Prospective Teachers' Tendencies to Utilize From the Facilities of Contemporary Educational Technology

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Abstract	Article Info
In terms of effectiveness and efficiency, it is important to determine the views of prospective teachers related to taking advantage of the facilities of contemporary educational technology. This study which aims to identify prospective teachers' attitudes towards computer-assisted learning was conducted with 140 prospective teachers (86 female, 54 male) who have been attending pedagogical formation education at Süleyman Demirel University in the 2013 academic year. In this study, in eight different fields of prospective teachers' attitudes towards computer assisted education were examined with different variables such as gender, major and graduation year. As a data collection tool, the "Computer Assisted Education Attitude Scale" was used in order to determine the tendencies of prospective teachers towards the use of computer-assisted learning in different fields such as physical sciences, social sciences, health sciences, fine arts, theology, mathematics and Turkish language. In the statistical analysis, frequency analysis, descriptive statistics, nonparametric statistical technics were used. As a result of the analysis it was identified that teachers participating our study exhibited substandard attitudes towards computer-assisted education. In computer-assisted education, female prospective teachers had higher attitude level than men prospective teachers. In addition, attitude scores of participants of mathematics, health sciences, fine arts and science was higher than the participants of the Turkish language, foreign languages, social sciences and theology departments. There were statistically significant difference between attitude scores of participants of different disciplines. Results of the research findings are expected to contribute to the widespread use of instructional technology, and are expected to lead to applications in other fields.	Received: 17 February 2015 Revised: 30 April 2015 Accepted: 15 June 2015 *Keywords:* Teaching Profession, Education, Technology, Computer-Assisted Education, Attitude

1. Introduction

The role of technology in education has become indisputable and affects every aspect of education in hardware and theoretical dimensions (İşman, et al.2002). In our country, the education system, its program and its efforts to improve the effectiveness of educational practices, and the functional importance of technology-assisted education are clearly seen. The research results, (Geban, Aşkar and Özkan, 1992; Saracaloğlu, Serin and Bozkurt, 2000; Akçay, 2002; Sezgin, 2002; Yenice, 2003; Bussell, 2004; Donaldson, 2004; Kert, 2004; Atam, 2006) in order to determine the effectiveness of instructional technology in the teaching of different subject areas with various sample groups, reveal positive effects on the level of learning, persistence and attitude in general.

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In the current "Information Age" new concepts and technologies such as computers, multimedia, audio, video, animation, the internet and developing internet technologies have taken place in education and training life (Alakoç, 2003). Technologies are used to support the development of learners (Tezci and Gürol, 2002). Educational technology gives opportunities to reach the objectives set out in education effectively as soon as possible. In this context, modern educational technology expresses that educational environments are organized (Hızal, 1991), depending on the needs and the circumstances of the individuals. Instructional technology refers to guiding the related learning for the teaching of a subject (Alkan, 1998). The first thing that comes to mind with the use of technology is the computer. The computer has come not as an option for teaching process but as a complementary and strengthening element of the system (Namlu, 1999). Computer-assisted education refers to enriching the education and training activities and utilization of the computer as a tool to help teachers to improve the quality of education (Arslan, 2006). Information can be presented effectively with computer-assisted education (Çalışkan and Şimşek, 2000). On the one hand the internet which is capable of interaction contributes to the learning by providing easy access to all areas and materials as it changes radically the appearance of the learning environment and its evaluation methods (Sünbül, 2002:171).

Education with the computer has significant advantages over other teaching methods due to the nature of the benefits that are not available from any other training tool (Rıza, 1997). For this reason, the use of computers is becoming increasingly common in education and training activities (Önder, 2003). Although many computer programs were previously application and training-oriented in education, today it is possible to find-personal course schedules, practice and application programs, educational games, simulation programs, interactive programs, such as problem-solving programs which are effective in a variety of styles (Tekdal, 2002).

