INTERNET ACCESS, USE AND SHARING LEVELS AMONG STUDENTS DURING THE TEACHING-LEARNING PROCESS

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ABSTRACT
The purpose of this study was to determine the awareness among students and levels regarding student access, use, and knowledge sharing during the teaching-learning process. The triangulation method was utilized in this study. The population of the research universe was 21,747. The student sample population was 1,292. Two different data collection methods were used from two different sources. Quantitative data were collected using a set form distributed to the students titled "The Internet in Teaching-Learning Processes Questionnaire". Qualitative data were also collected through a structured interview with 24 faculty members. The following results were obtained: 1. Instances of knowledge access, use and sharing by students during the teaching-learning process rank high. 2. Female students use the internet in a more functional sense than males. 3. The levels of students accessing, using, and sharing knowledge during the teaching-learning process differ. 4. Internet access, use, and knowledge sharing levels vary between academic departments. 5. Internet access, use and knowledge sharing levels differentiate according to type of education. 6. The opinions of faculty members and students overlap regarding the level of accessing knowledge via the internet, but differ on the subject of use and knowledge sharing.
Keywords: Learning, Teaching, Internet, Knowledge, Students, Faculty, Education.

INTRODUCTION

Information and communication technologies used to acquire knowledge have had a significant effect on the development of human beings during the second half of the twentieth century. For this reason, the 21st century is often referred to as the "knowledge society", "knowledge period" or "knowledge revolution". Innovative information and communication technologies have had major effects throughout all fields of study, above all education. In the 1980s, with the sudden proliferation of personal computers, the viewpoint that using information and communication technologies during the teaching-learning process would improve the quality of education and solve problems became widespread (IBE, 1997). Now the internet offers endless choices of information available to all and has become a symbol of change. The internet is affecting the education process for people by offering alternative, creative learning methods (İşman and Dabaj, 2004).

One of the core 21st century educative concepts is learning for knowledge (IBE, 1998). Because one of the central topics for the 21st century is technology, people and all concepts related to people make use of technology and its advantages. In the 21st century, it has become important for all members of society to make use of electronic literacy, informatics and communication technologies, as well as maintaining the knowledge and skill to use these actively and efficiently. Rapid developments and changes in information technologies are widely accepted as the most striking features of the information age, especially in the scope of the internet (Dursun, 2004; Gündüz & Hamedoğlu, 2003; Çavuş & Göktaş, 2008). Those who take advantage of these advances should be those involved with the teaching-learning process. This situation presents a unique double-sided quality which allows educators and students to make use of the advances of technology, while adding and creating new advances along the way.

The internet can be described as the net of nets that connects all computers in the world to each other (Ersoy and Yaşar, 2003), or the net of connections that covers the entire world. The internet is one of the most charismatic features of the information age. Using computers and the internet has become an indispensable part of daily life. In response to almost every inquiry, the internet is able to produce desired information easily and smoothly (Kılıç and Karaaslan, 2004). Thus, one of the most important concepts for the 21st century is using technology for more effective and permanent learning (Polka and Mattia, 2009). Acclimation to new technology in this new century has become compulsory in a sense while the education system, education programs, teaching-learning methods and teaching materials have changed. In almost every aspect of education, the applications of technology and the internet are becoming more widespread (Oral, 2004).

Currently, the internet affects every person's life in a comprehensive fashion (Ersoy and Yaşar, 2003). Some of these effects include the increase of communication, expanding educational services and an increase of quality along with personal interaction. The internet changed the concepts of place and time for education by moving education outside the school. Recently, more importance has been given to seeking, evaluating, organizing, using

and sharing information with others (Karahan and İzci, 2001). The internet has become the most efficient source for information (Akkoyunlu, 2002), as well as the most efficient and valid method to share information with the masses in a rapid, easy, cheap, and reliable manner. All the while, the internet sharpens a person's ability to search and disseminate information.

Teaching can be described as organizing information and the environment to carry out learning. In other words, learning experiments or teaching-learning processes can be expressed as being organized with some essential stimulants in order to reach educational objectives such as methods, equipments, sources, etc. (Sönmez, 2007, 137).İşman and Eskicumalı (2006, 136) point out that because knowledge can be obtained rapidly, the use of technological developments in education is inevitable and will most likely continue. The use of the internet, television and similar devices affects the structure of the education system and the teaching-learning process. According to İşman & Eskicumalı, this influence will increase the quality of teaching-learning activities.

