Prospective Elementary Teachers' Attitudes Toward Computer and Internet Use: A Sample from Turkey

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Abstract: The aim of this study is to investigate prospective elementary teachers' attitudes toward computer and Internet use. This research was carried out in fall semester of 2007 at a small university in northeastern Turkey with 191 prospective elementary teachers. Data collection tools were Computer Attitude Scale-Marmara and Internet Use Attitude Scale. Results of the study show that attitudes of prospective teachers' towards computer and Internet use are at high level. No significant differences were found between prospective elementary teachers' attitudes toward computer and Internet use related with class, graduation school type and monthly family income variables. There was no significant relation between gender variable and computer usage however a significant relationship was found between gender and Internet.

Key words: Knowledge Technology · Computer · Internet · Attitude · Prospective Teachers

INTRODUCTION

Within this century, technology is becoming more important factor in education and is considered to have a great impact on education. There are rapid developments in information technologies (IT), which are defined as tools used for creating, collecting, storing, processing, regaining, spreading and preserving of data in literature [1]. Developments in information technologies play a significant role within changing structure of knowledge and spreading it to different areas and this affects significantly the field of education too.

Information technologies on one hand expand the field of education and on the other hand offer new opportunities for education [12]. These opportunities can be enumerated such as obtaining, increasing, using, spreading and storing of knowledge [13, 1]. In order to realize these opportunities in their appropriate domains some technological tools have great importance and one of these tools is the computer [16, 21, 24]. Nowadays via the capabilities of computer technology a range of educational and communication tools could serve students easily [3]. With a computer, teaching and learning activities can be enhanced, learning materials can be projected on a screen, permanent retention of information can be achieved and students' self-learning can be increased [7, 5].

Other technological tools as well as computers can be used in education too. Internet technologies also can provide education field with many opportunities. In contemporary societies, Internet becomes part of the life with its various functions. Generated knowledge can be fast and easily transmitted and shared through the Internet [34]. Internet provides students with facilities in which they can communicate, research, access and share information through web pages, electronic journals and databases [18]. This technology is unique in the sense that it provides students, instructor and administrators who are the most important agents of the educational process and who feel the need to have access to increasingly accumulating information, with opportunity to keep track of the world more closely and shape it [39].

In education taking advantages of these technological tools depends largely on teachers who can use these tools effectively. However, Akkoyunlu [2] reveals that only 26% of Turkish teachers are capable of

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using the computer and 35% of these teachers' use the Internet properly. Results of this research reveal that teachers in Turkey are incapable of using the computer and the Internet properly. Teachers who serve as the main transmitters of knowledge in Turkey should take advantages of these technological tools and use them sufficiently in their instruction [28]. Turkey is in need of well educated teachers and prospective teachers who can use information technologies effectively [8, 35]. The well-known advantages of information technologies could convince teachers to use them in their instruction. However, the main issue in education remains the development of positive attitudes toward information technologies among teachers [25]. Attitudes are kind of mental processes that are thought to influence future behaviors, experiences, beliefs and have implications on the use of computers and the Internet [9, 36, 20].

Attitudes towards computers and the Internet use can be defined as feelings, thoughts and experiences that are related with computer and Internet activities [21, 22]. Some studies in the literature reveal that using information technologies consistently develops more positive attitudes towards computers [30, 22]. So the most important factor that affects teachers' attitudes towards using information technologies in the classroom could be gaining of more positive attitudes. If teachers' attitudes towards information technologies are negative, they would not want to use these kinds of technologies in instruction.

There are so many studies determining teachers' and prospective teachers' attitudes towards computers and the Internet. Yaman [40] examined the use of internet among 159 physical education students and result showed that students had negative feelings towards the usefulness of the Internet. Asan and Koca [6] were examined students' attitudes towards internet. Their study concluded that majority of the students have positive attitudes and they concentrated on positive and consciousness about Internet. Also Khine [31] studied 184 pre-service teachers and found a significant relationship between computer attitude and its use in the institution. Teo [38] concluded in his study that there were significant correlations between the overall computer attitudes and years of computer use and level of computer confidence.