Innovations that occur in information technology affect human life (Seferoğlu and Akbıyık, 2005) and can result in serious changes in the needs of teaching (Alakoç, 2003). With the development of opportunities to access information, computer technologies have become tools to be used in teaching (Kirschner and Selinger, 2003). With computer technologies, education and training activities have become inseparable (Komis et al. 2007) For this reason, schools where the teaching activities are carried out resort to various applications in efforts to use computer technologies (Seferoğlu and Akbıyık, 2005). The number of studies has been increasing every day in order to provide computers, which have become essential tools of modern life, to be used effectively and efficiently. Recent studies indicate a variety of benefits of technology integration in education. Technology-supported learning environments make important contributions to the multi-faceted presentations of the information (Gürol, 2001). In the learning environment supported by instructional technologies and materials students experience a richer learning experience (Halis, 2002) First of all, the use of technology evokes interest in the students to increase their motivation and makes it easy to remember previously studied information on the subject (İşman, 2003). Because that audio, video, text, music, and animation techniques can be used together; it makes it easy to learn by addressing multiple senses of the students (Uşun, 2000). By taking their own responsibility for learning, students who learn in this kind of learning environments give meaning to information in their own ways, do more mind exercises in comparison with other methods (Oliver, 2000). Technology that allows students to learn by doing both help them simplify the abstract and complex information offered to students and also provides advantages such as money, time, and safety (İşman et al., 2002).

In the education system, the use of computer technologies in an efficient and effective way for students to interact with technology and technological tools affects the perspectives of the individuals' attitudes towards technology (Bindak and Çelik, 2006). For this reason, the

people and institutions providing education must keep pace with evolving technology. Teachers need to be well-trained before being able to provide this quality of service (Yılmaz, 2007). In order to perform computer-aided training effectively, teachers must have a positive attitude (Arslan, 2006). Countries which are aware of this develop strategies to train better teachers who use information technology (Kocasaraç, 2003).

In the current era of information and communication, there is need for efficient utilization of the opportunities offered by technology that has gained importance day by day. Considering the benefits of applications of technology in the learning and teaching process, educators' acceptance of the importance of the use of technology in creating effective learning environments is very important. Thus, they should enable students to be active and they need to create learning environments in which the students create their own knowledge. It is important that prospective teachers' awareness should be raised concerning the use of technologies in education to create learning environments that will allow students to experience rich learning experiences. In this context, it is essential to examine how and the extent to which prospective teachers tend to use technology. Today, computer-based education is extensively used in many courses (Akçay et al. 2003; Christensen, 2002; Ruthven and Hennesy, 2002). So teachers' views and qualifications in terms of learning technologies need to be questioned.

In this study, for the purpose of determining the views of prospective teachers regarding taking advantage of modern educational technology in their teaching area, analyses in terms of variables such as levels of teachers' attitudes to computer-assisted learning, gender, their major and their year of graduation. As a result of the research findings we will be able to contribute to the widespread use of instructional technology.

2. Methodology

2.1. Research Design

This is a descriptive study aiming to find teachers' attitudes to computer-assisted learning with respect to different variables (Karasar, 2005:77).

2.2. Sample

The study was conducted in the 2013 academic year on 140 volunteer students, who attend pedagogical formation education at Suleyman Demirel University. Participants were composed of 86 female and 54 male individuals.

Introductory Findings of the Sample:

Table1. Percentage distribution of the participants by gender

Gender	F	%
Female	86	61.4
Male	54	38.6
Total	140	100.0

61.4% of the participants were women, 38.6% were male

Table 2. Percentage distribution of the participants according to departments

Departments	F	%
Health Sciences	9	6.4
Social Sciences	14	10.0
Physical Sciences	22	15.7
Foreign Languages	9	6.4
Theology	16	11.4
Fine Arts	25	17.9
Mathematics	23	16.4
Turkish Language	17	12.1
Other	5	3.6
Total	140	100.0

Participation in the study mostly involved students of Fine Arts (17.9%), Mathematics (16.4%) and Sciences (15.7%). The number of participants from the departments was: Turkish language (12.1%), Theology (11.4%) and Social sciences (10.0%). The least contribution to research was from Health Sciences (6.4%), Foreign Languages (6.4%) and other departments (3.6%) respectively.

Table 3. Percentage distribution of the participants by year of graduation

Graduation Year	F	%
2011-before	63	45.0
2012	77	55.0
Total	140	100.0

45.0% of the participants graduated before 2011 and 55.0% graduated in 2012.