The internet is presently being used as a source for teaching material. According to Oral (2004), providing information and communication technologies for teaching-learning processes will have some advantages: students will play a more active role, discussions of courses will contain more detail, students will become more independent, communication between students and teachers will become level and direct, students will easily process new student-based education material, student skills will increase, and the hierarchical structure between teachers and students will be more flexible. The students will also be able to access information pertaining to their courses and activities from different sources quickly and without difficulty (Taşpınar and Gümüş, 2004), and will be able to evaluate these sources and synthesize them. Therefore, development in the learning environment will be suitable for each individual.

According to Taşpınar and Gümüş (2004), instructors and students are driving toward the same aims: to become computer literate, to increase knowledge of communication technologies, to utilize this knowledge during class, and to fully employ these skills while conducting research on the internet. Recently, one of the most common uses for internet research was found to be support for information submission (Ergün, 1998; Dursun, 2004). A number of instructors at higher education institutions share course notes, exams, and other visual materials via internet websites. Therefore, the use of the internet has changed the concept of "traditional" student and teacher roles (Oral, 2004). The role of the student includes not only absorbing information given to them, but also searching, analyzing and resubmitting information for others to use. This is a global phenomenon and for Turkey, discovering the internet's true potential for educational needs is a priority for the National Development Plan in response to the Ministry of National Education (Milli Eğitim Bakanlığı, 2002).

Turkish citizens were first connected to the internet in 1993 (Güdücü, 2006). The first signs of its use in the field of education were visible at the Middle East Technical University in 1998, followed by Istanbul Technical, Anadolu, Sakarya, and Boğaziçi Universities (Dursun, 2004). According to data gathered in 2009, the rate of computer usage for individuals between the ages of 16-74 in Turkey was 50.5%. Of these individuals, 30% were women. It was also found that 48.6% of the men and 28% of women utilized the internet. 88.5% of male internet users and 87.5% of female internet users were found to have graduated from high school and/or entered an undergraduate or graduate program at a university in Turkey (Türkiye İstatistik Kurumu, 2009, Mestçi, 2010). Internet users were most likely students and employers, followed by wageworkers and the jobless. People between the ages of 16-24 were found to use the internet more often than others (Devlet Planlama Teşkilatı, 2009), which includes students in high school as well as university. However, this finding does not necessarily indicate a higher use of the internet in teaching-learning processes. Most university students use the internet for chatting (51.7%) and other types of communication (45.6%). According to previous research (by Bozkurt and Zaim, 2008), internet usage by students can be distributed into the following categories: 97.8% email, 97.2% search engines, 86.7% file download, 76.2% written chat, 75.7% video chat, 68% file sending, 60.2% news groups, 58.6% audio chat, 23.2% FTP, and 2.4% other. In European Union countries, the rate of internet usage among their populations is 68% in contrast to Turkey at 32% (Devlet Planlama Teşkilatı, 2009). These results could indicate that people who have lower incomes and education levels in Turkey cannot yet access information and communication technologies (Öztürk, 2005).

Information acquisition and control of this information via the internet are primarily priorities for the intellectual population (Yıldırım & Bahar, 2008) and therefore affects those who have reached a level of higher education. These skilled individuals have the power to reach out and educate themselves on current events across the globe which then allows these individuals to become self-aware of their role in society. It has been said the 21st century will be the age of education as well as information and knowledge (Barkan, 1994). This underlines the requirement for all to have communication skills necessary for teaching and learning in the 21st century. Humans rely on the foundation of school as an institution and communication is at the center of this foundation (Saunders

& Mills, 1999). Therefore, communication skills should be a basic prerequisite for those wishing to develop and understand learning and teaching. Information has leaked from the classroom and has subsequently spread all over the world (Yıldırım & Bahar, 2008). The implementation of online learning and distance education has become quite common at higher learning institutions. The methods of e-learning require teaching material to be obtained via the internet making campus visits quite unnecessary. These new forms of study have launched the internet to a key position in education and the teaching-learning process.

In summary, accessing, using and sharing knowledge via the internet and other communication technologies lies in the interest of the educated, primarily those in the university level; those with the power for social change and development. For those university students carrying out this change, it could be said they have an obligation to be equipped with qualified cognitive, affective, and psychomotor proficiency during their studies. Producing knowledge and turning this knowledge into technology to facilitate an increasing quality of life and the students' ability to access and use this knowledge purposefully while sharing it at a high level is a requirement of the information era. Consequently, the purpose of this study was to determine the internet utilization level of university students. The research questions investigated were:

1. What level are the university students who access knowledge via the internet during the teaching-learning process?
2. What level are the university students who use this knowledge purposefully during the teaching-learning process?
3. What level are the university students who share this knowledge with others during the teaching-learning process?