Determining prospective teachers' attitudes towards computer and Internet use is important because they will be teachers in. Therefore, describing prospective

teachers' attitudes towards computer and Internet use during their undergraduate education might help educators see their students' technological skills. Moreover taking the necessary steps to improve theaters technology skills will enable them to use information technologies more efficiently in their professional life [34, 8]. This study aims to find out attitudes of prospective elementary teachers towards computer and Internet use 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:

- What is the overall profile of prospective elementary teachers' attitudes towards computer and Internet use?
- Do prospective elementary teachers' attitudes towards computer and Internet use differ in terms of gender variable?
- Do prospective elementary teachers' attitudes towards computer and Internet use differ in terms of grade level variable?
- Do prospective elementary teachers' attitudes towards computer and Internet use differ in terms of graduated high school type variable?
- Do prospective elementary teachers' attitudes towards computer and Internet use differ in terms of monthly family income variable?

MATERIALS AND METHODS

In this study survey research design was used in order to investigate prospective elementary teachers' attitudes towards computer and Internet use. Survey research designs "are procedures in quantitative research in which investigators administer a survey to a sample or to the entire population of people in order to describe the attitudes, opinions, behaviours or characterictics of the population" [11]. This research design also helps researchers to obtain general results about the sample [29].

Sample: Sample of this study consist of 191 prospective elementary teachers who are studying at School of Education in a small university in northeastern Turkey. Demographic characteristics of prospective elementary teachers are shown in Table 1.

Table 1: Demographic characteristics of prospective elementary teachers

		Frequency (f)	Percentage(%)
Gender	Male	96	50.3
	Female	95	49.7
Grade Level	Freshman	34	17.8
	Sophomore	56	29.3
	Junior	49	25.7
	Senior	52	27.2
Graduated High	Anatolian High School	25	13.1
School Type	General High School	142	74.3
	Super High School	24	12.6
Monthly	0 – 500 TL*	74	38.7
Family Income	500 – 750 TL	38	19.9
	750 – 1000 TL	50	26.2
	1000 + TL	29	15.2

Note: Note:* TL refers to Turkish Lira

According to the scores in Table-1, 96 (50.3%) male and 95 (49.7%) female prospective elementary teachers participated in the study. Grade level variable consist of 34 (17.8%) first grade (freshman), 56 (22.6%) sophomore, 49 (19.8%) junior and 52 (27.2%) senior students. Also, 25 (13.1%) students graduated from Anatolian High School (which has an instruction in English and students are chosen through national entrance exam), 142 (74.3%) graduated from General High School and 24 (12.6%) 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, 74 (38.7%) of prospective elementary teachers' families have 0-500 TL ($0-$300), 38 (19.9%) have 500-750 TL ($300-$550), 50 (26.2%) have 750-1000 TL ($550-$700) and 29 (15.2%) have over 1000 TL (over $700) income.

Data Collection: Data was collected through administering a survey instrument that consists of three parts. In the first part there are some demographic questions as independent variables such as gender, grade 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 [13]. In the last part there is an Internet Use Attitude Scale (IUAS) which was developed by Tavsancil and Keser [37].

There are 42 attributions in CAS-M and it consists of three sub-scales. These are Computer Liking (CL: 12 attributions), Computer Anxiety (CA: 15 attributions) and Use of Computer in Education/Instruction

Table 2: Ranges for the Statements in the Survey

Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree
1.00-1.80	1.81-2.60	2.61-3.40	3.41-4.20	4.21-5.00

(CEI: 13 attributions). 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's just like five point Likert type and each attributions were labeled as 5= Completely agree, 4= Mostly agree, 3= Agree, 2= Mostly disagree and 1=Completely disagree.

There are 31 attributions in IUAS and it consists of six sub-scales. And these sub-scales are; Using the Internet in instruction (6 attributions), Using the Internet in research (5 attributions), Using the Internet in social interactions (5 attributions), Using the Internet in communication (6 attributions), Using the Internet in knowledge and information sharing (4 attributions) and whether students enjoy using the Internet in instruction or not (5 attributions). The total score of the 31 attributions also gives the general attitudes towards the Internet use. Additionally, the reliability coefficient (Cronbach Alpha) of the questionnaire is 0,89. It's just like five point Likert type and each attributions were labeled as 5=Completely agree, 4= Agree, 3= Neutral, 2= Disagree and 1=Completely disagree.

