

THE INTERNET COMPETENCY LEVELS OF TURKISH HIGH SCHOOL STUDENTS AND RELATED CONDITIONS

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Abstract

The purpose of this study is to examine the internet competency scores of high school students according to their various individual features and describe their access conditions at school, at home and at internet cafes. The data has been collected using two instruments namely (1) Student Characteristics and their Internet Access Conditions Questionnaire; and (2) The Internet Competency Scale for High School Students. Instruments have been applied to 516 (220 female and 296 male) students in the metropolitan area of Izmir. There are significant differences between students' internet competency scores and their individual characteristics, such as the type of high school they are enrolled in, where these high schools are located (center or suburb), and their Internet access conditions such as, having computer at home or not, being subscribed to an internet company or not, where they connect, how they have learned and how much time they devote to internet weekly, the most preferred activities on the internet, their level of English and if they are visiting internet cafes or not. There are no significant differences between students' internet competency scores and their individual characteristics such as sex, age, and grade and study area.

Keywords: High School Students, Internet Competency, Digital Literacy, Internet Cafes

Özet

Bu araştırmanın amacı, internet kullanan lise öğrencilerinin bireysel özelliklerine göre internet yeterlik düzeyleri ile okulda, evde ve internet kafelerde internet kullanma koşullarını saptamaktır. Bu amaçla İzmir metropol alanındaki liselerde okuyan 516 (220 kız ve 296 erkek) öğrenciye araştırmacı tarafından geliştirilen "Öğrenci Özellikleri ve İnternet Kullanma Koşulları Anketi" ile "İnternet Yeterlik Düzeyi Anketi" uygulanmıştır. Sonuçlar, Öğrencilerin internet yeterlik düzeylerinin; okudukları lisenin türüne, okudukları lisenin bulunduğu yere, bilgisayar sahibi olup olmamalarına, internet aboneliklerinin olup olmamasına, internete bağlandıkları yere, internet kullanmayı öğrenme biçimlerine, haftalık internet kullanma sürelerine, İngilizce bilme derecelerine ve internet kafelere gidip gitmemelerine göre önemli farklılıklar göstermektedir. Öğrencilerin internet yeterlik düzeyleri onların cinsiyetlerine, yaşlarına, okudukları sınıfa ve okudukları alana göre önemli farklılıklar göstermemektedir.

Anahtar Kelimeler: Lise Öğrencileri, İnternet Kullanma Becerileri, Dijital Okuryazarlık, İnternet Kafeler

Introduction

"To transform into a knowledge society; to raise the living standards of people; to contribute to science and civilisation and to have an active say both in regional and global issues" are the objective targets of Turkey within the framework and guidance of long term development strategy (SPO, 2001, p.21).

Due to these targets, the rapid changing process of Turkey has become more radical, rooted and comprehensive together with ongoing so-called scientific and technological revolution and globalisation processes.

In this context, as the internet has produced the 4th industrial revolution in human history (Capron, 1999), and as it is the modern way of reaching knowledge and effective communication, its advantages and disadvantages for young people and the nation have begun to be discussed intensively. Some have considered internet's possible determinant role in educational and economic development of a society. These people also think that internet is advantageous for having a developmental role in widening the intellectual capacity of young people. Whereas some others have pointed out that it has probable negative effects especially on the young population, since internet access allows students to communicate with a potential global audience. They argued that firstly, internet may have negative effects on the national conscious of the students, and secondly, they claimed that students may gain

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bad habits by visiting some internet sites, like gambling, pornography, etc. To illustrate, for the last few years, we have been faced with some suicides among high school students who visit Satanist web sites.

Under these conditions, it has become important to know and to explain how frequently and how competent the students who use internet are in this country, since few studies exist on the subject. Furthermore, it has also become important to know the internet access conditions of **students using internet**. So, it will be possible to master the issue and to take measures for the effective use of internet both for the sake of students and the country. For these purposes assessing students' internet competency levels with validity and reliability seems to be necessary and crucial. Therefore, to develop an internet competency scale (ICS) is another purpose of this study.

Statement of the problem

The purpose of this study is to describe both various individual characteristics, and internet access conditions of High school students using internet and to find out if these factors contribute their internet competency levels.