METHOD

In this section information about the research method, population and sample, data collection and analysis is provided.

Research Method

In this study, the triangulation technique was used as a research method. The triangulation technique uses more than one method or source of data in the study of social phenomena (Bryman, 2001, 274). Also, the triangulation technique uses two or more methods of data collection in order to study more aspects of human behavior. The triangulation technique used in social science is an attempt to figure out, or explain more fully, the richness and complexity of human behavior while examining issues from more than one standpoint offering the researcher greater opportunities to use both quantitative and qualitative date (Cohen & Manion, 1998, 233).

Population and Sample

The population of the study is composed of 21,747 students from Sakarya University in Turkey. In those cases where the number of the participants is known, the sample of the study involves 1,292 students –639 female and 653 male– determined by the sampling method. The sample of research is 95% reliable with 3% fallibility since the bottom and top borders of the realization rate is made up of students whose access, use, and sharing of knowledge during the teaching-learning process is not known. The number of participants is determined by the rational sampling method since the number of the students in each department is not equal. The sample of the research shows the variance as: 256 (19,8 %) engineering, 254 (19,7 %) education, 285 (22,1 %) science-literature, 114 (8,8 %) technical education, 56 (4,3 %) theology, 283 (21,9 %) economics and 44 (3,4 %) physical education and sport.

Data Collection and Analysis

The data in the study were gathered by using two different methods and sources. Quantitative data were collected from a set form titled, "The Internet in Teaching-Learning Processes Questionnaire", developed by the researcher and based on expert opinions. The internal consistency reliability of the questionnaire, or Cronbach's alpha, measured 0.88. The first section of the questionnaire requested some personal information from the participant. The second asked questions pertaining to the participant's use of the internet to access, use, and share knowledge during teaching-learning activities. The analyses quantitative data: the average points the student scored on the subscale of the "The Internet in Teaching-Learning Processes Questionnaire" were found and one above and one below of standard deviations scores were taken as cut-off scores. For questions pertaining to knowledge access, it was concluded that those who scored below 8 points were assigned to the low level, those who scored between 8-14 points were the middle level, while the ones who scored 15 were at the high level; for questions pertaining to using and sharing knowledge, those who scored below 7 points were assigned to the low level, those who scored between 7-13 points were the middle level, while those who scored 14 points and above make use of the internet during teaching-learning activities at a high level.

The structured interview was used as a secondary research method. The structured interview is a research method where a person responds to answers with information about themselves according to definite categories. The greatest advantage of this method is minimizing the differences among the applicants in situations where there is more than one applicant (Türnüklü, 2000). Qualitative data were collected through this interview method from 24 university faculty members who were actively employed. Three questions were asked to each member concerning their level of access, use, and sharing of information via the internet during the teaching-learning process. The data were analyzed by compiling the common components found in the answers given.

Findings

This section includes the results and analysis of research problems and data obtained pertaining to subordinate problems in each section.

Table 1. Point Averages for Accessing, Using Purposefully and Sharing Knowledge by Students via the Internet during the Teaching-Learning Process

Internet	N	Low		Medium		High	
	Total	N	%	N	%	N	%
Accessing	1292	145	11.2	1032	79.9	115	8.9
Using	1292	145	11.2	1110	85.9	37	2.9
Sharing	1292	179	13.9	1065	82.4	48	3.7

According to Table 1, the level of accessing knowledge by students via the internet in teaching-learning activities started at a low 11.2%, middle 79.9%, and high 8.9%. The level of using knowledge purposefully started at a low 11.2%, middle 85.9%, and high 2.9%. The level of sharing knowledge started at a low 13.9%, middle 82.4%, and high 3.7%. In this situation, it can be stated that accessing, using purposefully and sharing knowledge by the students via the internet during the teaching-learning process are at the middle level.

Table 2. With The Addition of Gender Variables; Accessing, Using Purposefully and Sharing Knowledge by Students via the Internet during the Teaching-Learning Process

Internet	Gender	N	Mean	Std. Deviation	t values
Accessing	Female	639	10.89	1.97	t= 4.05
	Male	653	10.43	2.14	df= 1290
					p<.001
Using	Female	639	10.41	1.97	t= 5.75
	Male	653	9.72	2.30	df= 1290
					p<.001
Sharing	Female	639	10.18	2.04	t= 5.92
	Male	653	9.46	2.29	df= 1290
					p<.001

According to the gender variables in Table 2, females use the internet in a more functional sense than males according to the following data. Accessing knowledge [$t_{(1290)}$=4.05, p<.001], using knowledge purposefully [$t_{(1290)}$=5.75, p<.001] and sharing knowledge [$t_{(1290)}$=5.92, p<.001] via the internet during teaching-learning activities.