Positive attributions were graded as 5-4-3-2-1 and negative attributions were graded as 1-2-3-4-5 in both questionnaires. Ranges of agreement with the attributions on the survey was determined by using the (n-1)/n formula and after calculation the interval width of the range between 1 through 5 was calculated as 0.8. The ranges for the statements in the survey are shown in Table 2.

According to Table 2, the interval width of 1-1.8 showed very low level, the 1.81-2.60 interval showed low level, the 2.61-3.40 interval showed medium level, the 3.41-4.20 interval showed high level and the 4.21- 5.00 interval showed very high level of agreement with the statements on the survey. Additionally, the reliability coefficients (Cronbach Alpha) of the CAS-M is 0,92 and IUAS is 0,89. After administering two of these questionnaires to the sample, the reliability coefficient (Cronbach Alpha) was found as 0,89.

Data Analysis: Prospective elementary teachers' responses to the questionnaire were statistically analyzed according to gender, class level, high school type and

Table 3: Descriptive statistics for CAS-M and IUAS

	N	$\bar{x}$	ss
CAS-M	191	3.81	0.5
IUAS	191	3.53	0.54

Tablo 4: Independent samples t-test scores in terms of genders

	Gender					
	Male (n=96)		Female (n=95)			
	$\bar{x}$	ss	$\bar{x}$	ss	t	p
CAS-M	3.81	0.49	3.8	21.43	0.181	0.856
IUAS	3.63	0.54	3.44	16.41	2.375	0.019

monthly family income variables via SPSS 11.5 software. The mean (x), standard division (ss) and percentage (%) scores were computed for each attribution. Also 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.

Findings: In this study, findings are presented by looking at prospective elemantary teachers' attitudes towards computer and Internet use within each variable, which also represent each research question. And these varables are gender, grade level, graduation high school type and monthly family income.

Regarding first research question, which investigated the overall profile of prospective elementary teachers' attitudes towards computer and Internet use, prospective teachers' mean scores with the standard deviations on each sub-scale are shown in Table 3.

According to Table 3 mean scores for CSA-M sub-scale is 3,81 and for IUAS sub-scale is 3,53. By comparing these scores with the scores in Table-2, we can see that prospective elementary teachers' general attitudes towards computer and Internet use are at higher level.

Regarding second research question, which investigated whether attitudes towards computer and Internet use 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 4.

The independent-sample t-test scores in Table 4 show that in terms of gender there is no significant difference (t=0,181; p>0,05) between the prospective elementary teachers' attitudes towards computers. But there is a significant difference (t=2,375; p=0,019)

Table 5: Descriptive statistics and ANOVA test scores on grade level

	Grade Level							
	Freshman (n=34)		Sophomore (n=56)		Junior (n=49)		Senior (n=52)	
	$\bar{x}$	ss	$\bar{x}$	ss	$\bar{x}$	ss	$\bar{x}$	ss
CAS-M	3.76	0.5	3.84	0.4	3.87	0.58	3.74	0.52
IUAS	3.48	0.63	3.62	0.5	3.52	0.58	3.48	0.5

	Source	Sum of Squares	df	Mean Square	F	p
CAS-M	Between Groups	0.505	3	0.168	0.665	0.575
	Within Groups	47.320	187	0.253		
	Total	47.825	190			
IUAS	Between Groups	0.689	3	0.230	0.769	0.513
	Within Groups	55.839	187	0.299		
	Total	56.528	190			

between prospective elementary teachers' attitudes towards Internet use. According to mean scores of IUAS male prospective teachers show more positive attitude towards Internet use compared with females $(x_{male}=3,63 > x_{female}=3,44)$.

Regarding third research question, which researched whether prospective elementary teachers' attitudes towards computers and Internet use differed with grade level, a one-way between-groups ANOVA test was conducted. Table 5 provides the descriptive statistics and ANOVA test scores on grade level.

According to ANOVA scores in Table 5, there aren't any significance difference between prospective elementary teachers' attitudes towards computer $(F_{CAS-M}=0,665;\ p_{CAS-M}>0,05)$ and Internet $(F_{IUAS}=0,769;\ p_{IUAS}>0,05)$ use in terms of grade level. However, descriptive statistics on grade level revealed that junior prospective elementary teachers had a little bit more positive attitudes towards computers $(x_{junior}=3,87)$ and sophomore prospective elementary teachers had more positive attitudes towards Internet use in IUAS $(x_{sophomore}=3,62)$ than the other grade levels.

