulary knowledge related to the technical jargon

On the other hand, Table 5 illustrates the motivating factors for the use of PDA in the participants' daily lives.

Table 5: The Motivating factors for the use of PDA in the praticipants' daily lives

Motivating Factors
Giving the sense of value
Contributing to the vocabulary knowledge in the social life
Contributing to the interaction with environment
Arousing the desire not to fail

Contributing to the interaction with the family
Providing the opportunity to record the events in the environment

In the analysis of the motivating factors for the participants to use the PDAs, as a different perspective, the three factors, namely; the use of PDA in daily lives, in the interaction with each other and interaction with the instructors, as apart from the factor related to the use of PDAs in the instructional activities, were analyzed under two sub-factors as in terms of teaching and social interaction. For instance; the participants could have interaction with the purpose of teaching as well as for the purpose of social interaction. In that case, it is possible that a questionnaire item can be involved under more than one dimension. Once the items concerning the three main dimensions were also examined in terms of teaching and social interaction, it was obtained that the PDAs were used in the daily life for the purpose of teaching, with mean value of 2,46 but for the purpose of social interaction, with the mean value of 2,32. Additionally, it was found that the participants used PDAs in their interaction with each other for the purpose of teaching at 2, 64 mean, on contrary for social interaction purpose, 2,55. Likewise, the mean score for the participants' use of PDAs in the interaction with the instructors for the purpose of teaching was obtained as 2,55 while for the purpose of social interaction, it was 2,44. Under all three dimensions, it was observed that the use of PDAs for the purpose of teaching was more important than for the purpose of social interaction. These findings had similarities with the ratings of the items in the questionnaire individually according to their scores regardless of the sub-dimensions.

In the second part of the questionnaire on the Use of PDAs, firstly the participants' overall scores were calculated. In order to test whether the data met the requirement of the normal distribution to use parametric tests (Pallant, 2001), Kolmogrov-Smirnov (K-S) test and Shapiro Wilk-tests were employed on the participants' overall scores through SPSS 15.0.

For K-S test, the test statistics was D=.165 and at the significance level of .05, it was found as $p>0.05$ while for Shapiro-Wilk statistics was W=.95 and similarly at the significance level of .05, it was found as $p>0.05$. Additionally, Q-Q and P-P diagrams were examined. Besides, it was observed that the skewness (-.092) and kurtosis (-1,17) values of the distribution was within the normal distribution values. Considering these findings, it was assumed that the data had normal distribution.

The mean score obtained from the second part of the Use of PDA questionnaire was 91. There were 37 items in this part. While the minimum score was 37, the maximum score was 111 for this part. The hypothetic mean score that can be obtained from the scale (questionnaire) was 74. According to one sample t-test which was conducted to test the difference between the mean score and hypothetic mean score, it was found that the mean score (91) was statistically significant than the hypothetic mean (74) at the significance level of .05 ($t=5,62$; $p<.05$) and considering that the score obtained from the scale was higher than the hypothetic score, it was concluded that the students' motivation to use PDAs was high. When each participant's mean score was examined (see Table 5), it was seen that none of the participants got lower score than the hypothetic mean. Thus, it can be claimed that all of the participants' motivation levels to use PDAs were higher.

Table 6: The motivation factors to use PDA in terms of technical features at HP IPAQ 6915 brand and model

No	Item	N	Mean	SD
3	Having camera at PDA motivated me to carry PDA with me.	12	2,92	0,29
34	Having some features that are not included in the mobile phone but at PDAs tempted me to use PDA	12	2,92	0,29
35	Having Windows at PDA influenced me to use PDA	12	2,92	0,29
6	The idea that it can help me at lessons enabled me to use PDA	12	2,83	0,58
10	Carrying my files and data with PDA encouraged me to use PDA	12	2,83	0,39
18	Having keyboard at PDA influenced me to use PDA	12	2,83	0,58
24	Being a mobile phone at the same time motivated me to use PDA	12	2,83	0,39
29	Having MSN Messenger at PDA was effective for the use of PDA	12	2,83	0,58
7	The function of Contacts at PDA influenced me to use PDA	12	2,75	0,45
12	The function of Calculator influences me to use PDA	12	2,75	0,62
13	Participating to a scientific project made me enthusiastic	12	2,75	0,45
15	Taking Notes easily with PDA motivated me to use PDA	12	2,75	0,62
20	Receiving my e-mails through PDA made me encouraged to use PDA	12	2,75	0,62

