

The Relation among Candidate Teachers' Computer Self-Efficacies, Attitudes towards the Internet and Achievements in a Computer Course

Oğuz SERIN¹, Asuman Seda SARACALOĞLU² and Güneş YAVUZ³

Abstract

The purpose of this study is to investigate the relation among computer self efficacy perception level and attitude towards the Internet with achievement of candidate teachers. Candidate teachers studying in educational faculties are chosen for the universe. The sample determined by appropriate sampling method includes total 342 candidate teachers, 34.80 % (n=119) from Cyprus International University (CIU), 38.30 % (n=131) from Adnan Menderes University (ADU) and 26.90 % (n=92) from Istanbul University (IU). The data were collected through Perception of Computer Self Efficacy Scale, developed by Aşkar ve Umay (2001), and Attitude Towards Internet Scale developed by Tavşancıl and Keser (2001). In addition to these scales, candidate teachers' achievement scores were obtained from student affairs. For the analysis of the data frequency, mean, t-test, F-test (ANOVA), and Pearson product-moment correlation coefficient were used. Significance level was taken as .05. As a result, it was found that the university in which the students studied is effective on computer self-efficacy, attitude towards the Internet and achievement in computer course. Gender is effective only on achievement in computer course. Also, it was determined that there is a significant correlation among computer self-efficacy, attitude towards the Internet and achievement in computer course.

Key words: Computer Self-efficacy, Attitude, Internet, Achievement, Candidate Teachers

Introduction

Rapid developments in science and technology also affect the education system as it is in all areas. This situation makes new technologies that have important role in the development of the quality in education required to enter the education organizations. (Akkoyunlu and Tuğrul, 2002; Aktümen and Kaçar, 2003). Studies show that individuals who have higher computer self-efficacy are more ambitious to attend to the activities of computer and they have higher expectations from those kinds of studies (Aşkar and Umay 2001). In addition these individuals cope with a problem about computer more easily (Karsten and Roth 1998; Compeau and Higgins 1995).

¹ Cyprus International University Faculty of Education, Lefkoşa-TRNC oserin@ciu.edu.tr

² Adnan Menderes University Faculty of Education, Aydın, Turkey sedasaracal@adu.edu.tr

³ Istanbul University Faculty of Education, Istanbul, Turkey gyavuz@istanbul.edu.tr

Studies that analyzed the relationship between computer self-efficacy and experience have given strange results. For instance, Torkzadeh and Koufteros (1994) indicated that students' computer self-efficacy increase meaningfully during their training. Aşkar and Umay (2001) indicated that inexperience and less computer usage cause students to have low computer self efficacy. According to them, inexperience and less computer usage cause students to have low computer self efficacy and low computer self efficacy affects in experience and less computer usage in much more negative way. Researchers indicated that students should be encouraged to use computer. Akkoyunlu and Orhan (2003) emphasized positive experiences affect computer self-efficacy believes of individuals in a positive way and negative experiences affect computer self-efficacy believes of individuals in a negative way.

The other one of the most important variables that affects the usage of computer is attitude towards computer. In the researches it was determined that the more individuals have computer experience, the more positive attitude towards computer they have (Deniz, 2000) while individuals who do not have any experience of computer have negative attitude towards computer (Hashim and Mustapha, 2004).

Using computer as an education tool is a feature that a teacher should possess in the developing education concept. Çavuş and Gökdaş (2006), and Arslan (2006) emphasized the importance of basic computer skills and Internet usage training that teachers and especially candidate teachers take in terms of their success during their jobs and they indicate that this provide them benefit from computer and Internet effectively. At this point of view developing computer self-efficacy and attitudes of candidate teachers is very important in terms of using computer and information technologies in teaching activities.

Because of its interactive feature Internet provides contribution to learning and provides materials almost all subjects that can be used directly in the courses. Therefore, it is said that it changes the view of the learning environment and evaluating methods completely since it provides a design that has pictures and graphics (Sünbül, 2002:171).