Regarding fourth research question, which investigated whether prospective elementary teachers' attitudes towards computer and Internet use differed in terms of the high school type they graduated from, a one-way between-groups ANOVA test was conducted. Table 6 provides the descriptive statistics and ANOVA test scores on high school type.

Tablo 6: Descriptive statistics and ANOVA test scores on graduated high school types

	Graduated High School Type					
	Anatolian High School (n=25)		General High School (n=142)		Super High School (n= 24)	
	$\bar{x}$	ss	$\bar{x}$	ss	$\bar{x}$	ss
CAS-M	3.92	0.45	3.78	0.48	3.87	0.63
IUAS	3.62	0.56	3.51	0.51	3.6	0.7

	Source	Sum of Squares	df	Mean Square	F	p
CAS-M	Between Groups	0.550	2	0.275	1.094	0.337
	Within Groups	47.275	188	0.251		
	Total	47.825	190			
IUAS	Between Groups	0.396	2	0.198	0.663	0.516
	Within Groups	56.132	188	0.299		
	Total	56.528	190			

Tablo 7: Descriptive statistics and ANOVA tast scores on monthly family income

	Monthly Family Income							
	0 – 500 (n=74)		500 – 750 (n=38)		750 – 1000 (n=50)		1000 + (n=29)	
	$\bar{x}$	ss	$\bar{x}$	ss	$\bar{x}$	ss	$\bar{x}$	ss
CAS-M	3.83	0.46	3.72	0.6	3.83	0.45	3.85	0.53
IUAS	3.44	0.5	3.51	0.65	3.6	0.55	3.73	0.48

	Source	Sum of Squares	df	Mean Square	F	p
CAS-M	Between Groups	0.354	3	0.118	0.465	0.707
	Within Groups	47.471	187	0.254		
	Total	47.825	190			
IUAS	Between Groups	1.915	3	0.638	2.186	0.091
	Within Groups	54.613	187	0.292		
	Total	56.528	190			

According to ANOVA scores in Table-6, there aren't any significance difference between prospective elementary teachers' attitudes towards computer (F_{CAS-M}=1,094; p_{CAS-M}>0,05) and Internet use (F_{IUAS}=0,663; p_{IUAS}>0,05) in terms of graduated school type.

Regarding fifth and last research question that studied whether prospective elementary teachers' attitudes towards computer and Internet use differed in terms of monthly family income, a one-way between-groups ANOVA test was conducted. Table 7 provides the descriptive statistics and ANOVA test scores on monthly family income.

According to ANOVA scores in Table 7, there aren't any significance differences between prospective elementary teachers' attitudes towards computers (F_{CAS-M}=0,465; p_{CAS-M}>0,05) and internet use (F_{IUAS}=2,186; p_{IUAS}>0,05) in terms of monthly family income.

DISCUSSION AND CONCLUSION

Computer and Internet using attitudes are mental processes, which stem from the beliefs, experiences and value judgments over the computer object, in which individuals views, feeling and attitudes on Internet and computer usage are evaluated [21, 22]. This description reveals that computer and Internet using attitudes could be studied by using different dimensions and variables. In this study, prospective elementary teachers' computer and Internet using attitudes were examined according to gender, class level, high school type they graduated and family income variables. In this study first research question investigated prospective elementary teachers' computer and Internet using attitudes in general and means were respectively 3.81 for computer using attitudes and 3.53 for Internet using attitudes in the survey instrument. These mean scores reveal that prospective teachers' computer and Internet using attitudes were high. Similarly, Gercek *et al.* [23] found that prospective teachers' computer using attitudes were in medium level, but in this study these attitudes were found to be high. The reason for these high attitudes towards computer using might be due to high usage of computers and its various applications in instruction and getting homework and various tasks from the instructors that require computer usage. Oguz [33] used the same survey instrument applied in this study for Internet using attitudes and he found similar results.

