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### **ATTITUDES OF STUDENTS TOWARDS COMPUTERS**

#### **ABSTRACT**

The aim of this study was to examine attitudes of secondary school students towards computers and to compare their tendencies based on the Loyd & Gressard attitude scale. In addition, the study was designed to examine possible differences in computer attitudes of students by gender, age and school location. The participants were secondary school students taking Computer Literacy course during 2007-2008 school year in Bursa. Participants were selected from two secondary schools that researchers went for "Teaching Practice Course". 266 students were taking Computer Literacy course in these schools. Frequency analysis, independent sample t-test and one-way ANOVA were used to compare students' mean scores obtained from CAS. Results suggested that most of the students attending to the study have positive attitude towards computers in general. Data analysis revealed that there was no significant difference between students' mean scores according to their gender, age and school location.

**Keywords:** Computer Education, Students' Attitude, Attitude Towards Computer, Computer Attitude Scale, Gender, School Location, Age

### **ÖĞRENCİLERİN BİLGİSAYARA KARŞI TUTUMLARI**

#### **ÖZET**

Bu çalışmanın amacı, ortaöğretim öğrencilerinin bilgisayar karşı tutumlarını araştırmak ve Loyd & Gressard Tutum Ölçeğine göre eğilimlerini cinsiyet, yaş ve okul değişkenlerine göre karşılaştırmaktır. Bursa ilinde 2007-2008 eğitim öğretim yılında bilgisayar dersi alan, iki okuldan toplam 266 öğrenci araştırmanın katılımcılarını oluşturmaktadır. Katılımcılar araştırmacıların "Öğretmenlik Uygulaması Dersi" için gittikleri iki okuldan seçilmiştir. Araştırmada öğrencilerin tutum ölçeği puanları arasındaki farkın analiz edilmesi amacıyla frekans ve yüzde dağılımları, bağımsız örneklem için t-Testi ve tek yönlü ANOVA analizi kullanılmıştır. Araştırma sonucunda öğrencilerin büyük bir çoğunluğunun bilgisayara karşı olumlu tutum geliştirdikleri görülmüştür. Yapılan istatistiksel analizler sonucunda öğrencilerin bilgisayara karşı tutum puanlarına cinsiyet, yaş ve okul konumu değişkenlerinin etkisi olmadığı sonucuna ulaşılmıştır.

**Anahtar Kelimeler:** Bilgisayar Eğitimi, Öğrenci Tutumları, Bilgisayara Karşı Tutum, Bilgisayar Tutum Ölçeği, Cinsiyet, Okul Konumu, Yaş



## 1. INTRODUCTION (GİRİŞ)

The importance and use of computers has increased dramatically over last two decades (Popovich, Gullekson, Morris, & Morse, 2008). Rapid developments in technology have led people use computers at home, school and workplace. With the increased use of computers in teaching and learning, technology has become an integral part of education (Teo, 2008). Computers are providing individuals with a powerful means to transmit, access, and interpret an immense and growing body of information worldwide. In doing so, it is changing the way people live and work. For the students, computers can be powerful study tools, by providing general "clerical" support, e.g. word processing facilities, spreadsheets, databases, or by contributing to the subject area, e.g. via simulations in Physics, calculation and statistical packages in Mathematics, programming environments in Computer Science and computer assisted language learning (Federico, 2000) Computer based instruction and computers programs, tools providing much facilities and supports to students' educational life (İşman, Çağlar, & Dabaj, et al, 2004). The widespread use and ever-changing nature of "Information Technology" (IT) has led to a clamant need for understanding why people accept or reject the use of computers (Smith and Oosthuizen, 2006). In response to this need, researchers have tried to investigate attitudes towards computers. Computer attitude has been defined as a person's general evaluation or feeling of favor or antipathy toward computer technologies and specific computer-related activities (Smith et al. 2000). Computer attitude evaluation usually encompasses statements that examine users' interaction with computer hardware, computer software, other people relating to computers, and activities that involve computer use. Computer-related activities examined are either single instances of behavior or classes of behavior (Smith et al. 2000). Various computer attitudes scales have been developed (e.g. Loyd and Gressard 1984; Bear, 1987; Smith et al. 2000) but the CAS developed by Loyd and Gressard (1984) is one of the most often applied scales to undergraduate students. CAS can be analyzed into several intrinsic variables, such as computer anxiety, computer liking, perceived usefulness, perceived ease-of-use, self-confidence (SC) and perceived consequences for society.