When the Internet is thought as an important necessity in the environment of training and education, it is clear that attitudes of teachers who have the job of training individuals who will use Internet technology in many areas towards the Internet have an important role. Firstly teachers should develop positive attitudes towards Internet usage in order to make students to develop positive attitudes towards the Internet.

When it is told candidate teacher's attitude towards the Internet, emotion, thought and behaviors about the frame and aim of the Internet. In order to use Internet that becomes the most important communication and teaching tool effectively and efficiently, first of all the attitudes of the candidate teachers should be known. Designing, applying and evaluating learning and teaching processes that provide efficiency and effectiveness is one of the main functions of the education technologies. As a result we have to accept that Internet is an integral part of modern life. Therefore, determining candidate teachers' attitudes towards the Internet, computer self-efficacies, and achievement in a computer course is seen important.

The Aim of the Research

The aim of this study is to analyze candidate teachers' attitudes towards the Internet, computer self-efficacies, and achievement in a computer course based on gender, and universities in which they get educated.

Research Question

The research question is: "What are the relations (if there is) among candidate teachers' attitudes towards the Internet, use self-efficacies, and academic achievement in a computer course?" Answers were sought to sub-questions below in the direction of the main question:

- a. Do candidate teachers' attitudes towards the Internet, computer self-efficacy, and achievement in a computer course differ according to gender?

- b. Do candidate teachers' attitudes towards the Internet, computer self-efficacy, and achievement in a computer course differ according to universities that they get educated?
- c. Is there a any correlation among candidate teachers' attitudes towards the Internet, computer self-efficacy, and achievement in a computer course?

Method

Model of the Research

This research that has been realized with relation search model is in the type of descriptive method. Descriptive method that is used commonly aims describing the situation that is interested. Searching models are research concept that aims to describe the situation as it is (Karasar, 2009).

Universe and Sample

Students who study in Turkey and Turkish Republic of Northern Cyprus constitute the universe of the research. Sample of the research was determined with appropriate sampling method. The sample includes totally 342 students from Adnan Menderes University (ADU), İstanbul University (IU) and Cyprus International University (CIU) % 36.30 (n=124) of whom are males and % 63.70 (n=218) of whom are females.

Data Collecting Tools

"Perception of Computer Self-Efficacy Scale", developed by Aşkar ve Umay (2001), with 71 Cronbach alpha reliability was used in the study. In addition, "Attitude towards the Internet Scale", developed by Tavşancıl and Keser (2001) with .89 Cronbach alpha reliability was used to collect data.

Analysis of the Data

The obtained data were analyzed with the SPSS. To determine whether there was any difference between the groups the t-test was used for two-sided comparisons and the F-

test was used for multiple-sided comparisons. The Scheffe significance test was used to determine from which group the significant differences resulted from. Pearson product-moment correlation coefficient was used. The significance level was accepted as .05 in the study.

Findings

The first sub-question of the research was “Do candidate teachers’ attitudes towards the Internet, computer self-efficacies, and academic achievement in a computer course differ according to gender?”. T-test was used to determine whether there is any significant differences according to gender.

Table 1. T-Test Results for Attitudes towards the Internet, Computer Self-Efficacies, and Achievements According to Gender

Gender		n	Mean	Std. Dev.	df	t	p
Computer Self-Efficacy (CSE)	Female	218	57.867	9.459	340	.026	.979
	Male	124	57.838	9.822			
Attitudes towards the Internet (ATTI)	Female	218	59.885	18.264	340	.855	.393
	Male	124	61.693	19.730			
Achievement in a Computer Course (ACC)	Female	218	83.100	10.293	340	2.170	.031*
	Male	124	80.475	11.529			

*p<.05

According to the t-test result, t-test result it was determined that university students’ achievement in a computer course differ significantly according to gender ($t=2.170$; $p<.05$). As it is shown in Table 1, it can be said that the achievements of female students is higher than those of female students. However, it can be said that students’ attitude levels towards the Internet and Computer Self-Efficacies levels do not differ significantly based on gender.