Second research question investigated whether prospective elementary teachers' computer and Internet using attitudes differed with gender. Analysis of survey data reveal that computer attitudes did not change with gender. This finding is supported in the literature by studies of Guler and Saglam [26], Gercek *et al.* [23], Deniz [13, 14] and Busch [9] who also found that computer attitudes did not change with gender. However, this should not force us to conclude that gender does not play any role in computer attitudes. There are studies in literature suggesting that there is a relationship between gender and computer attitudes. Erçelik [19] also used the survey instrument developed by Deniz [14] in his study of prospective elementary teachers' attitudes towards computers and found that there are gender differences

among participants. Esgi and Bardakci [22], Kose *et al.* [32] and Deniz [17] also found that there are significant differences between gender and computer using attitudes. The difference between the findings of this study and the above mentioned studies call for further research in gender and computer using attitudes. T-test analysis revealed that there are significant difference between Internet using attitudes and gender variables. Mean scores indicate male prospective elementary teachers have more positive attitude toward using the Internet when compared to female students. This might be due to less possibility of female students to have or reach a computer compared to males. Especially, male student have a greater chance of using Internet café, because in Turkey males dominate the Internet café scene to play online games or to chat. In their study Cavus and Gokdas [10] compared the gender variable with Internet using aims and found that there is a significant difference between male and female students and mean scores indicate that male students have more positive attitude toward Internet use.

Third research question investigated whether prospective elementary teachers' computer and Internet using attitudes differed with class level variable. Data analyses reveal that computer and Internet using attitudes did not change with class level variable. Studies by Deniz [15] and Gercek *et al.* [23] reveal that computer using attitudes did not change with class level. and Moreover Alabay [4] found that the Internet using attitudes did not differ with class level. However, mean scores in this study indicated that computer using attitudes for junior students and the Internet using attitudes for sophomore students were relatively more positive compared to other class levels. This might be due to junior students' consistent use of computers when preparing homework and teaching materials. In Turkey junior students in schools of Education take a lot practice courses, such as observing an educational setting for one semester and preparing final projects for most of the classes, but in freshmen and sophomore level grading is done mostly by taking midterm and final exams. Sophomore students generally are given home works that require a lot of Internet searching and this might affect in positive way sophomore students' Internet using attitudes.

Forth research question investigated whether prospective elementary teachers' computer and Internet using attitudes differed with high school type they graduated. One way variance analysis showed that computer and Internet using attitudes had not changed

with high school type variable. This result supports Alabay's [4] finding that prospective teachers' graduation high school type did not affect their Internet using attitudes and findings of Gercek *et al.* [23] showing that there is no significant difference between graduated high school type and Internet using attitudes. Prospective elementary teachers' computer and Internet using attitudes did not differ with the high school type. However, if we look at the means scores of each high school type, students who graduated from Anatolian High School showed slightly more positive attitude toward using computers and the Internet compared to the other high school types. This might be because of the more often use of computers and Internet resources by the students from Anatolian High Schools.

Fifth and last research question investigated whether prospective elementary teachers' computer and Internet using attitudes differed with family income. Data analyses reveal that there was no statistically significant (p>0,05) difference between prospective elementary teachers' computer and Internet using attitudes and their family income. However, if we look at the means scores of family income variable, students who had family income of 1000 TL and higher showed slightly more positive attitude toward using computers and the Internet compared to others. This might be explained by the findings of Hsieh and Chen [27] who found that parents' educational level affected their income and that in turn affected positively children's effective use of information technology.

This study reveals that prospective teachers who study in the school of education in Turkey should get more basic computer courses; instructors should increase their use of information technologies in their instruction and give more homework and projects that require more Internet search; and school of education administrators should increase the computer and Internet using facilities, such as IT labs, throughout the campus to allow students from all backgrounds to take advantage of these facilities.

REFERENCES

1. Akkoyunlu, B., 1998. Bilgisayar ve Egitimde Kullanilmasi, Eskişşehir: Anadolu Üniversitesi Açık Öğgretim Fakültesi Yayinlari

2. Akkoyunlu, B., 2001. Ögretmenlerin Internet Kullanimi Uzerine Bir Calisma. Journal of Qafqaz University, 8: 57-66.

3. Akpinar, Y., 2005. Bilgisayar Destekli Egitimde Uygulamalar (2nd Ed.), Ankara: Ani Yayincilik

4. Alabay, E., 2007. Okul Oncesi Ogretmen Adaylarinin Internet Kullanimina Yonelik Tutumlarinin Incelenmesi, 1th Computer and Instructional Technologies Symposium, Çanakkale/ Turkey

5. Arici, N. and E. Dalkilic, 2006. Animasyonlarin Bilgisayar Destekli Ogretime Katkisi: Bir Uygulama Ornegi, Kastamonu Egitim Dergisi, 14(I:2): 421-430.