Table 3. With the Addition of Class Level Variables; Accessing, Using Purposefully and Sharing Knowledge by Students via the Internet during the Teaching-Learning Process

						F-Values		
Internet	Grades	N	Mean	Std. Deviation	df	F	P	Source of Variance
Accessing	1st year	424	11.01	2.07				1>2, 1>4
	2nd year	298	10.42	2.11				
	3rd year	265	10.89	2.06	3-1288	11.90	P<.001	3>4
	4th year	305	10.20	1.93				
	Total	1292	10.66	2.07				
Using	1st year	424	10.35	2.16				1>4
	2nd year	298	9.94	2.22				
	3rd year	265	10.31	2.07	3-1288	9.87	P<.001	3>4
	4th year	305	9.55	2.13				
	Total	1292	10.06	2.17				
Sharing	1st year	424	10.02	2.15				1>2

2nd year	298	9.43	2.21				
3rd year	265	10.04	2.21	3-1288	5.41	P<.001	3>2
4th year	305	9.72	2.20				
Total	1292	9.82	2.20				

According to Table 3, the higher the students' class level is, the more their level of accessing, using purposefully and sharing knowledge of via the internet during the teaching-learning process differentiate. In regard to student knowledge access, the difference is notable at the level [$F_{(3\text{-}1288)}$=11.90, p<.001] between the 1st and 2nd year students, 1st and 4th year students and 3rd and 4th year students. Using knowledge purposefully is notable at the level between the 1st and 4th year students and 3rd and 4th year students at the level of [$F_{(3\text{-}1288)}$=9.87, p<.001]. The sharing of knowledge is remarkable between the 1st and 2nd year students, 3rd and 2nd year students at the level of [$F_{(3\text{-}1288)}$=5.41, p<.001]. The students not only view the internet as a source for accessing, using, and sharing knowledge, but also a medium with alternative uses.

Table 4: With the Addition of Academic Department Variables; Accessing, Using Purposefully and Sharing Knowledge of the Students via Internet in Teaching-Learning Process

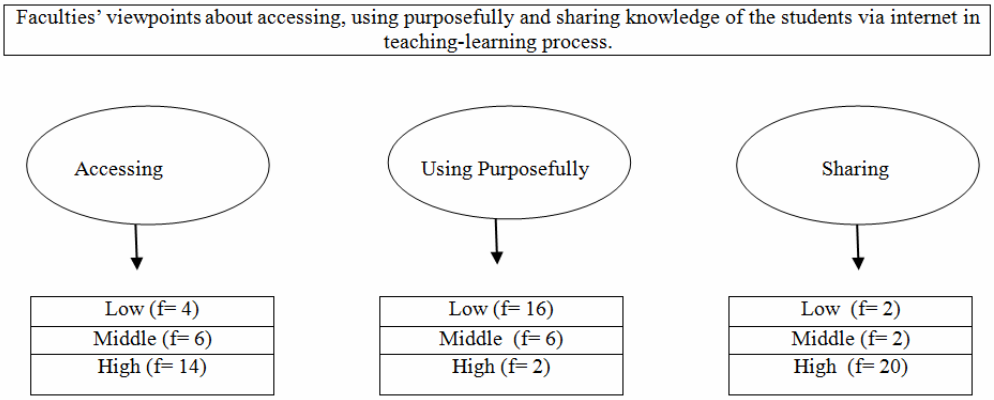
						F-Values		
Internet	Department	N	Mean	Std. Deviation	df	F	P	Source of Variance
Accessing	1.Engineering	256	10.45	2.12				
	2. Education	254	11.23	1.80				2>1, 2>3 ,2>5
	3. Science & Art	285	10.46	2.18				
	4. Technical Ed.	114	10.52	2.24				
	5. Theology	56	10.11	1.49	6-1285	5.32	P<.001	
	6- Economy	283	10.63	2.03				
	7- Physical &Sports	44	11.11	2.41				
	Total	1292	10.66	2.07				
Using	1.Engineering	256	9.59	2.29				
	2. Education	254	10.58	1.91				2>1, 2>3
	3. Science & Art	285	9.89	2.23				
	4. Technical Ed.	114	9.93	2.35				
	5. Theology	56	10.09	1.63	6-1285	5.27	P<.001	
	6- Economy	283	10.16	2.12				
	7- Physical &Sports	44	10.52	2.29				
	Total	1292	10.06	2.17				
Sharing	1.Engineering	256	9.25	2.06				
	2. Education	254	10.26	1.90				2>1, 2>4
	3. Science & Art	285	9.83	2.19				
	4. Technical Ed.	114	9.34	2.28				
	5. Theology	56	10.27	1.69	6-1285	6.48	P<.001	
	6- Economy	283	9.96	2.41				6<1
	7- Physical &Sports	44	10.18	2.72				
	Total	1292	9.82	2.20				