Hypotheses

Two main hypotheses are postulated for this study and these are:

1. There are significant differences between students' internet competency scores according to their individual characteristics , such as (a) sex (b) age (c) grade (d) study area (e) the type of high school they are enrolled in (f) and where these high schools are located (metropolitan or suburb).
2. There are significant differences between students' internet competency scores and their Internet access conditions such as (a) having computer at home or not, (b) being subscribed to an internet company or not, (c) where they connect, (d) how they have learned and (e) how much time they devote to internet weekly (f) the most preferred activities on internet (g) their level of English and (h) if they are visiting internet cafes or not.

Methodology

Description of population and sample

The population of this study included 95,150 students enrolled in high schools in 2000-2001 training year at the metropolitan area of İzmir. The population of high school students in İzmir was clustered firstly into 9 sub-metropolitan provinces and secondly, into the types of high schools. Out of total 166 high schools, 15 high schools were chosen from 9 sub-metropolitan provinces.

1,352 students were randomly selected, which consisted of 15.5% of total students enrolled in these high schools. And finally 38.1% of these students defined themselves as internet users.

The Internet Competency Scale for High School Students

Two instruments were used to collect data, namely, (1) Student Characteristics and their Internet Access Conditions Questionnaire; and (2) The Internet Competency Scale for High school Students.

Student Characteristics and Their Internet Connecting Conditions Questionnaire had 20 items aiming to collect data about student's demographic characteristics and to describe the internet access conditions of students in both internet cafes and other ways.

The Internet Competency Scale for High school Students was designed to assess the level of students' ability to use the internet. The items of this scale were taken from Digital Literacy Checklist, originally developed by Larrison (2000). Larrison described digital literacy as "the ability to understand and use information in multiple formats from a wide range of sources when it is presented via computers".

In this study only "Internet Competencies" part of Digital Literacy Checklist was taken to measure high school students' internet competencies. The Internet Competencies Part of Digital Literacy Checklist contains 8 dimensions and 30 items, listed below.

Dimensions	Items
1. Communication Competencies	5
2. General Web Process Competencies	7
3. Information Literacy – Critical Thinking Competencies	2
4. Information Search Competencies	6
5. Data retrieval and Manipulation Competencies	6
6. Information Organization	1
7. Bibliographic Citation	2
8. Copyright Knowledge Competency	1
Total	30

In this research, a 5- point Likert –Style scale was used. Students using internet were asked to indicate their level of capability for the listed items – related to some skills - where 1(one) represented high incapability and 5(five) high capability. After the translation of Internet Competency Scale from English to Turkish, this translation was validated by English Language and Computer experts. The factor structure and the reliability level of the original instrument has not been analysed by Larrison (2000). For these purposes the Internet Competency Scale was applied to 128 students enrolled in one academic and one vocational high school in the same educational year.

The factor structure of Internet Competency Scale was assessed with “Principal Components Analysis” technique. The result showed two factors with 13,307 and 1,526 eigenvalues which constituted respectively 44.4 % and 5.1% of total variance. If the difference between the two eigenvalues is high, it can be said that the scale is one factor loaded; this factor can be identified as “Internet Competency” (SPSS, Inc., 1986).

The item-total correlations of the scale differed between 0.3534 and 0.8154. As the items with .20 coefficient and above are accepted as functional ones in the scale (Özdamar, 1997). It can easily be said that all the items of ICS have additive characteristics.

The alpha coefficient of the ICS was found 0.96, which shows high reliability (Özdamar, 1997).

Presentation of findings and interpretations

General

The most important finding of this study is that the 38.1% of total students use internet in one way or other, in spite of the fact that there are not enough computers or internet facilities in high schools in Turkey. However, the number of the internet cafes has rapidly increased particularly in big cities in recent years.