6. Asan, A. and N. Koca, 2006. An Analysis of Students' Attitudes Towards Internet, Current Developments in Technology-Assisted Education, V. International Conference on Multimedia and ICT in Education, 22-24 April, Lisbon Portugal.

7. Baki, A., 2002. Ogrenen ve Ogretenler Için Bilgisayar Destekli Matematik, Istanbul: Ceren Yayin Dağgitim

8. Bindak, R. and H.C. Celik, 2005. Ilköğretim Okullarinda Gorev Yapan Ogretmenlerin Bilgisayara Yonelik Tutumlarinin Cesitli Degiskenlere Gore Incelenmesi, Inonu Universitesi Eğgitim Fakultesi Dergisi, 6(I.10): 27-38.

9. Busch, T., 1995. Gender Differences in Self-Efficacy and Attidutes Towards Computers, Journal of Educational Computing Research, 12: 147-158.

10. Cavus, H. and I. Gokdas, 2006. Egitim Fakultesi'nde Ogrenim Goren Ogrencilerin Internetten Yararlanma Nedenleri ve Internet Kullanimi Sonucu Kazanımlari. Yuzuncu Yil Universitesi, Egitim Fakultesi Dergisi, V:3, I:2,

11. Creswell, J.W., 2002. Educational Research: Planning, Conducting and Evaluating Quantitative And Qualitative Research. Upper Saddle River, Merrill Prentice Hall: New Jersey.

12. Demirli, C. and A. Dikici, 2003. Ogretimde Web Tabanli Uygulamalarin Ogrenci Basarisina Etkisi, Third International Education Technologies Symposium, Turkish Republic of Northern Cyprus.

13. Deniz, L., 1994. Bilgisayar Tutum Olcegi (BTO-M)'nin Gecerlik, Guvenirlik, Norm Calismasi ve Ornek Bir Uygulama. Yayinlanmamis Doktora Tezi, Marmara Universitesi Sosyal Bilimler Enstitusu, Istanbul.

14. Deniz, L., 1995. Öğgretmen Adaylarının Bilgisayar Tutumları, Marmara Üniversitesi Atatürk Eğgitim Fakültesi Eğgitim Bilimleri Dergisi, 7: 51-60.

15. Deniz, L., 2000. Ogretmen Adaylarinin Bilgisayar Yasantilari ve Bilgisayar Tutumlari. Marmara Universitesi Ataturk Egitim Fakultesi Egitim Bilimleri Dergisi, 12: 135-166.

16. Deniz, L., 2001. Psikolojik Danisma ve Rehberlik Ogrencilerinin Bilgisayar Yasantilarina Yonelik Bir Izleme Calismasi, Egitim Bilimleri Dergisi, 13.

17. Deniz, L., 2005. Ilkogretim Okullarinda Gorev Yapan Sinif ve Alan Ogretmelerinin Bilgisayara Yonelik Tutumlari, The Turkish Online Journal of Educational Technology, V:4, I:4,

18. Ekiz, H., B. Yavuz and U. Huseyin, 2003. Mantik Devreleri Dersine Yonelik Internet Destekli Uzaktan Egitim Uygulamasi, Third International Education Technologies Symposium, Turkish Republic of Northern Cyprus, V:2: 665-672

19. Ercelik, S., 2004. Sinif Ogretmenlerinin Bilgisayar Kullanimi Ile Ilgili Tutumlarinin Incelenmesi. Yayınlanmamis Yüksek Lisans Tezi. Marmara Universitesi Sosyal Bilimleri Enstitüsü, Istanbul.

20. Eren, E., 2004. Orgutsel Davranis ve Yonetim Psikolojisi, Istanbul: Beta Basim Yayim Dagitim

21. Erkan, S., 2004. Ogretmenlerin Bilgisayara Yonelik Tutumlari Uzerine Bir Inceleme, Manas Universitesi Sosyal Bilimler Dergisi, 12.