The second sub-question of the research was expressed as “Do candidate teachers’ attitudes towards the Internet, computer self-efficacies, and achievement in a computer course differentiate according to universities that they get educated?” One way analyses of variance (ANOVA) was used in order to determine whether there is a statistical

meaningful differentiation among candidate teachers' attitudes towards the Internet, Computer Self-Efficacies, and achievement in a computer course significant difference according to universities that they get educated.

As a result of one way analyses of variance (ANOVA), it was determined that university students' attitudes towards the Internet, Computer Self-Efficacies, and achievement in a computer course are affected by independent university variable. Scheffe meaningfulness test was applied to data in order to determine the groups that cause differentiation in candidate teachers' attitudes towards the Internet, Computer Self-Efficacies, and achievement in a computer course.

Table 2. F-test (ANOVA) Results for Attitudes towards the Internet (ATTI), Computer Self-Efficacy (CSE), and Achievement in a Computer Course (ACC) According to Universities

	University	n	Mean	Std. Dev.	df.	F	p	Meaningful difference
CSE	ADU (a)	131	55.465	9.366	2	8.908	.000*	a-c**
	IU (b)	92	57.880	9.853	339			
	CIU (c)	119	60.470	8.963	341			
	Total	342	57.856	9.578				
ATTI	ADU (a)	131	50.488	14.569	2	27.579	.000*	a-c**
	IU (b)	92	53.152	15.682	339			
	CIU (c)	119	77.319	12.619	341			
	Total	342	60.540	18.800				
CCS	ADU (a)	131	84.564	10.506	2	8.331	.000*	b-a**
	IU (b)	92	78.684	10.862	339			
	CIU (c)	119	82.168	10.468	341			
	Total	342	82.149	10.815				

*p<.05

According to the Scheffe test difference derives from the groups who indicate their university as "ADU" and "CIU" in terms of Computer Self-Efficacies dependent variable; differentiation derives from the groups who indicate their university as "ADU", "CIU", "IU" and "CIU" in terms of attitudes towards the Internet. It was determined that Computer Self-Efficacies of the students of CIU was higher than the students of other universities. The difference derives from the groups who indicate their university as "IU" and "ADU" in terms of achievement in a computer course. The students of "ADU" have higher achievement in a computer course means than the other universities' students. It is

seen that score means of the students of “CIU” are higher when the score means of attitudes towards the Internet, computer self-efficacy was analyzed

The third sub-question of the research was expressed as “Is there a any correlation among candidate teachers’ attitudes towards the Internet, computer self-efficacy, and achivement in a computer course?”

Table 3. Correlation Results among Attitudes towards the Internet, Computer Self-Efficacy, and Achivement in a Computer Course

Dependent Variables	n	r	p
Attitudes towards the Internet-Computer Self-Efficacy	342	.219**	.000
Attitudes towards the Internet-Achivement in a Computer Course	342	.042	.436
Computer Self-Efficacy- Achivement in a Computer Course	342	.175**	.001

** Correlation is significant at the .01 level (2-tailed).

When the Table 3 was analyzed, significant correlation among university students’ attitudes towards the Internet and computer self-efficacy ($r=.219$), computer self-efficacy and academic achievement in the computer course ($r=.175$) was determined.