No	Item	N	Mean	SD
23	Evaluating PDA activities with marks motivated me to use PDA	12	2,75	0,45
16	Watching video through PDA motivated me to use PDA	12	2,67	0,65
22	Working in cooperation with my instructor tempted me to use PDA	12	2,67	0,65
1	The instructor's using PDA also made me tempted to use PDA	12	2,58	0,67
19	Playing games at PDA encouraged me to use PDA	12	2,58	0,79
31	Sharing files through Bluetooth at PDA encouraged me use PDA	12	2,58	0,79
28	Connecting Internet through GPRS at PDA motivated me to use PDA	12	2,50	0,80
17	Listening to music at PDA made me enthusiastic to use PDA	12	2,42	0,90
27	The idea of helping my peers motivated me to use PDA	12	2,42	0,90
30	Difficulty to pass through different programs at PDA decreased my interest in PDA	12	2,42	0,67
4	Using earphones at PDA influenced me to use PDA	12	2,33	0,89
32	Having technical problems frequently decreased my desire to use PDA	12	2,33	0,89
37	Having small screen at PDA demotivated me to use PDA	12	2,33	0,89
21	Fear to damage PDA decreased my interest İN PDA	12	2,25	0,86
26	Having short charging time decreased my interest in using PDA	12	2,25	0,97
25	Difficulty to see PDA screen under sunlight limited my use of PDA	12	2,17	0,58
33	Economical difficulty caused by PDA use decreased my interest in PDA	12	2,17	0,84
36	Having English as the program language decreased my interest in using PDA	12	2,17	0,84
5	The difficulties in uploading program to PDA decreased my interest to PDA	12	2,00	0,85
8	Using some programs only through STYLUS decreased my interest in using PDA	12	1,92	0,79
9	Not finding PDA versions of the programs I want, demotivated me to use PDA	12	1,92	0,67
2	Interference occurred during phone call at PDA decreased my interest in using PDA	12	1,67	0,49
11	Difficulty to run a program at PDA decreased my interest in using PDA	12	1,67	0,78
14	Difficulty to enter numbers to PDA made the use of PDA harder	12	1,58	0,79

As seen at Table 6, the most important hardware factors that motivated the participants to use PDA were; the function of camera at PDAs, some features that are not included in the mobile phones but at PDAs, using Windows operating system to which the participants were familiar. Additionally, carrying files and data with PDAs, having keyboard on PDAs, and using them as the mobile phones at the same time, having MSN Messenger program, function of e-mail sending options, calculator and taking notes easily through PDAs were some other motivating factors.

The factors that inhibited the students to use PDAs were questioned through only five items out of 37 items in the scale and the mean scores of these items were under 2.00. These were; using some programs only through STYLUS at PDAs, not finding PDA versions of some programs that the students use, hearing disturbing interferences during phone calls at PDAs and running programs at PDAs with difficulty, and finally the difficulty to enter numbers to PDAs.

While practicing the critic event approach to the students at the end of the term, the students were asked to write the situations/moments they felt best and worst while studying with PDAs. The qualitative data obtained from this measurement instrument was analyzed inductively. The themes emerged related to the situations that the students felt best while studying PDAs could be accepted as the factors motivating the students to use PDAs while the themes regarding the situations they felt worst could be accepted as hindering factors.

A total of 52 opinions were stated related to the most favorable (best) moments/ situations while the participants are using PDAs. The data that were collected in this section can be grouped under three main motivating factors, which are the factors related to the Internet, the factors related to hardware/software and psychological factors. These factors were tabularized in the Table 7 below.

