DETERMINING PROSPECTIVE ELEMENTARY TEACHERS' ATTITUDES TOWARDS COMPUTER: A SAMPLE FROM TURKEY[1)]

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Abstract. The aim of this study is to determine prospective elementary teachers' attitudes towards computers. This research was carried out in fall semester of 2007 at a small university in northeastern Turkey with 248 prospective elementary teachers. In order to get general results about the sample survey methodology was used. Results show that computer attitudes of prospective elementary teachers are at medium level. No significant differences were found between gender, high school type and monthly family income independent variables and computer liking, computer anxiety and use of computers in education/instruction subscales. However, a significant difference was found between high school type and computer anxiety and computers in education/instruction subscales.

Keywords: knowledge technology, computer, computer attitude, elementary teaching

Introduction

There are so many rapid and significant developments in the field of

knowledge technology. These developments serve human being in number of ways. Today knowledge technologies became basic components in either exploration-implementation-evaluation process or personal and financial affairs. Many fields should closely follow these new developments in knowledge technologies in order to benefit from them. One of these fields is education.

Knowledge technologies offer new opportunities for education such as obtaining, increasing, using, spreading and storing of knowledge (Deniz, 1994; Akkoyunlu, 1998). No doubt that the basic and commonly used of these technologies are computers which are contemporary superior technological tool (Deniz, 2001, Erkan, 2004, Gönen & Kocakaya, 2005). Computers are integrated almost in every major area of education. Nowadays via capabilities of computer technology a range of educational and communication tools serve students easily (Akpınar, 2005). In computer environment by fortification and projection of learning and teaching activities, transfusion of permanent information to students can be carried out (Baki, 2002; Arıcı & Dalkılıç, 2006). In terms of teachers, computers enable teacher's to develop their professional knowledge and skills and aid instruction in class (Tandoğan, 1998). In order to take advantage of computers in education we need to graduate teachers who are taught how to use computers in their various lessons (Bindak & Çelik, 2005; Özden et al.[2)]). Attitudes towards computers influence teachers' acceptance of the usefulness of technology, and also influence whether teachers approach these resources and integrate them into their classroom (Akbaba & Kurubacak, 1998; Clark, 2000). This situation calls for determination of teachers' attitudes towards computers. Attitudes towards computers are defined as individuals' thoughts on computers and usage of computers on activities (Erkan, 2004, Eşgi & Bardakçı, 2007). Teachers and students attitudes towards computers are directly related to computers in the classrooms (Zhao et al., 2001). Computer usage capabilities that prospective teachers have affect the quality of education. Woodrow (1991) claimed that students' attitudes

towards computers were critical issues in computer courses and computer-based curricula. Monitoring prospective teachers' attitudes towards computers should be a continuous process if the computer is to be used as a teaching and learning tool (Sam et al., 2005). So, prospective teachers' attitudes towards computers during their undergraduate education should be also checked. Taking the necessary steps to improve teachers' computer skills will enable them to use computers more efficiently in their professional life.

Related Works

In literature there are so many studies on determining students' attitudes towards computers. İşman et al. (2004) investigated undergraduate students' attitudes towards computers based on gender, education level of their mothers, education level of their fathers, having computers at their homes, having education on computer, and position of students. Results of İşman's (2004) study showed that students' have positive attitudes towards computers. Teo (2008) examined the attitudes towards use of computers among 139 pre-service teachers in different subject areas. These areas were Humanities, Sciences, Languages and General (Primary). The results of this study showed no gender or age differences among pre-service teachers' computer attitudes; however, there were significant differences for computer attitudes by the subject areas. Correlation analyses revealed significant associations between years of computer use and level of confidence, and computer attitudes. Khine (2001) studied 184 pre-service teachers and found a significant relationship between computer attitude and its use in instruction. Uşun (2004) aimed in his study to determine 156 undergraduate students' attitudes on the use of computers in education. The results of the study showed that undergraduate students agree that computers individualize the learning, they want more use of computers in education and their attitudes on the use of computers in education are positive.