22. Esgi, N. and S. Bardakci, 2007. Ogretmen Adaylarinin Bilgisayar Iliskin Tutumlarinin Belirlenmesi: Gaziosmanpasa Universitesi Ornegi, 16. Ulusal Egitim Bilimleri Kongresi, Tokat.

23. Gercek, C., P. Koseoglu, M. Yilmaz and H. Soran, 2006. Ogretmen Adaylarinin Bilgisayar Kullanimina Yönelik Tutumlarinin Cesitli Degiskenler Acisından Incelenmesi, Hacettepe Universitesi Egitim Fakültesi Dergisi, I: 30.

24. Gonen, S. and S. Kocakaya, 2005. Lise–1 Ogrencilerinin Farkli Iki Ogretim Yontemine Gore Fizik Basari ve Bilgisayar Tutumlarinin Karsilastirilmasi, Pamukkale Universitesi Egitim Fakultesi Dergisi, I: 17.

25. Grabe, M. and C. Grabe, 1998. Integrating Technology for Meaningfull Learning, Houghton Mifflin Company in United States of America.

26. Guler, H. and N. Saglam, 2002. Biyoloji Ogretiminde Bilgisayar Destekli Ogretimin ve Calisma Yapraklarinin Ogrencilerin Basarisi ve Bilgisayara Yonelik Tutumlarina Etkileri, H. U. Egitim Fakultesi Dergisi, 23: 117-123.

27. Hsieh, H.L. and P.C. Chen, 2004. An Explorative Study Of The Digital Divide In Education: Another Look At Taiwan, World Transactions on Engineering and Technology Education, V: 3, I: 2.

28. Isman, A., 2005. Ogretim Teknolojileri ve Materyal Gelistirme (1th Ed.), Ankara: Pegema Yayin Dagitım.

29. Karasar, N., 2005. Bilimsel Arastirma Yontemleri (15th Ed.), Ankara: Nobel Yayin Dagitim.

30. Keser, H., 1999. Ogrencilerin Bilgisayara Yonelik Tutumlari: A.Ü.Egitim Bilimleri Fakultesi Ogrencileri Uzerinde Bir Arastirma, Anadolu Universitesi Yayinlari, No:1076, Egitim Fakultesi Yayinlari, Eskisehir.

31. Khine, M.S., 2001. Attitudes Toward Computers Among Teacher Education Students in Brunei Darussalam. International Journal of Instructional Media, 28(2): 147-153.

32. Kose, S., A. Savran and K. Gezer, 2007. Meslek Yuksekokulu Ogrencilerinin Bilgisayar ve Internet Kullanimina Yonelik Tutumlari, Pamukkale Universitesi Egitim Fakultesi Dergisi, I: 21.

33. Oguz, A., 2007. Ogretmen Adaylarinin Internet Kullanimina Yonelik Tutumlarini Etkileyen Etkenler, Gaziosmanpasa Üniversitesi Örneğgi, 16. Ulusal Eğgitim Bilimleri Kongresi, Tokat.

34. Oral, B., 2004. Ogretmen Adaylarinin Internet Kullanma Durumlari, Elektronik Sosyal Bilimler Dergisi, 3(I.10): 01-10.

35. Ozden, M.Y., K. Cagiltay and E.Cagiltay, Teknoloji ve Egitim: Ulke Deneyimleri ve Turkiye Icin Dersler, Retriewed in 30.12.2007 from http://www.egitim.aku.edu.tr/ozden1.htm.

36. Simsek, M.S., T. Akgemci and A. Celik, 2003. Davranis Bilimlerine Giris ve Orgutlerde Davranis (3th Ed.),. Konya: Adim Press.

37. Tavsancil, E. and H. Keser, 2002. Internet Kullanimina Yönelik Likert Tipi Bir Tutum Ölceginin Gelistirilmesi, Egitim Bilimleri ve Uygulama, V.1, I.1.

38. Teo, T., 2008. Pre-service Teachers' Attitudes Towards Computer Use: A Singapure Survey, Australian Journal of Educational Technology, 24: (4).

39. Toprakci, E., 2007. The Profiles of The Use of The Internet for Study Purposes Among University Students, Turkish Online Journal of Educational Technology, V.6, I.3.

40. Yaman, M., 2007. The Attitudes of The Physical Education Students Towards Internet, Turkish Online Journal of Educational Technology, V.6, I.3.