Discussion and Conclusion

There is no statistically significant difference, candidate teachers’ Computer Self-Efficacies, and candidate teachers’ attitudes towards the Internet, supported by Akkoyunlu and Orhan (2003), Köseoğlu et al. (2007), Akkoyunlu (2008), and Adalier (2009) according to the gender. There is statistically significant difference, candidate teachers’ computer self-efficacies, supported by Karsten and Roth (1998), Nagira (2000), Torkzadeh and Van Dyke (2002), Wu and Tsai (2006), Vekiri and Chronaki (2008), Pamuk and Peker (2009), and Adalier and Serin (2010). It is seen that score means of the students of “CIU” are higher when the score means of attitudes towards the Internet, Computer Self-Efficacies was analyzed in Table 2. This situation can be explained by higher computer and Internet experiences of the students in Cyprus International University. First, Cyprus International University use moodle system (students have to use this system and Internet in order to find course descriptions, deliver projects, getting all kinds of documents about the course

such as presentations, results of the exams). The second, students of CIU have connection to the Internet in everywhere at the university such as in the dormitories' rooms and computer hall, and there is wireless Internet connection around the cafes. And the third one, since the telephone is expensive they communicate with their parents and friends on the Internet (facebook, msn, twitter..). Moreover, Wu and Tsai (2006), in their study, find out that university students' Internet attitudes were highly correlated with their Internet self-efficacy. According to the some researches significant correlation was found between computer Computer Self-Efficacies and attitudes towards the Internet in a positive way (Durndell and Haag, 2002; Salanova et al., 2000; Tsai and Tsai, 2003). As a result of the research it was determined that university students' attitudes towards the Internet, computer self-efficacies, and achivement in a computer course are affected by independent university variable, and university students' achivement in a computer course significant difference according to gender. It was determined that there was meaningful relation among university students' attitudes towards the Internet, Computer Self-Efficacies, and achivement in a computer course.

Finally, based on the findings of this research, the below suggestions were given:

- ✓ Training candidate teachers with the knowledge of Internet by adding courses about how to use Internet in the process of teaching learning to the syllabus of the organizations that train teachers.
- ✓ In order develop better attitude towards the Internet, richer Internet facilities should be provided at schools and dormitories.

References

Adalier, A. (2009). *Türkçe ve İngilizce öğretmen adaylarının bilgisayarla yönelik tutumları ile öz-yeterlik algıları*. 2. Uluslararası Dünya Dili Türkçe Sempozyumu. Cyprus International University, KKTC.

- Adalier, A. and Serin, O. (2010). *Teacher candidates' perceived information literacy self-efficacy and perceived computer self-efficacy*. International Edocational Technology Conference 2010 (IETC 2010), Istanbul.
- Akkoyunlu, B. (2008). *Bilgi Okuryazarlığı ve Yaşam Boyu Öğrenme 8th International Educational Technology Conference (IETC2008)*. Anadolu Üniversitesi, Eskişehir.
- Akkoyunlu, B. and Orhan, F (2003). Bilgisayar ve öğretim teknolojileri eğitimi (böte) bölümü öğrencilerinin bilgisayar kullanma öz yeterlik inancı ile demografik özellikleri arasındaki ilişki. *The Turkish Online Journal of Educational Technology-TOJET*, volume 2 (3), 11-86
- Akkoyunlu, B. and Tuğrul, B. (2002). Okul öncesi çocuklarının ev yaşantısındaki teknolojik etkileşimlerinin bilgisayar okuryazarlığı becerileri üzerindeki etkisi. *Hacettepe Üniversitesi Eğitim Fakültesi Dergisi*, 23, 12-21.
- Aktümen, M. and Kaçar, A. (2003). İlköğretim 8. sınıflarda harfli ifadelerle işlemlerin öğretiminde bilgisayar destekli öğretimin rolü ve bilgisayar destekli öğretim üzerine öğrenci görüşlerinin değerlendirilmesi. *Kastamonu Eğitim Dergisi*, 2, 339-358.
- Arslan, A. (2006). Bilgisayar destekli eğitim yapmaya ilişkin tutum ölçeği. *Yüzüncü Yıl Üniversitesi Eğitim Fakültesi Dergisi*, Cilt:3, Sayı:2, s:24-33.
- Aşkar, P. and Umay, A. (2001). İlköğretim matematik öğretmenliği öğrencilerinin bilgisayarla ilgili öz-yeterlik algısı. *Hacettepe Üniversitesi Eğitim Fakültesi Dergisi*, 21, 1-8.
- Çavuş, H. and Gökdaş, İ. (2006). Eğitim fakültesi'nde öğrenim gören öğrencilerin internetten yararlanma nedenleri ve kazanımları. *Yüzüncü Yıl Üniversitesi Eğitim Fakültesi Dergisi*, 3, 2, 56-78.
- Compeau, D. R. and Higgins, C. A. (1995). Computer self-efficacy: Development of a measure and initial test. *MIS Quarterly*, June, 189-211.