Purpose of the Study

This study aims to find out computer attitudes of prospective elementary teachers based on gender, class level, graduated high school type and monthly family income at a small university in northeastern Turkey. In accordance with this objective, the study specifically focuses on the following research questions: (1) according to Computer Attitude Scale-Marmara and its sub-scales what is the overall profile of prospective elementary teachers' attitudes towards computer; (2) is there a difference on computer attitudes between genders; (3) is there a difference on computer attitudes between grade levels; (4) is there a difference on computer attitudes between graduated high school types; (5) is there a difference on computer attitudes between monthly family incomes.

Methodology

The aim of this study is to determine prospective elementary teachers' attitudes towards computers. This research was carried out in fall semester of 2007 at a small university in northeastern Turkey. Survey methodology was used in this study. This methodology helps researchers to obtain general results about the sample (Karasar, 2005).

Sampling

Sample of this study consist of 248 prospective elementary teachers who are studying at School of Education in a small university in northeastern Turkey. The sample included all the prospective elementary teachers (freshman, sophomore, junior and senior) studying in this school. According to gender variable, 121 (%48,8) male and 127 (%51,2) female prospective elementary teachers participated in the study. Grade level variable consist of 91 (%36,7) freshman, 56 (%22,6) sophomore, 49 (%19,8) junior and 52 (%21) senior students. According to high school type, 26 (%10,5) students graduated

from Anatolian High School (which has an instruction in English and students are chosen through national entrance exam), 187 (%75,4) graduated from General High School and 35 (%14,1) graduated from Super High School (which has one year of English preparation and students are chosen according to their middle school GPA). According to monthly family income variable, 87 (%35,1) of prospective elementary teachers' families have 0-500 TL (Turkish Lira) ($0-$300) income, 61 (%24,6) have 500-750 TL ($300-$550) income, 64 (%25,8) have 750-1000 TL ($550-$700) income, and 36 (%14,5) have over 1000 TL (over $700) income.

Instrument

In this study, questionnaire was designed for analyzing prospective elementary teachers' attitudes towards computers. This questionnaire is divided into two parts. In the first part there are some demographic questions as independent variables such as gender, class level, graduated high school type and monthly family income which were developed by the researchers. In the second part there is a Computer Attitude Scale-Marmara (CAS-M) test which was developed by Deniz (1994). CAS-M was administered in Turkish and the analysis was done in Turkish too. There are 42 attributions in CAS-M and it consists of three sub-scales. These are computer Liking (CL), computer anxiety (CA) and use of computer in education/instruction (CEI). The total score of 42 attributions also gives the general attitudes towards computers. Additionally, the reliability coefficient (Cronbach Alpha) of the questionnaire is 0,92. It is just like five point Likert Type scale and each statement were labeled as 5 = completely agree, 4 = mostly agree, 3 = agree, 2 = mostly disagree and 1 = completely disagree.

Subscales' names, number of their attributions and classification of obtainable scores for attitude levels (low attitude, medium attitude and high attitude) can be seen in Table 1.

Table 1. Classification of obtainable scores for different attitude levels

	No of Attribu-tions	Low Attitude	Medium Attitude	High Atti-tude
CAS-M	42	42–160	161–187	188–210
Computer Liking (CL)	12	12–39	40–50	51–60
Computer Anxiety (CA)	15	72-75	65–71	15-64
Use of Computer in Education/Instruction (CEI)	13	13–47	48–57	58–65

After administering this questionnaire to the sample, the reliability coefficient (Cronbach Alpha) of the questionnaire was found as 0,89.

Analysis of Data

Prospective elementary teachers' responses to the questionnaire were statistically analyzed according to gender, class level, high school type and monthly family income variables via SPSS 11.5 software. The mean ($\bar{x}$) and standard division (ss) scores were computed for each attribution. In the study, some parametric tests such as t-test; one-way analysis of variance (ANOVA) based on p=0.05 significance level were used to clarify the significance of the differences on means. In order to determine source of the differences on means in ANOVA Scheffe test was used.