Students’ demographic characteristics and internet competencies

No significant differences were found between students’ internet competency scores and their sex, grade and learning the area they are studying at. In other words, the internet competency of students did not differ according to these variables. However, when the gender variable was taken into consideration, the percentage of male students using internet was higher (44.8%) than that of female students (31.8%). This finding seems consistent with the other recent research reports, conducted in other countries. For example, according to the recent report by Camp, the proportion of women in the field of computer science at Colleges in USA is even declining (Camp, 1997). This finding also seems to be consistent with other research results in terms of the attitudes of students towards computers. To illustrate, Shashaani and her colleagues in Iran (2001); Hakkarainen and his colleagues (2000) in Finland; Tsai and his colleagues (2001) in Taiwan have reported that male students had more positive attitudes towards internet and computers than female students.

The internet competencies of students significantly differed according to **the type of high schools** ($F=16.46$, $p<0.001$) they enrolled. The results of Tukey Test, made to see the source of this difference, were found with F test and are given in Table I.

Table I
Students' internet competency scores according to type of high schools they enrolled
The Results of Tukey Test

Type of High Schools	Mean	1	2	3	4	5	6	7
1 Anatolian and scientific high schools	3.75				*	*	*	*
2 Private high schools	3.57					*	*	*
3 Academic high schools	3.39						*	
4 Technical high schools	3.16							
5 Religious high schools	3.06							
6 Girls' vocational high schools	3.03							
7 Vocational high schools	2.93							

$p<0.05$ * Significant difference

It is understood from Table I that the differences among students' internet competency scores found with F test were due to the differences between academic and technical-vocational high school students' internet competencies. The internet competency means of Anatolian, Scientific and Private high school students were higher than the internet competency means of technical and vocational high school students. These findings can be explained with two factors. Firstly, it is known that in Turkey, public Anatolian and Scientific high schools are the most privileged in terms of the facilities they have. They also select their students through a central admission examination after primary education. In addition to this, research findings show that the general academic abilities of these high school students are significantly higher than the academic abilities of other high school students (Kabadayı & Demirci, 1997). Moreover, these high schools are preparing their students for higher education.

Significant difference was also found between central and suburban high school students' internet competency with t test ($t= 4.7$; $DF= 514$; $p< 0.001$). The internet competency mean of central high school students was higher than the internet competency mean of suburban high school students.

Students' internet access conditions and the internet competency means

Table II shows the distribution of students using internet according to having **computer and internet access facilities at home or not**. Table II also gives the results of the t test devised to see if there is a significant difference between these two groups of students' internet competencies. As it is seen from Table 3, 54.7% of students using the internet have at least one computer at home. The percentage of having an internet access at home was less than this rate (45%).

Table II
Facilities at home and the internet competency mean of students

Facilities at home	Have	Don't Have	Total	t
Computer	282	234	516	
%	54.7	45.3	100	
Internet competency mean	3.8	2.9		8.8* $p<0.001$

Internet access	235	281	516	
	45.5	54.5	100	
%				
Internet competency mean	3.8	3.0	9.4*	p<0.001
DF: 514				* significant difference

There is a significant difference between students' internet competency means and having these two facilities at home or not. The internet competency mean of students who have computer and internet access at home was higher than the students who do not have these facilities at home.

The internet competency means of students also significantly differed according to **where they mostly connected to internet** ($F = 45.71$; $p < 0.001$). The related data and the results of Tukey Test devised to understand the sources of this difference are shown in Table III.

Table III
The Internet competency means of students according to where they mostly accessed to internet

Place of access	f	%	Internet competency mean		Tukey Test		
					home	cafe	school
Mostly home	242	49.1	3.6				
Mostly internet cafe	252	47.2	3.0	home		*	*
Mostly school	19	3.7	2.6	cafe			
Total	513	100.0		school			

* Significant difference

When Table III is examined, it is firstly seen that most of the students get accessed to the internet at internet cafes (49.1%). It is surprising that only 3.7% of the students accessed to the internet at schools. The internet competency means of students who mostly have access at home significantly differ from the students who use internet at schools and at internet cafes. The internet competency mean of students connecting to internet at home is higher (Mean = 3.0) than the students' internet competency means connecting to internet at schools and internet cafes. This phenomenon together with the previous findings gives the idea that when the students have internet access at home, they develop more competencies. It can also be said that students do not use internet effectively at schools and at cafes.