There are several studies on computer attitude in the literature. Simsek (2008) handled students' attitudes towards integration of ICT's in a reading course. The aim of the study is to investigate students' attitudes towards the use of information and communication Technologies (ICTs) in a reading skills course. The 30 students who took part in this study were enrolled in the Reading Skills I course. Students build positive attitudes toward the use of ITCs as teaching tools. In particular, it was surprising to see that positive attitudes were developed despite the difficulties the students experienced. Carey, Chisholm and Irwin (2002) reflect the issue of "The Impact of Access on Perceptions and Attitudes Towards Computers". The implications for computer training in teacher preparation and international business management education were discussed. The most important reflection is that computer access has an impact on how college students across geographic regions perceive and feel about computers. The greater the access and usage is, the more positive the attitudes towards this technology. Bovee, Voogt & Meelissen (2007) investigated computer attitudes of 240 students from eight primary and secondary schools in South Africa. The research question of their study was whether differences in computer attitude could be found between boys and girls, and to what extent these differences could be explained by student, school, and environment



characteristics. In contrast to most studies on gender differences and computer attitudes, no gender differences in computer attitudes were found. Palaigeorgiou, Siozos, Konstantakis & Tsoukalas (2005) designed and constructed a Computer Attitude Scale adapted to freshmen in computer science departments. It consisted of the following: two factors strongly correlated with computer experiences, two factors relevant to general attitudes towards the IT profession and finally a factor that expresses the evaluation of positive consequences of computers in personal and social life. The scale was considerably related to computer experience and succeeded in revealing important views of students' reality. It was concluded that men and women had similar engagement with computers and concerns for the future effects of continuous computer use, but women were more anxious about hardware usage, felt less self-confidence in their previous knowledge and assessed less positively the consequences of computers in personal and social life.

### **1.1. Use Of Instructional Technology In Turkey (Türkiyede Eğitim Teknolojilerinin Kullanımı)**

Rapid technological developments have its impact on education and educational systems. Consequently, educational systems need people who use instructional technology effectively.

According to 8<sup>th</sup> development plan for next five years, the strategies of the MINISTRY OF EDUCATION for instruction and communication technology were as follows:

- Take advantage of technology especially computer technology in every stage of education and improve distance education methods.
- Encourage students to use instruction and communication technology for learning. Take all advantages of technology to get through student centered education.
- Widespread computer based education in every stage of education especially at primary and secondary education (M.E.B, 2004).

Practices and decisions for IT have gained importance in educational policy of Turkey. Projects and practices such as providing computers and internet access to every school, establishing school networks and management information systems has taken place in Turkish educational policy (Bayrakçı, 2005). Nowadays, The Ministry of Education struggle to use e-school applications in preschool, primary and secondary schools (Aytaç, 2003, Akbaş 2003). In primary schools, computer literacy courses are offered. Computer-based instruction technologies are used in some courses. In addition to this, some internet based projects are being done to shift from teacher centered environment to student centered environment (Knowlton 2000, Greany 2002). Moreover, people are encouraged to have a personal computer. All schools are expected to acquire and integrate IT in their curriculum so as to develop a culture of thinking, lifelong learning, and social responsibility.

Successful implementation strategies and policies do ensure IT usage in schools up to a certain point (Teo, 2006). The successful integration of computers in educational environments depends, to a great extent, on students' attitudes towards them (Palaigeorgiou, Siozos, Konstantakis & Tsoukalas, 2005). Research has found that computer attitudes not only play an influential role in determining the extent to which students accept the computer as a learning tool but also future behaviors towards the computer such as using it for further study and vocational purposes (Teo, 2006).



### **1.2. The Aim Of The Research (Çalışmanın Amacı)**

In order to be reflective on the usage of computers and facilities, there should be examination of the thoughts and attitudes of students towards computer. Based on the constructivist perspectives, students have great role in the learning process and much affected from the technology support to their education. The aim of this study was to examine attitudes of secondary school students towards computers and to compare their tendencies based on the attitude scale. In addition, the study was designed to examine possible differences about computer attitudes of students by gender, age and school.