Findings

Attitude towards computer was measured in terms of the computer liking, computer anxiety and use of computer in education/instruction sub-scales in the CAS-M (Deniz, 1994). All 248 participants responded to all attributions in the CAS-M and no missing data was found in the questionnaire. Table 2 presents the participants' total mean scores with the standard deviations on each subscale.

Table 2. Descriptive statistics of the total scores for CAS-M and each sub-scale

	n	$\bar{x}$	ss
CSA-M	248	161,82	20,93
CL	248	43,63	8,14
CA	248	61,63	7,6
CEI	248	49,51	8,71

Total mean scores of CSA-M is 161,82, CL is 43,63, CA is 61,63 and CEI is 49,51. By comparing these scores with those in Table 1, we can see that prospective elementary teachers' general attitude towards computer is at medium level and in terms of subscales; attitudes towards CL and CEI sub-scales are at mid-level and towards CA is at high level. In order to determine whether attitude scores differed between genders of prospective elementary teachers, an independent-samples t-test was conducted. The independent-sample t-test scores can be seen in Table 3.

Table 3. Independent samples t-test scores in terms of genders

	Gender					
	Male (n=121)		Female (n=127)			
	$\bar{x}$	ss	$\bar{x}$	ss	t	p
CSA-M	160,74	22,53	162,85	19,32	-0,794	0,428
CL	44,01	8,35	43,27	7,94	0,713	0,477
CA	60,69	8,17	62,51	6,91	-1,89	0,059
CEI	49,39	9,08	49,62	8,38	-0,205	0,838

The independent-sample t-test scores showed that in terms of gender there is no significant difference ($t=-0,794$; $p>0,05$) between the prospective elementary teachers' attitudes towards computer. According to the scores, female prospective elementary teachers have a little bit more high attitude

($\bar{x}$=162,85) towards computers than males ($\bar{x}$=160,74). Also in terms of sub-scales female prospective elementary teachers have more positive attitude towards CA ($\bar{x}$=62,51) and CEI ($\bar{x}$=49,62) sub-scales. On the other hand males have more positive attitude in CL ($\bar{x}$=44,01) sub-scale than females.

In order to see whether attitudes of prospective elementary teachers' attitudes towards computer differed in terms of class level, a one-way between-groups ANOVA test was conducted. Table 4 provides the descriptive statistics on class level.

Table 4. Descriptive statistics on class level

	Class Level							
	Freshman (n=91)		Sophomore (n=56)		Junior (n=49)		Senior (n=52)	
	$\bar{x}$	ss	$\bar{x}$	ss	$\bar{x}$	ss	$\bar{x}$	ss
CSA-M	164,36	20,06	162,75	17,62	161,26	23,9	156,9	22,4
CL	44,04	7,75	43,83	7,88	43,34	8,96	42,98	8,44
CA	63,39	7,84	60,89	6,22	61,85	7,08	59,11	8,31
CEI	51,63	8,85	49,85	6,67	47,81	10,15	47,03	8,22

According to the mean scores in Table 4, we can see that freshman prospective elementary teachers have more positive attitudes towards CAS-M ($\bar{x}$=164,36), CL ($\bar{x}$=44,04) and CEI ($\bar{x}$=51,63) than the other ones. On the other hand it was investigated that in CA sub-scale freshman prospective elementary teachers have a little bit more high anxiety level than the other ones ($\bar{x}$=63,39). The summary of one-way ANOVA is given in Table 5.

As the result of the ANOVA test show there isn't any significant difference ($p>0,05$) in CAS-M and CL. But there is a significant difference in CA ($p<0.05$) and CEI ($p<0,05$) subscales between the prospective elementary teachers' class levels. In order to find out the source of the differences in CA and CEI sub-scales, Scheffe test was used and scores are shown in Table 6.