As Table III shows, the internet competency means of students who use internet at school is the lowest (Mean= 2.6) and significantly differs from others. When one of the educational objectives of high schools is considered - "to be able to learn the ways of reaching knowledge and to be able to use it in problem solving" (FEL, 1973). It can be said that this finding is disappointing. It is clear that high schools are not successful enough in helping students to acquire this behavioural characteristic.

The internet competency means of students also significantly differ according to **how/where they learned to use internet** ($F = 21.76$; $p < 0.001$). The percentage distribution of students and their internet competency means according to this variable and the results of Tukey Test are given in Table IV.

Table IV
The Internet competency of students' according to how/where they learned to use internet

How/Where	f	%	Internet competency mean	Tukey Test
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1	At home by themselves	23	46.1	3.58	1	1	2	3	4
2	Take course out of school	42	8.1	3.09	2				
3	At cafes by themselves	20	40.5	3.01	3	*	*		*
4	Take course at school	27	5.2	2.88	4				
Total		51	100						
		6	.0						

p<0.05 *Significant different

As Table IV shows, only 5.2% of total students have learned how to use internet from school courses. On the contrary, students mostly learned to use internet either at home (46.1%) or at internet cafes (40.5%) by themselves.

These findings give the idea that high schools are considerably weak in facilitating students with the internet. As a result of this, students try to learn how to use the internet in other ways. So we can say that the students are eager to learn that.

When the internet competency means of students are examined according to how they learned, students learned to use internet “at home by themselves” had the highest mean (\bar{X} =3.58) and that significantly differ from the others. These students are respectively followed by the students who “take course out of school” (\bar{X} =3.09) and learned to use internet “at cafes by themselves” (\bar{X} =3.01). On the other hand, students who learned to use internet by taking “a course at school” have the lowest internet competency mean (\bar{X} =2.88).

The internet competency means of students also statistically differ according to **how much time they devoted** to using internet weekly (F= 5.63; p<0.001). The results of Tukey Test and the ANOVA Test are presented at Table V.

Table V
The Internet competency mean of students according to how much time they devoted to using internet weekly

Hours devoted weekly	F	%	Mean	Tukey Test				
				1	2	3	4	5
1 1-3 hours	220	42.8	2.89	*	*	*	*	*
2 4-6 hours	137	26.7	3.39			*		*
3 7-10 hours	79	15.4	3.74					
4 11-15 hours	46	8.9	3.61					
5 16 – over	32	6.2						
			3.87					
Total	514	100.						
		1	0					

*significant difference

As Table V displays, most of the students (42.8 %) devoted only 1-3 hours weekly to using internet. The internet competency mean of these students significantly differs from the other students who devoted more time weekly to using internet. Their internet competency mean is the lowest (Mean= 2, 8). Parallel to this, it is seen from Table V that the more students devote time weekly to use internet, the higher internet competency scores they have.

This finding is consistent with the findings in Tables III and IV. Students who have an internet access at home and the ones who learned to use it by themselves at home and the ones who spent more time are the students who have the highest internet competency means. These could be explained as

the variable of “internet experience” as defined by Tsai (2001). In other words, the students having more exposure to the internet tended to have statistically higher internet competency mean.

The other variable which explains the difference among students’ internet competency means was **their English level**. There was a positive and significant relationship between the internet competency means and English levels of students ($r = 0.25$; $p < 0.001$) because many programs on the internet are in English.

In this research the students were also asked what the **most preferred (popular) activity** was while they were using internet. Internet competency means of students significantly did not differ according to the most preferred activity ($F = 5.63$; $p > 0.05$). The percentage distribution of students according to these activities is presented at Table VI.

Table VI
The most preferred activities of students using internet

Activities	f	%
Chat, make friends and play games	295	58.0
e-mail	72	14.1
To reach bibliography related to lessons and homework	71	13.9
To follow recent events	41	8.1
Listen to music or watch movies	26	5.1
Shopping	4	0.8
Total	509	100.0

As illustrated in Table VI, the most preferred activity is “chat” (58 %). This is followed by two activities with close percentages “e-mail” (14.0%) and “to reach bibliography related to homework” (13.9%). Students using internet for shopping is the lowest (0.8%).