### **1.3. Research Questions (Çalışmanın Soruları)**

This study attempted to answer the following questions:

- Do the students have positive attitudes towards computers
- Is there a significant difference between students' attitudes towards computers based on their gender?
- Is there a significant difference between students' attitudes towards computers based on their age?
- Is there a significant difference between students' attitudes towards computers based on their school location?

## **2. RESEARCH SIGNIFICATION (ÇALIŞMANIN ÖNEMİ)**

Research shows us that students' experience about the use of computers increases their positive attitudes towards computers (Deniz, 2000; Hashim & Mustapha, 2004). Since students' attitudes towards computers give us basic information about their knowledge about computer literacy, it is important to find out students' current situation on that subject. The results of this study can be used by teachers and by researchers in order to determine the current situation of the students about computer literacy and to develop some teaching strategies about computer literacy courses.

## **3. METHOD (YÖNTEM)**

### **3.1. Design Of The Research (Çalışma Modeli)**

Descriptive research model was used in this study. Descriptive approach was applied to analyze students' attitudes towards computers.

### **3.2. Sample (Örneklem)**

The participants were secondary school students taking Computer Literacy course during 2007-2008 school year in Bursa. There were 266 students consisted of 83 students from 6<sup>th</sup> grade, 105 students from 7<sup>th</sup> grade, 78 students from 8<sup>th</sup> grade. Of the 266, 41% (110) were females, and 59% (156) were males. Participants were selected from two secondary schools that researchers went for "Teaching Practice Course".

### **3.3. Instrument (Araç)**

In this research, Computer Attitude Scale (CAS) designed by Loyd ve Gressard (1984), was used for analyzing students' attitudes towards computers. CAS is an instrument measuring different aspects of computer attitude. The total score is a general measure of attitude toward computers and consists of 40 questions with choices measured on a 4 point Likert scale (strongly agree, slightly agree, slightly disagree, strongly disagree). Four sub-scores can be used to measure computer anxiety, confidence with computers, liking computers and attitude toward the usefulness of computers. This paper is only reporting on attitudes toward computers based on the total score. It



was translated to Turkish by Berberoğlu & Çalikoğlu in 1992. It's Cronbach Alpha reliability was found as 0.90 for the whole of the questionnaire.

### 3.4. Limitations (Sınırlılıklar)

In this study, prior knowledge of participants on computer literacy was not considered. Also teaching process and how participants interact with computer in that course was not considered. This study was limited by participants' attitudes towards computers on the variables of gender, age and school location.

## 4. RESULTS (BULGULAR)

Students' attitudes towards computers were statistically analyzed according to gender, age and location of school. Independent sample t-test and one way ANOVA was used to determine the difference. SPSS 15.0 for Windows was used for data analysis. Significance level was determined as 0.05.

### 4.1. Findings Regarding The First Research Question (Birinci Araştırma Sorusunun Bulguları)

First research question was "Do the students have positive attitudes towards computers in general?". Table 1 shows us frequency and percentages of individual items of CAS.

Table 1. Frequencies and percentages of individual items of CAS  
(Tablo 1. Öğrencilerin tutum ölçeği sorularına verdikleri cevapların frekans dağılımları ve yüzdeleri)