As shown in Table 6 source of the difference in all CA and CEI subscales arise from between freshman and senior prospective elementary teachers' attitudes ($p<0,05$). In order to see whether attitudes of prospective elementary teachers towards computer differed in terms of high school types, a one-way between-groups ANOVA test was conducted. Table 7 provides the descriptive statistics on graduated high school type.

Table 5. Summary of one-way ANOVA on class level

	Source	Sum of Squares	df	Mean Square	F	p
CA-M	Between Groups	1909,485	3	636,495	1,461	,226
	Within Groups	106336,562	244	435,806		
	Total	108246,046	247			
CL	Between Groups	44,279	3	14,760	2,221	,882
	Within Groups	16320,327	244	66,887		
	Total	16364,606	247			
CA	Between Groups	646,651	3	215,550	3,867	,010
	Within Groups	13602,089	244	55,746		
	Total	14248,740	247			
CEI	Between Groups	875,784	3	291,928	3,980	,009
	Within Groups	17899,182	244	73,357		
	Total	18774,966	247			

Table 6. Scheffe test scores on class level

De-pen-dent Vari-able	Class Level	Class Level	Mean Difference	Std. Error	P
CA	Freshman	Sophomore	2,5065	1,26810	,274
		Junior	1,5422	1,32298	,715
		Senior	4,2840	1,29794	,014
	Sophomore	Freshman	-2,5065	1,26810	,274
		Junior	-,9643	1,46053	,933
		Senior	1,7775	1,43788	,676
	Junior	Freshman	-1,5422	1,32298	,715
		Sophomore	,9643	1,46053	,933
		Senior	2,7418	1,48651	,336
	Senior	Freshman	-4,2840	1,29794	,014
		Sophomore	-1,7775	1,43788	,676
		Junior	-2,7418	1,48651	,336
CEI	Freshman	Sophomore	1,7777	1,45467	,684
		Junior	3,8185	1,51763	,100
		Senior	4,5963	1,48891	,025
	Sophomore	Freshman	-1,7777	1,45467	,684
		Junior	2,0408	1,67542	,686
		Senior	2,8187	1,64945	,406
	Junior	Freshman	-3,8185	1,51763	,100
		Sophomore	-2,0408	1,67542	,686
		Senior	,7779	1,70523	,976
	Senior	Freshman	-4,5963	1,48891	,025
		Sophomore	-2,8187	1,64945	,406
		Junior	-,7779	1,70523	,976

Table 7. Descriptive statistics on graduated high school type

	Graduated High School Type					
	Anatolian High School (n=26)		General High School (n=187)		Super High School (n= 35)	
	$\bar{x}$	ss	$\bar{x}$	ss	$\bar{x}$	ss
CAS-M	166,6	21,24	161,64	20,36	159,2	23,62
CL	44,53	9,13	43,6	8,02	43,14	8,14
CA	62,73	6,35	61,51	7,44	61,42	9,23
CEI	51,44	8,37	49,42	8,64	48,57	9,4

According to the mean scores in Table 8, we can see that prospective elementary teachers who graduated from Anatolian High School have more positive attitude towards CAS-M ($\bar{x}$=166,6) and CL ($\bar{x}$=44,53), CA ($\bar{x}$=62,73) and CEI ($\bar{x}$=51,44). The summary of one-way ANOVA is given in Table 8.

Table 8. Summary of one-way ANOVA on graduated high school type

	Source	Sum of Squares	df	Mean Square	F	p
CAS-M	Between Groups	840,084	2	420,042	,958	,385
	Within Groups	107405,963	245	438,392		
	Total	108246,046	247			
CL	Between Groups	29,843	2	14,922	,224	,800
	Within Groups	16334,763	245	66,673		
	Total	16364,606	247			
CA	Between Groups	35,389	2	17,695	,305	,737
	Within Groups	14213,351	245	58,014		
	Total	14248,740	247			
CEI	Between Groups	129,850	2	64,925	,853	,427
	Within Groups	18645,116	245	76,103		
	Total	18774,966	247			

As the result of the ANOVA test show there isn't any significant difference (p>0,05) in CAS-M and its' subscales among the prospective elementary teachers' high school types.