2.3. Process

The data collection tool, "Computer Assisted Education Attitude Scale" developed by Arslsan (2006) was used. The scale consists of 10 positive and 10 negative items. The Kaiser-Meyer-Olkin (KMO) coefficient was 0.88, the Barlett test of significance value was 0000 and the Cronbach's alpha reliability coefficient was 0.93. Cronbach's alpha reliability coefficient for this study was found to be 0.90. If the value is over the 0.80, Cronbach's alpha value of the scale is highly reliable scale (Tavşancıl, 2002; Alpar, 2001). Before determining the basic statistical analysis of our study, we determined whether or not the data fit a normal distribution using the One-Sample Kolmogorov-Smirnov test. In case the data did not fit the normal distribution, parametric tests cannot be used and instead of them non-parametric tests are used (Yılmaz andYılmaz, 2005). As that the data obtained from our study do not fit a normal distribution ($p < 0.05$), the non-parametric Mann-Whitney U test and Kruskal-Wallis Variance analysis were used. Also we benefited from the descriptive statistics and frequency analysis.

3. Findings

This study which analyzed comparatively prospective teachers' tendencies related to teaching computer assisted education was descriptive, and was carried out on the basis of a general screening model and quantitative research techniques. In the research, the effect of the graduation year, major and gender on attitudes towards computer-assisted learning was analyzed. For the purposes of this study the scores of the data collection tool were analyzed using appropriate statistical techniques. Through the obtained results, approaches of prospective teachers for making computer-assisted education are interpreted in tables. For significance (p >0.05), the significance level is based on.

Table 4. Scores of participants' attitudes toward "Computer Assisted Education"

Total Score	N	Minimum	Maximum	$\overline{X}$	SS
	140	20	78	42.55	11.716

Participants' attitudes toward Computer Assisted Education score is 42.55±11.71 points. Attitude scores towards computer-assisted education: the lowest is 20, and the highest is found as 78.

Table 5. Comparison of the mean attitude scores toward "Computer Assisted Education" according to the gender of the participants

Gender	N	$\overline{X}$	SS	Z	p
Female	86	44.40	11.595	-2.174	.030
Male	54	39.61	11.404		

Female participants' mean attitude score was 44.40 ± 11.59 points while male participants' were found to be 39.61 ± 11.40 points. Male and female participants' attitudes toward computer-assisted education had statistically significant difference between the scores (p<0.05).

Table 6. Comparison of the mean attitude scores toward "Computer Assisted Education" according to the departments of the participants.

Departments	N	$\overline{X}$	SS	Chi-square
Health Sciences	9	46.33	8.544	
Social Sciences	14	39.64	10.020	
Physical Sciences	22	42.95	10.594	
Foreign Languages	9	39.89	14.049	X^2=15.706
Theology	16	35.81	6.358	df=8
Fine Arts	25	43.64	12.007	p=.047
Mathematics	23	48.87	13.769	
Turkish Language	17	40.76	12.468	
Other	5	40.00	10.677	
Total	9	46.33	8.544	

When we examined the attitude mean scores of the participants according to departments, we found that the scores of the participants from the highest to lowest were: Mathematics 48.87±13.76 points, Health Sciences 46.33 ± 8.54 points, Fine Arts 43.64 ± 12.0 points, Physical Sciences 42.95±10.59 points, Turkish Language 40.76 ± 12.46, Other departments 40.0 ± 10.67 points, Foreign Languages 39.89 ± 14.04 points, Social Sciences 39.64±10.02 points and Theology 35.81±6.35 points. There was statistically significant difference ($p < 0.05$) among attitude scores towards computer-assisted education according to departments of the participants.

Table 7. Comparison of the mean attitude scores toward "Computer Assisted Education" according to the graduation year of the participants.

Graduation Year	N	$\overline{X}$	SS	Z	p
2011 -before	63	41.65	11.240	-.910	.363
2012	77	43.29	12.116		

The mean attitude score of the participants who graduated in 2011 or before was 41.65±11.24 points while the mean attitude scores of the participants who graduated in 2012 was 43.25±12.11. Participants who graduated in 2012 had a higher attitude scores however, according to the graduation year of the participants, there was no statistically significant difference between the mean attitude scores ($p > 0.05$).