The findings of Table VI seem to reflect the studies conducted by Hakkarainen and his friends (2000) made in Finland and O’Sullivan and his friends (2000) in The United States. In these countries, students mostly use information and communication technologies for entertainment, too. Moreover, the study conducted by IBS (Investigation and Consultation Commerce 2001) in Turkey gives parallel findings. According to IBS, 75% of Turkish internet users are use the internet to chat (Radikal, 05.02.2001).

At first glance, these findings are discouraging from educational point of view, since it seems to suggest the idea that students do not use the internet to reach information and to learn more, for instance. However, it might also be thought that students are getting acquainted with internet and in this way; they would probably have more internet competency as the findings of this study reveal.

Lastly, it is found in the study that 63.4% of total students declared that they go to internet cafes. The most important reason for this is the lack of internet facilities either at home and at school (44.0%). Students mostly go to internet cafes at weekends (69.4%). 73.1% of them make friends at cafes.

Conclusions

Internet has become more widespread in Turkey not only at work but also at internet cafes which are visited particularly by young students in cities. This new platform of information exchange would have an impact both on the way people learn and on their vision. So, it has become important to know the proportions of internet user students, their competency level, and their individual characteristics and other related conditions. Therefore, educators should take proper measures to contribute to the use of internet more effectively and beneficially.

The most striking finding of the survey is the 38.1% of total students use internet though they are not given enough facilitates. 63% of students declared that they visit internet cafes.

The internet competency mean of students is Mean=3, 3. The competency mean of students does not differ significantly according to gender. Though the proportion of internet using male students is higher than that of internet using female students. The internet competency mean of privileged high school students, who have computer and internet access at home, shows higher internet competency than the other students. Similarly, students who learned internet at home by themselves, students who spend more time and students who have more experience have higher internet competency mean than the rest of the students. However, most of the students (58%) make friends and play games while they use internet.

These findings suggest that the high school students are ready and eager to use and learn internet when they are given satisfactory internet and computer facilities. Additionally, students' internet competency means will be higher when they have more internet experience.

Several findings of the survey show that schools do not have enough facilities and similarly teachers are efficient neither in teaching students how to use internet nor e-learning. If students are to be prepared for future, internet technology should be a common part of schooling. Ways to educate teachers who are able to employ the internet in their classroom teaching / learning activities should be found and there should be collaboration between computer / internet specialists and teachers to promote information literacy in high school curriculum.

Finally, since most of the students visit internet cafes to have fun or for social needs, principals of schools should create places similar to internet cafes.

REFERENCES

- Camp, T.(1997). The incredible shrinking pepline. *Communication of ACM*. 40. p. 103
- Capron, It. L.(1999). *Computers: Tools for an information age*. (2nd ed ed). Addison-Wesley, New York.
- Fundamental Educational Law. Law no: 1739, Date of acceptance 14 June 1973.
- Hakkarainen and his friends.(2000). Students' skills and practices of using ict: results of a national assessment in Finland. *Learning Center And Department of Psychology*. University Of Helsinki, P,O, Box 13, SF-00014, Helsinki, Finland.
- Kabadayı, Reşide., Demirci S. (1997). Çeşitli lise öğrencilerinin genel akademik yetenek düzeyleri. *Eğitim ve Bilim* 105.
- Larsson,Laura.,<http://courses.washington.edu/hs590a/modules/69/diglit/diglit.htm#1>
- O'sullivan, M. and Thomas, S. (2000). Teaching internet information literacy: A collaborative approach (part II). *Multimedia Schools*. 7, p.34
- Özdamar, K. (1997). *Paket Programları İle İstatistiksel Veri Analizi I*. Eskişehir, Turkey.
- Radikal,. 2001. Turkey.
- Shashaani, L. and Khalili A.(2001). Gender and computers : similarities and differences in Iranian College Students' attitudes toward computers. *Computers & Education* 37, pp.363-375.
- SPO.(2000). Eighth five year development plan. 2001-2005. *State Planning Organisation*. Ankara, Turkey.
- SPSS, Inc, (1986). *SPSS – X user's guide* (3rd ed.) Chicago.
- Tsai, C.C., Lin, S. S. C. and Tsai M.J.(2001). Developing an internet attitude scale for high school students. *Computers & Education* 37 1, pp.41-51.