	Strongly Agree		Agree		Disagree		Strongly Disagree	
	f	%	f	%	f	%	f	%
1-Computers do not scare me at all.	200	75.19	37	13.91	12	4.51	17	6.39
2- I'm no good with computers.	12	4.51	31	11.65	99	37.22	124	46.62
3- I would like working with computers.	155	58.27	84	31.58	17	6.39	10	3.76
4- I will use computers many ways in my life.	140	52.63	103	38.72	16	6.02	7	2.63
5- Working with a computer would make me very nervous.	16	6.02	39	14.66	78	29.32	133	50.00
6- Generally, I would feel OK about trying a new problem on the computer.	101	37.97	113	42.48	34	12.78	18	6.77
7- The challenge of solving problems with computers does not appeal to me.	37	13.91	58	21.80	97	36.47	74	27.82
8- Learning about computers is a waste of time.	16	6.02	11	4.14	65	24.44	174	65.41
9- I do not feel threatened when others talk about computers.	161	60.53	65	24.44	15	5.64	25	9.40
10- I don't think I would do advanced computer work.	34	12.78	80	30.08	94	35.34	59	21.80
11- I think working with computers would be enjoyable and stimulating.	172	65.79	75	28.20	8	3.01	8	3.01
12- Learning about computers is worthwhile.	181	68.05	64	24.06	14	5.26	7	2.63
13- I feel aggressive and hostile toward computers.	14	5.26	17	6.39	43	16.17	192	72.18
14- I am sure I could do work with computers.	115	43.23	116	43.61	26	9.77	9	3.38
15- Figuring out computer problems does not appeal to me.	44	16.54	69	25.94	96	36.09	57	21.43
16- I'll need a firm mastery of computers for my future work.	126	47.37	90	33.83	29	10.90	21	7.89
17- It wouldn't bother me at all to take computer courses.	50	18.80	54	20.30	97	36.47	65	24.44
18- I'm not the type to do well with computers.	20	7.52	21	7.89	91	34.21	134	50.38
19- When there is a problem with a computer run that I can't immediately solve, I would stick with it until I have the answer.	127	47.74	88	33.08	41	15.41	10	3.76



20- I expect to have little use for computers in my daily life.	23	<b>8.65</b>	50	18.80	83	31.20	110	41.35
21- Computers make me feel uncomfortable.	18	6.77	21	7.89	72	27.07	155	58.07
22- I am sure I could learn a computer language.	100	37.59	110	41.35	34	12.78	22	8.27
23- I don't understand how some people can spend so much time working with computers and seem to enjoy it.	57	21.43	46	17.29	65	24.44	98	36.84
24- I can't think of any way that I will use computers in my career	19	<b>7.14</b>	18	6.77	42	15.79	187	70.30
25- I would feel at ease in a computer class.	130	<b>48.87</b>	86	32.33	27	10.15	23	8.65
26- I think using a computer would be very hard for me.	23	<b>8.35</b>	18	6.77	74	27.82	151	56.77
27- Once I start to work with the computer, I would find it hard to stop.	103	38.72	63	23.68	69	25.94	31	11.65
28- Knowing how to work with computers will increase my job possibilities.	167	<b>62.78</b>	58	21.80	20	7.52	21	7.89
29- I get a sinking feeling when I think of trying to use a computer.	26	<b>9.77</b>	17	6.39	74	27.82	149	56.02
30- I could get good grades in computer courses.	145	<b>54.51</b>	94	35.34	16	6.02	11	4.14
31- I will do as little work with computers as possible.	131	49.25	103	38.72	24	9.02	8	3.01
32- Anything that a computer can be used for, I can do just as well some other way.	64	24.06	84	31.58	93	34.96	25	9.40
33- I would feel comfortable working with a computer.	125	<b>46.99</b>	95	35.71	26	9.77	20	7.52
34- I do not think I could handle a computer course.	33	<b>12.41</b>	23	8.65	73	27.44	137	51.50
35- If a problem is left unsolved in a computer class, I would continue to think about it afterward.	100	37.59	108	40.60	40	15.04	18	6.77
36- It is important to me to do well in computer classes.	131	<b>49.25</b>	96	36.09	23	8.65	16	6.02
37- Computers make me feel uneasy and confused.	18	<b>6.77</b>	15	5.64	76	28.56	157	59.02
38- I have a lot of self-confidence when it comes to working with computers.	100	37.59	112	42.11	45	16.92	9	3.38
39- I do not enjoy talking with others about computers.	47	17.67	39	14.66	83	31.20	97	36.47
40- Working with computers will not be important to me in my life's work.	19	<b>7.14</b>	24	9.02	61	22.93	162	60.90

In the light of the answers given by students to each items of CAS, it can be said that most of the students have positive attitudes towards computers in general.

#### 4.2. Findings Regarding The Second Research Question (İkinci Araştırma Sorusunun Bulguları)

First research question was "Is there a significant difference between students' attitudes towards computers based on their gender?" In order to answer this question Independent sample t-test was used to compare their CAS scores according to their gender.