4. Discussion

In our study, it was determined that attitudes towards computer-assisted education level of the students who are in the departments of mathematics, health sciences, fine arts and physical science are higher than Turkish language, foreign languages and social sciences departments' students. This situation may be due to more intensive use of computer-assisted education in mathematics, health and physical sciences departments. Besides it was observed that the majority of the research on computer-assisted learning was in mathematics (Çankaya and Karamete, 2008; Mitchell and Savill-Smith, 2004, Alakoç, 2003; Ersoy, 2003), health sciences (Ay, 2009; Aktaş et al. 2007), fine arts (Sevinç andKoldemir, 2009; Zor, 2006) and physical sciences (Hançer and Yalçın, 2009; Akçay et al. 2003; Özmen, 2004; Yenice et al. 2003; Saka and Akdeniz, 2006). However it is necessary that teachers should turn to computer-assisted education other than in the mathematics or physical sciences departments (White, 1996).

It was identified that teachers participating in our study exhibited substandard attitudes towards computer-assisted education. Today, considering the fact that children live intertwined (Reiner, 2009) with the computer in home or school environment, the teachers should develop their education with computers. In the teaching and learning environment, to ensure the best performance of technological tools good teachers are needed who have the ability to use technology in classrooms (Fisher, 2000). When we look at this aspect in computer-assisted education teachers participating in our research did not possess the necessary level of attitude. Yet, when they start to work they will encounter students who are familiar with technology (Erdemir et al. 2009). In our study, both women and men achieved below average scores for their attitudes towards computer- assisted education; however it was found that women have higher attitude scores than men. In the research on university students studying in different

departments there was no significant difference between the genders in their attitudes towards computer (Çekbaş et al. 2003; Harmandar and Samancı, 2000). Teachers need to be to both meet the needs of the society and who can (Davis, 2003) use information and technology as well. In this context, regardless of gender, in today's world of education all prospective teachers need to demonstrate a positive attitude towards technology-assisted education. In some researches it is identified that in computer-assisted education female prospective teachers have higher attitude levels than men. The main reason is that women are superior to men in evaluating and planning teaching materials (Erdemir et al. 2009), and they are more sensitive to using technology in education as well (Galpin and Sander, 2007). When the results of the research are analyzed in which teachers' qualifications in terms of learning technologies are questioned, teachers in general, have a positive attitude towards educational technologies but it is noteworthy that the rates of using new technologies and educational tools in the classroom is considerably lower. In other words, teachers do not benefit from educational technologies to the optimal level. The the reason why the use of educational technology is not at the desired level is because of the features of the curriculum, the ignorance of inspectors' guidance as needed, difficulty of achieving tools and equipment and the work of the related departments of the ministry is not meeting the needs of teachers. Yet, the prospective teachers accept the role of technological developments in education, and should have the ability to use this technology in order to achieve the desired success in their professional life. Teachers' knowledge and experiences are very important in applying instructional technology and materials in their educational practice.. In this context, in-service training activities can be arranged to increase the knowledge and experiences of the teachers.

5. Conclusion

As a result of this research, it was found that the teachers who participated our study exhibited substandard attitudes towards computer-assisted education. In computer-assisted education, female prospective teachers have higher attitude level than men ($p < 0.05$). In addition, attitude scores of participants of mathematics, health sciences, fine arts and science was higher than the participants of the Turkish language, foreign languages, social sciences and theology departments. According to the participants of different disciplines there was statistically significant difference between attitude scores ($p < 0.05$). Results of the research findings are expected to contribute to the widespread use of instructional technology, and are expected to lead to applications in other fields.

6. Recommendations

At the end of the study we can say that prospective teachers participating in our study need to develop themselves in computer-assisted education, in order to be beneficial to their students in their future professional lives. Studies should be carried out to help prospective teachers develop themselves vocationally and to help them both to gain the habit of scientific thinking and to help them to realize their interests and abilities.

As a result, it is a fact that computer-assisted education has a positive contribution to the developments of the children and today, it is an important requirement to produce teachers who have positive attitudes towards computer-assisted education. In the field of technology, with qualified, well-informed and skilled teachers, it will be possible to get the most out of computer-assisted education. However, as seen in our research results, the levels of teachers' attitudes towards computer-assisted education is not high. For this reason, necessary regulations should be enforced in the departments which produce prospective teachers to make them develop themselves in computer-assisted education.

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