- Deniz, L. (2000). Öğretmen adaylarının bilgisayar yaşantıları ve bilgisayar tutumları. *M.Ü. Atatürk Eğitim Fakültesi EğitimBilimleri Dergisi*, 12, 135-166.
- Durndell, A., & Haag, Z. (2002). Computer self-efficacy, computer anxiety, attitudes towards the internet and reported experience with the internet, by gender, in an east European sample. *Computers in Human Behavior*, 18, 521–535.
- Hashim, H. R. and Mustapha, W. N. (2004). Attitudes toward learning about and working with computers of student at UITM. *The Turkish Online Journal of Educational Technology*, 3(2).
- Karasar, N. (2009). *Bilimsel Araştırma Yöntemi*. Ankara: Nobel Yayın Dağıtım.
- Karsten, R. and Roth, M. R. (1998). The relationship of computer experience and computer self-efficacy to performance in introductory computer literacy courses. *Journal of Research on Technology Education*, 31(1), 14-24.
- Köseoğlu, P, Yılmaz, M., Gerçek, C. and Soran, H. (2007); Bilgisayar kursunun bilgisayara yönelik başarı, tutum ve öz-yeterlik inançları üzerine etkisi, *Hacettepe Üniversitesi Eğitim Fakültesi Dergisi*, 33: 203-209
- Nagira, M. (2000). A study and an evaluation about information literacy education for computer beginners. *Japan Journal of Medical Informatics* 20(2), 1004
- Pamuk, S. and Peker, D. (2009). Turkish pre-service science and mathematics teachers' computer related self-efficacies, attitudes, and the relationship between these variables. *Computer and Education*, 53(2), 454-461
- Salanova, M., Grau, R., Cifre, E., and Llorens, S. (2000). Computer training, frequency of use and burnout: The moderating role of computer self-efficacy. *Computers in Human Behaviour*, 6(2), 575–590.
- Sünbül, M. (2002). *Öğretim Teknolojileri ve Materyal Geliştirme*. (Ed: Rauf Yıldız), Konya: Mikro Yayınları.

- Tavsancıl, E., and Keser, H. (2001). Development of a likert type attitude scale towards internet. *J. Faculty Educ. Sci.*, 34(1-2): 45-61.
- Torkzadeh, G. and Van Dyke, T.P. (2002). Effects of training on internet self-efficacy and computer user attitudes. *Computer in Human Behavior*, 18(5), 479-494.
- Torzadeh, G. and Koufteros, X. (1994) Factorial validity of a computer self-efficacy scale and the impact of computer training, *Education and Psychological Measurement*, 54(3), 813 - 821
- Tsai, M.-J., and Tsai, C.-C. (2003). Information searching strategies in web-based science learning: the role of internet self-efficacy. *Innovations in Education and Teaching International*, 40, 43-50.
- Vekiri, I. and Chronaki, A. (2008). Gender issues in technology use: perceived social support, computer self-efficacy and value beliefs, and computer use beyond school. *Computer and Education Volume* 51(3), 1392-1404
- Wu, Y-T. and Tsai, C-C. (2006). University students' internet attitudes and internet self-efficacy: A study at three universities in Taiwan. *CyberPsychology and Behavior*, 9(4): 441 - 450.