According to Table 4, levels of accessing, using purposefully and sharing knowledge by students via the internet during the teaching-learning process differ between different academic departments. Clearly, students in the education department favor accessing, using purposefully and sharing knowledge via the internet during the teaching-learning process. The differentials for the education, engineering, science-literature, and theology departments in respect to knowledge access equate to [$F_{(6\text{-}1285)}$=5.32, p<.001]. In respect to using knowledge purposefully, the differentials for the education, engineering, and science-literature departments equate to [$F_{(6\text{-}1285)}$=5.27, p<.001]. In correspondence with knowledge sharing, the education department differentiates from the engineering and technical education departments, while physical education and sport differentiates from the engineering department at the level [$F_{(6\text{-}1285)}$=6.48, p<.001].

Table 5. With the Addition of Two Subsections (Day/Evening) Among Education Students; Accessing, Using Purposefully and Sharing Knowledge by Students via the Internet during the Teaching-Learning Process

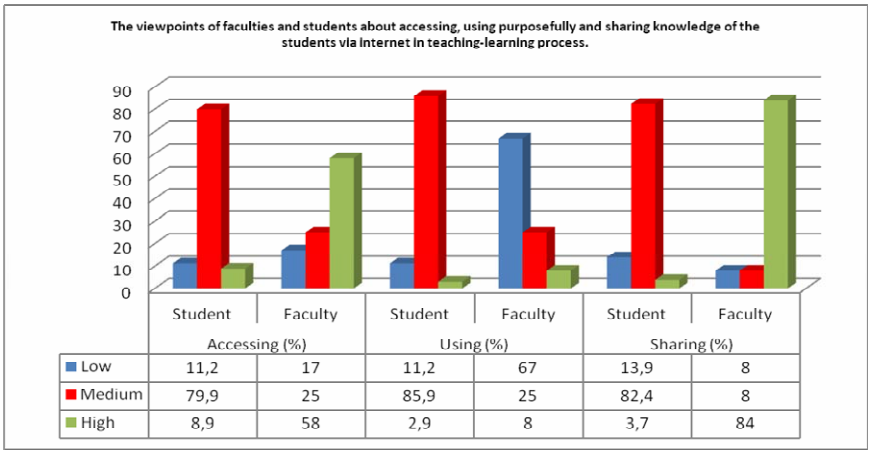
Internet	Type of Education	N	Mean	Std. Deviation	t values
Accessing	Day	1043	10.70	2.08	t= 1.29
	Evening	249	10.51	2.03	df= 1290
					p>.05
Using	Day	1043	10.10	2.17	t= 1.48
	Evening	249	9.88	2.15	df= 1290
					p>.05
Sharing	Day	1043	9.79	2.19	t= -.727
	Evening	249	9.91	2.25	df= 1290
					p>.05

According to Table 5, the point averages associated with the access, use and sharing of knowledge by students via the internet during the teaching-learning process differentiate between students studying day education and those studying night education. Those students who chose day education favor accessing and using knowledge purposefully, while the night education students scored higher in the knowledge sharing category. However this differentiation is minor for all categories; accessing knowledge at the level [$t_{(1290)}$=1.29, p<.05], using knowledge purposefully at the level [$t_{(1290)}$=1.48, p<.05], and sharing knowledge at the level [$t_{(1290)}$= -.727, p<.05] .



Shape 1. The Opinion Gathered From Faculty Members Regarding the Access, Use and Sharing of Knowledge by Students via the Internet during the Teaching-Learning Process

According to faculty members, accessing knowledge by the students via the internet is high at 58%, middle 25%, and low 17%; using knowledge purposefully is low with 67%, middle 25% and high 8%; sharing knowledge high 84%, middle 8%, and low 8%. The opinions of faculty members and students concerning accessing, using purposefully and sharing knowledge by students via the internet during the teaching-learning process are compared in Graph 1.