Table 2. Independent sample t-test results of students' cas scores according to their gender  
(Tablo 2. Öğrencilerin tutum ölçeği puanlarının cinsiyete göre t-testi sonuçları)

Gender	N	Mean	Std. Deviation	t	Sig.
Female	110	125.63	15.043	-1.906	0.058
Male	156	129.36	16.184		

According to the results shown in Table 2, there was no significant difference between students' CAS scores according to their gender ( $t = -1.906$ ,  $p > .05$ ).



#### 4.3. Findings Regarding The Third Research Question (Üçüncü Araştırma Sorusunun Bulguları)

Second research question was "Is there a significant difference between students' attitudes towards computers based on their age?" In order to answer this question one way ANOVA was used to compare their CAS scores according to their age.

Table 3. One way ANOVA results of students' CAS scores according to their age

(Tablo 3. Öğrencilerin tutum ölçeği puanlarının yaşa göre tek yönlü ANOVA sonuçları)

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	159.999	2	79.999	0.319	0.727
Within Groups	66001.975	263	250.958		
Total	66161.974	265			

According to the results shown in Table 3, there was no significant difference between students' CAS scores according to their age ( $p > .05$ ).

#### 4.4. Findings Regarding The Fourth Research Question (Dördüncü Araştırma Sorusunun Bulguları)

Third research question was "Is there a significant difference between students' attitudes towards computers based on their school location?" In order to answer this question Independent sample t-test was used to compare their CAS scores according to their school location.

Table 4. Independent sample t-test results of students' CAS scores according to their school location

(Tablo 4. Öğrencilerin tutum ölçeği puanlarının okula göre t-testi sonuçları)

Gender	N	Mean	Std. Deviation	t	Sig.
School1	108	127.69	16.071	-0.103	0.918
School2	158	127.90	15.665		

According to the results shown in Table 4, there was no significant difference between students' CAS scores according to their school location ( $p > .05$ ).

### 5. CONCLUSION AND RECOMMENDATIONS (SONUÇ VE ÖNERİLER)

The aim of this study was to examine attitudes of secondary school students towards computers and to compare their tendencies based on the attitude scale. According to the results of this study, it can be said that most of the students have positive attitudes towards computers. Their mean score was over 125, the maximum score they could obtain was 160.

According to the independent sample t-test results based on gender, there was no significant difference between male and female students on their attitudes towards computers. Male students obtained slightly higher score than female students but the difference was not statistically significant.

The one way ANOVA results based on age suggested that there was no significant difference between the 6<sup>th</sup>, 7<sup>th</sup> and 8<sup>th</sup> grade students on their attitudes towards computers. The 6<sup>th</sup> and 7<sup>th</sup> grade students obtained 128 as a mean score, 8<sup>th</sup> grade students' mean score was 126. The independent sample t-test results based on school location suggested that there was no significant difference between two



schools' students on their attitudes towards computers. For each school, students obtained 127 as a mean score.

Because the sample of this study is not representative for whole population of secondary school students, it is not possible to generalize the results of the study. Further research should be done with more students and in a long term. Also further research should examine the impact of other variables such as level of computer experience, length of computer use, level of computer literacy on attitudes of students towards computers.

According to these results it can be concluded that it is inevitable to use instructional technologies in all courses. Students are able to use computers not only at school but also at home, at a friend's home or at internet cafes. This may be the most effective factor of increase in their positive attitude towards computers. Using computers almost everywhere seems to be a positive factor but it brings some problems like the difference in students' prior knowledge about computer literacy. Therefore it challenges teachers to give computer literacy course with traditional methods to these students. Researchers and teachers must consider this situation and they must try to find some solutions for that problem in near future. In many prior researches it is identified that there is a positive correlations between computer experience and attitude towards computers (Palaigeorgiou, Siozos, Konstantakis & Tsoukalas, 2005; Çelik & Bindak, 2005). Therefore it is expectable in near future that students will come to the school knowing most of the computer literacy concepts. So there may not be a need for computer literacy course in education curriculum anymore. A support desk providing required help to students about using computers in education may be a solution for that problem.

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