In order to see whether attitudes of prospective elementary teachers towards computer differed in terms of monthly family income, a one-way between-groups ANOVA test was conducted. Table 9 provides the descriptive statistics of one-way ANOVA on monthly family income.

Table 9. Descriptive statistics of one-way ANOVA on monthly family income

	Monthly Family Income							
	0 – 500 TL (n=87)		500 – 750 TL (n=61)		750 – 1000 TL (n=64)		1000 TL and over (n=36)	
	$\bar{x}$	ss	$\bar{x}$	ss	$\bar{x}$	ss	$\bar{x}$	ss
CAS-M	160,7	18,9	161,9	23,41	162,27	22,51	163,58	18,85
CL	42,3	7,77	43,6	8,47	44,2	8,81	44,25	7,35
CA	62	6,9	61,56	8,3	61,34	7,82	61,36	7,8
CEI	49,01	8,88	49,32	8,93	49,46	8,81	51,13	7,89

According to the mean scores in Table 9, we can see that prospective elementary teachers' families who have 1000 TL and over monthly income have more positive attitude towards CAS-M ($\bar{x}$=163,58), CL ($\bar{x}$=44,25) and CEI ($\bar{x}$=51,13) than the other family types. Also in CA sub-scale prospective elementary teachers with monthly family income of 0-500 NTL have more anxiety than the other ones ($\bar{x}$=62). The summary of one-way ANOVA is given in Table 10.

Table 10. Summary of one-way ANOVA on monthly family income

	Source	Sum of Squares	df	Mean Square	F	p
CAS-M	Between Groups	233,095	3	77,698	,176	,913
	Within Groups	108012,951	244	442,676		
	Total	108246,046	247			
CL	Between Groups	70,159	3	23,386	,350	,789
	Within Groups	16294,447	244	66,781		
	Total	16364,606	247			
CA	Between Groups	20,081	3	6,694	,115	,951
	Within Groups	14228,658	244	58,314		
	Total	14248,740	247			
CEI	Between Groups	118,868	3	39,623	,518	,670
	Within Groups	18656,099	244	76,459		
	Total	18774,966	247			

Therefore, no significant difference (p>0,05) in CAS-M and its sub-scales between the prospective elementary teachers' monthly family incomes takes place.

Discussion

The findings of this study indicate that prospective elementary teachers' attitude towards computer is at medium level. Also findings reveal that their attitudes towards computer liking and use of computers in education/instruction were at mid-level and computer anxiety was at high-level.

There wasn't a significance difference between prospective elementary teachers' genders. According to total mean scores in Table 3 females showed a little bit more positive attitude towards computer than males. However, in literature Kay,[3)] Broos (2005), Eşgi & Bardakçı (2007) and others have claimed that males have more positive attitudes than females. But others (e.g., Deniz,1994) did not find any significant differences of computer attitudes

between genders in their studies. Also anxiety levels are varying in this study. Findings show that females have high-level anxiety than males. In literature some researchers found similar findings as this study. Broos (2005), Cooper & Stone (1996), Okebukola (1993) found that males were less anxious than females. Computer anxiety is described in the literature as worrying while using computers or looking indifferently at computers and its equipments (McInerney et al., 1994). Okebukola (1993) stated several reasons for this difference and they are females found computers more of a fit for males than females and males have more computer experience in programming and computer games. Low anxiety level can cause more computer liking. This study supports these findings. Findings in this study showed that male prospective elementary teachers' not only have less computer anxiety level but also they have more computer liking attitude.