Table 7: The participants most favorable moments/cases while using PDAs

Themes	Frequencies (f)
Factors related to the Internet	**30**
Preparing/sending/sharing homework	8
Chatting	7
Mobile access to Internet	6
Searching on the net	5
Sending e-mail	1
Using GPS (Internet map)	1
Discussing on the Blog	1
Reading News	1
Hardware/ Software Factors	**15**
Playing Game	4
Taking Photograph	4
Carrying documents	4
Recording Video	2
Preparing homework	1
Psychological Factors	**7**
possession /care about	3
Feeling prestigious	3
Recreation (spending leisure time)	1

As Table 7 indicates that the situations that the participants felt best were the situation in which they conducted the Internet activities. The total frequency of the factors related to Internet was two times of hardware/software factor and 4,5 times of the psychological factors. In a similar way, the total frequency of hardware/software factor was two times of psychological factors.

The situations like preparing the homework on PDA and sending it to the instructor, also sharing it with their peers, chatting with friends and instructors through Internet, sharing their ideas in blog environment, searching on Internet, having Internet access wherever and whenever they want also overlapped with the motivating factors for the participants' use of PDAs. Moreover, "feeling valuable by means of possession" as one of the psychological factors was also compatible with "providing sense of valuing" as one of the motivating factor for the use of PDAs in instructional activities. Moreover, playing games, taking photos, carrying files, recording videos, sending e-mail and chatting are also consistent with the hardware factors motivating to use of PDAs.

On the other hand, regarding the situations in which the students felt worst while studying with PDAs, there were totally 28 opinions, yet two of these opinions explained that there was not any situation in which they felt worst. The data obtained from these opinions could be gathered under three main factors hindering the use of PDAs, as hardware/software factors, psychological factors and Internet-related factors. This classification was given in the following table;

Table 8: The factors related to participants most unfavorable moments while using PDAs

Themes	Frequencies (f)
Hardware/ Software Factors	**16**
Unable to play games	1
Unable to take photos or video recording	2
Unable to send documents via Bluetooth	1
Interference while using it as a phone	1
Unable to run some programs	1
The synchronization problems with computers	1
Run out of battery very soon	2
The problems while making homework	1
Break down of the PDA	4
Carrying the PDAs (being big size)	2
Psychological Factors	**6**
Fear of losing/or the stealing of PDA	4
Returning the sim card	1

Having higher phone bills	1
Factors related to the Internet	**4**
Unable to access Internet	3
Unable to send homework	1

When the Table 8 is examined, it was observed that the factors related to participants' most unfavorable moments while using PDAs was hardware/software factors. The total frequency of this main factor was calculated as 16, which is three times bigger than total frequency of psychological factors and four times bigger than the Internet related factors. When the data obtained from this section was compared to the data related to the participants' most favorable moments/situation while using PDAs, it was found that Internet play an important role in both cases. That is, the Internet related factors were the most favorable and most unfavorable moments that the participants felt while using PDAs. Therefore, as it was expected, the most unfavorable moments of the participants should be at the bottom level. In this respect, the result was found coherent. Although the factors related to hardware/software was found as the second important factor among the favorable moments of the participants while using PDAs, the same factors were found as the first important factor among the most unfavorable moments of the participants while using PDAs. Another significant aspect in this point was that although the hardware/software factors were almost half of the Internet related factors among the most favorable moments that participants felt while using PDAs, they were two times bigger among the most unfavorable moments that participants felt while using PDAs. This finding can be explained by the fact that participants have encountered a number of problems based on the hardware/software characteristics of the PDAs. When the findings obtained in this section were compared to the problems that the participants experienced while using PDAs, it is found that there is coherence between findings of the two sections. That is, participants stated that they have experienced technical problems while taking photos and recording videos, they had problems while playing games in PDAs, they heard interference while using PDAs as a phone, they had problems in carrying PDAs due to their bigger sizes, they had problems while using PDAs since they run out of battery very soon, they had problems due to PDAs synchronization problems with the desktop computers, they felt the fear of breaking down the PDAs, they had problems related to Internet access, they had problems in preparing and sending their homework and they had problems due to the having higher phone bills.

For the situations in which they felt worst while using PDAs, the factors such as having interference during phone calls and not running some program, got on with two of the five hardware factors that inhibited the students to use PDAs. Having interference during phone calls at PDAs was observed as among the hindering factors, also among the problems faced with the use of PDAs as well as among the worst moments while using PDAs. Although the interference during the phone calls cannot be considered as a great problem for the hearing students, even they will not realize such a problem, such interference could be disturbing for the hearing impaired students since their hearing aids produces the voices higher and the sounds that cannot be heard by the hearing people can disturb them. For instance; these students reported that the sound of tearing PDAs coverage disturbed them. The instructor of the lesson also confirmed that due to booster function of these hearing aids, such sounds could disturb them.