Graph 1. The Opinions of Faculty Members and Students Concerning Accessing, Using Purposefully and Sharing Knowledge by Students via the Internet during the Teaching-Learning Process

In shape 1, the opinions from faculty members and students concerning accessing knowledge via the internet overlap. However, a gap widens regarding using knowledge purposefully and sharing knowledge.

DISCUSSION AND CONCLUSIONS

The main purpose of this research was to determine to which extent students access, use, and share knowledge via the internet by collecting data from both students and faculty members. Based on the results of this research, it can be concluded that the level of knowledge access by students via the internet during the teaching-learning process is high. Students are definitely utilizing the internet during their education and the teaching-learning process. As stated before, in Turkey, most university students at the graduate level (87.5%) use the internet (TUİK, 2009), while 82% of these cannot bear the thought of daily life without access to the internet (Eğitişim Career Institute, 2010). Also, the results conclude that levels of using knowledge with purpose and sharing knowledge are high as well. These results exceed the numbers produced from earlier research. According to previous studies, the rate of internet use to the sole purpose of educational activities by was 23.6% (Atav, Akkoyunlu and Sağlam 2006), 49.1% (Toprakçı, 2010) and 15.5% (Demir, 2001); the rate of sharing the knowledge which was accessed and used was 34.2% (Toprakçı, 2010).

During teaching-learning activities, females use the internet in a more functional sense than males. These results are concurrent with those from previous studies. This finding overlaps with the research conclusions in literature. According to the research conclusions of Tutkun, Erdoğan and Arslan (2010), female students hold higher standards concerning educational activities when compared with males. This may be because female students also tend to have higher standards of responsibility for teaching-learning processes and helping attitudes in a classroom environment. Also, the level of a student's class corresponded with their level of internet access, use and knowledge sharing. Reasons for this phenomenon may lie in students' desire to obtain knowledge from multiple sources in addition to the internet during the teaching-learning process in order to obtain a higher class level.

Variations could also be seen when comparing internet use with the students' corresponding academic department. The education department scored highest for internet access when compared to the engineering, science-literature and theology departments. Those in the education department also use knowledge with purpose more often than those from engineering and science-literature, in addition to sharing knowledge at a higher level than the engineering and technical education departments. All this differentiation agreed with the earlier research of Demir (2001). This may be due to the education department's awareness for the need of centralizing the role of the internet in the classroom for those students the graduating teachers will one day educate. Another factor added to the test was the differences between education majors focusing on either day or night education. While those concentrating on day education were more likely to access and use knowledge with purpose via the internet, it was more prevalent for those with a night education concentration to share knowledge. These results may be caused by the view that continuance with students is important to the day shift teaching type, whereas night shift teaching prefers to focus on thinking about and sharing their thoughts with others.

There are noticeable overlaps between the opinions of students and faculty members regarding the level of accessing knowledge via the internet. However, some differences arise concerning the use of this knowledge. These conclusions overlap with the findings of Demir (2001). The viewpoint that it is necessary to access the internet during the teaching-learning process is common among faculty members. However, they also believe students cannot obtain true knowledge or choose knowledge with purpose via the internet. Faculty members are of the opinion that the internet causes students to slack off in their studies and research and the students' awareness of internet utilization is low. Due to knowledge pollution on the internet, students cannot access true data sources and therefore the internet simply provides students with class necessities without adding to their cognitive processes. Students simply do not internalize the data before going back out and sharing with others who also have the aim of learning.

LIMITATIONS

There are several limitations to this research. First, only one university was included in the research population. This population might have been extended to include universities at different development levels and within different geographic regions. Also, the quantitative data were collected not only from the teaching staff but also from students using the structured interview method.

IMPLICATIONS AND RECOMMENDATIONS

The results of this investigation could have important implications for more effective use of the internet and communication technologies during the teaching-learning process. A curriculum on the subject of internet use

could be created as extracurricular activities for students. Students should have the ability to use the internet effectively in school, home and social life.

According to all findings, in conclusion of the research and for the sake of future studies, these suggestions can be made: 1- Students should be educated in order to produce progressive attitudes towards accessed knowledge via the internet. 2- Students should be educated about accessing knowledge, using it with purpose, and sharing. 3- Faculty members should offer information to students about how to use internet and they should evaluate their activities in order to give feedback about the conclusions.

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