Also findings revealed that there was not any significant difference ($p>0,05$) between attitudes towards computer and prospective elementary teachers' class level. According to the mean scores in Table 4, we can see that freshman prospective elementary teachers have more positive attitudes towards computer, CL and CEI sub-scales. If we consider this fact it can be said that freshmen prospective elementary teachers have more homework in computer environment and benefit more from these tools in education. So they become more enthusiastic towards computers. On the other hand this situation made a significant difference in computer anxiety subscale. According to the mean scores in Table 4 freshman prospective elementary teachers have the highest and senior students have the lowest anxiety level. Computer anxiety may result from several factors such as low self-efficacy, low expectations of outcome, or lack of encouragement, knowledge and experiences (Arkın, 2003). Having so many lessons that are related with computers, senior prospective elementary teachers are more experienced and well-informed on computers compared with freshman students. Naturally this situation de-

creases the anxiety level towards computers of senior prospective elementary teachers.

The results of this study also showed that prospective elementary teachers who graduated from Anatolian High School have more positive attitude towards computer than students graduated from other schools. We can say that the reason why students graduating from General and Super High Schools may have less positive attitudes towards computer may be due to computers in class factors such as the types of computer application used, the purpose of using computers in class, and the role of satisfaction in high schools (Sam et al., 2005).

Findings also showed that prospective elementary teachers whose families monthly income is 1000 TL and over have more positive attitude towards computer than the students with less family income. Finlayson (1971) claimed that family income and social status is related to how much parents' value education. Also Healy & Schilmoeller (1985) stated in their study that the higher the family income, the higher positive attitude towards computers and towards computer use is shown by children of the family. In addition, Hsieh & Chen (2004) stated that parents' monthly incomes have an effect on having more technologies in the household and children are more likely to take on using them. This study supports these findings. Also according to mean scores in Table 9, prospective elementary teachers whose families have monthly income less than 500 TL have the highest anxiety level than the others. This can be due to limited possibilities. As a result we can say that children's positive attitudes towards computer depend on family income and parents' educational background.

NOTES

1. Partly related paper: Birisci, S., Metin, M. & Karakas, M. (2009). Prospective elementary teachers' attitude toward computer and internet use: a sample from Turkey. *World Applied Sciences J., 6*,

1433-1440.

2. Özden, Y. M., Çağıltay, K. & Çağıltay, E. N. (1997). Teknoloji ve Eğitim: Ülke Deneyimleri ve Türkiye İçin Dersler http://www.egitim.aku.edu.tr/ozden1.htm

3. Kay, R. (2007). Gender Differences in Computer Attitudes, Ability, and Use in the Elementary Classroom http://www.edu.gov.on.ca/eng/literacynumeracy/inspire/research/Kay.pdf

REFERENCES

Akbaba, S. & Kurubacak, G. (1998). Teachers' attitude towards technology. *CSS J. Computers Social Studies, 7,* 833-836.

Akkoyunlu, B. (1998). Bilgisayar ve Eğitimde Kullanılması, Anadolu Üniversitesi Açık Öğretim Fakültesi Yayınları, Eskişehir.

Akpınar, Y. (2005). Bilgisayar Destekli Eğitimde Uygulamalar, Anı Yayıncılık, 2. Baskı, Ankara.

Arıcı, N. & Dalkılıç, E. (2006). Animasyonların Bilgisayar Destekli Öğretime Katkısı: Bir Uygulama Örneği, Kastamonu Eğitim Dergisi, Cilt:14, Sayı:2, 421-430.

Arkın, E.İ. (2003). Teachers' attitudes towards computer technology use in vocabulary instruction, Unpublished Master Thesis, Bilkent University, Ankara.

Baki, A. (2002). Öğrenen Ve Öğretenler İçin Bilgisayar Destekli Matematik, Ceren Yayın Dağıtım, İstanbul.

Bindak, R. & Çelik, H, C. (2005). İlköğretim Okullarında Görev Yapan Öğretmenlerin Bilgisayara Yönelik Tutumlarının Çeşitli Değişkenlere Göre İncelenmesi, İnönü Üniversitesi Eğitim Fakültesi Dergisi, C.6, S.10, 27–38.

Broos, A. (2005). Gender and information and communication technologies (ICT) anxiety: male self assurance and female hesitation. *Cyber Psy-*

chology & Behavior, *8*, 21-31.