CONCLUSION AND DISCUSSION

The results of the study revealed that all of the participants have high level of motivation for PDA use. According to the average points of each item of the questionnaire, "using PDAs in instructional activities" is the most important factor that motivates students to use PDA. Using PDA for interacting with each other follows this. While using PDAs to interact with their instructors is in the third rank, using PDAs in their daily lives is the least motivating factor. When we look at the total average point of each aspect, we see that the most important factor that motives participants to use PDA is "interaction". The third important factor is using PDAs in instructional activities whereas the last factor is using PDAs in daily lives.

Following courses that the participants missed by means of PDAs, accessing the information they look for at any time and place they want, getting information they do not know or missed from their peers, getting immediate response to the messages they send, benefiting from their friends in solving problems related to the course and carrying the lecture notes with them all the time are the most motivating factors to use PDA. Learning more effectively in the discussions they hold on the net, expressing themselves better in these discussions, and reinforcing what they have learned during the lesson via accessing the main resource and materials of the course through Web are among other factors that motivate participants to use PDA.

Not making new friends by using PDAs, having extra burden due to PDA aided course, feeling obliged to using PDA for lessons all the time, feeling uncomfortable since other people get interested in them while using PDA,

and the difficulties they experience in sending messages are the factors that hinder the participants from using PDA.

In terms of equipment properties of PDA, it was found that all the participants have high level of motivation to use PDA. The most important equipment factors that motivate participants to use PDA are camera feature of PDAs, having some features not included in cell phones, and using Windows operating system which the participants are accustomed to from their computers. Carrying files and data with PDA, keyboard feature, its use as cell phone, running MSN Messenger program, sending e-mails, having calculator and taking notes easily on it are the other motivating factors.

The compulsory use of writing pen (Stylus) in some of the software in PDAs, the lack of PDA version of some programs that participants are accustomed to use in computer environments, the interference while talking on the phone, difficulty in running a program on PDA and difficulty in entering numbers in PDA were the principal hindering factors that emerged as a result of the equipment properties of PDAs.

The success of current technologies is based on the practicality of that technology when it is used in any field. The new-world concept, which gives importance to the new developments in social life, to the individual differences and to the educational issues rather than economic wealth of the nation, especially paying attention to the special education might lead the handicapped individuals to get their share from the application of technology into their education sufficiently. The new technologies, which also called mobile technologies, will be the indispensable source of the twenty-first century's technology through conveying their time and place independent features into mobile environments. The handicapped individuals who need special education may even follow the current issues by means of such technologies. The learners especially the ones who need special education, such as handicapped individuals, the students who have to stay at the hospital for their treatments might continue their education by the help of mobile technologies, thus, they can follow the courses without any time and place limitations, they can access the needed information whenever and wherever they want, they can get information about the courses hey missed from their classmates and they can ask and get answers to their questions immediately. Thanks to the Web nets, the mobile technologies have the potential to simultaneously transmit the information that the individuals need.

Like all of the new technological application, the mobile technologies might also have some limitations such as the cost, accessibility and acceptability. However, through practicing new governmental policies for the education of handicapped people, it could be increased the use and availability of mobile technologies in the field of special education. Likewise, through conducting studies similar to the present study, the acceptability, compatibility, effectiveness and practicality of the technology could be examined. The motivating or hindering factors for the students might be identified along with the different special education fields. Thus, the present study revealed that the greatest problem that the hearing impaired students encountered during their use of PDAs, was using the PDAs with hearing aid caused interference (noise). However, orthopedically handicapped students might complaint about the small size key pad of the PDAs. Being the first initiative in cooperation with special education and mobile technology was inspired the researcher of the present study. The researcher believes that a lot more studies can be conducted on this issue in Turkish context. The forthcoming studies on this issue might contribute to enhance the quality of life of the handicapped people as well as contribute to the sustainable development of the country.

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