Clark, K.D. (2000). Urban middle school teachers' use of instructional technology. *J. Research Computing in Education, 33,* 178-195.

Cooper, J. & Stone, J. (1996). Gender, computer-assisted learning and anxiety: with a little help from a friend. *J. Educational Computer Research, 15*, 67-91.

Deniz, L. (1994). Bilgisayar Tutum Ölçeği (BTÖ-M)'nin Geçerlik, Güvenirlik, Norm Çalışması ve Örnek Bir Uygulama. Yayınlanmamış Doktora Tezi. Marmara Üniversitesi Sosyal Bilimler Enstitüsü. İstanbul.

Deniz, L. (2001). Psikolojik Danışma ve Rehberlik Öğrencilerinin Bilgisayar Yaşantılarına Yönelik Bir İzleme Çalışması, Eğitim Bilimleri Dergisi, 13.

Erkan, S. (2004). Öğretmenlerin Bilgisayara Yönelik Tutumları Üzerine Bir İnceleme, Manas Üniversitesi Sosyal Bilimler Dergisi, 12.

Eşgi, N. & Bardakçı, S. (2007). Sınıf Öğretmeni Adaylarının Bilgisayar İlişkin Tutumlarının Belirlenmesi, Gaziosmanpaşa Üniversitesi Örneği, 16. Ulusal Eğitim Bilimleri Kongresi, Tokat.

Finlayson, D. (1971). Parental aspirations and the educational achievements of children. *Education Research, 14,* 61-64.

Gönen, S. & Kocakaya, S. (2005). Lise-1 Öğrencilerinin Farklı İki Öğretim Yöntemine Göre Fizik Başarı ve Bilgisayar Tutumlarının Karşılaştırılması, Pamukkale Üniversitesi Eğitim Fakültesi Dergisi, Sayı: 17.

Healy, P. & Schilmoeller, G.L. (1985). Parent attitude towards computer use by young children. *Research Rural Education, 2,* 135-140.

Hsieh, H.-L. & Chen, P.-C. (2004). An explorative study of the digital divide in education: another look at Taiwan. *World Trans. Eng, & Technol. Education, 3,* 223-226.

İşman, A., Caglar, M., Dabaj, F., Altinay, Z. & Altinay, F. (2004). Attitudes

of students towards computers. *Turkish Online J. Educational Technology*, *3*(1), 11-21.

Karasar, N. (2005). Bilimsel Araştırma Yöntemleri, Nobel Yayın Dağıtım, 15. Baskı, Ankara.

Khine, M.S. (2001). Attitudes towards computers among teacher education students in Brunei Darussalam. *Intern. J. Instructional Media, 28,* 147-153.

McInerney, V., McInerney, D.M. & Sinclair, K.E. (1994). Student teachers, computer anxiety and computer experience. *J. Educational Computing Research, 11,* 27-50.

Okebulola, P.A. (1993). The gender factor in computer anxiety and interest among some Australian high school students. *Educational Research, 35,* 181-189.

Sam, H.K., Othman, A.E. & Nordin, Z.S. (2005). Computer self-efficacy, computer anxiety, and attitudes towards the internet: a study among undergraduates in Unimas. *Educational Technology & Society, 8*, 205-219.

Tandoğan, M. (1998). Öğretmen ve Teknoloji, Anadolu Üniversitesi Açık Öğretim Fakültesi Yayınları, Eskişehir.

Teo, T. (2008). Pre-service teachers' attitude towards computer use: a Singapore survey. *Australasian J. Educational Technology, 24,* 413-424.

Usun, S. (2004). Undergraduate students' attitudes on the use of computers in education. *Turkish Online J. Educational Technology, 3*(2), 62-70.

Woodrow, J.J. (1991). A comparison of four computer attitude scales. *J. Educational Computing Research, 7,* 165-187.

Zhao, Y., Tan, H.-S. & Mishra, P. (2001). Teaching and learning: whose computer is it? *J. Adolescent & Adult Literacy, 44,* 349-354.

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