THE RELATIONSHIP BETWEEN SECONDARY SCHOOL STUDENTS' COMPUTER USE SELF–EFFICACY LEVELS AND INFORMATION LITERACY LEVELS

Asst. Prof. İsmail YÜKSEL[*]

Res. Asst. Gülçin ÇELİKER*

Abstract

The purpose of this study was to identify the secondary education students' computer use self-efficacy levels and their information literacy levels, and to examine the relationship between them. The study was conducted via a cross-sectional survey design on 243 secondary school students in Turkey. The data of the study was collected thoroughComputer Use Self-efficacy Scale and Information Literacy Scale. The Cronbach alpha coefficiencies of the scales were 0.95 and 0.96, respectively. To analyze the data descriptive statistics, comparsion tests (t-test and one way anaylsis of vraince), and correlation analysis were used. The findings manifestedthat students' computer use self-efficacy levels and information literacy skills were at medium level. Results also revealed that gender and class levels of students made significant diffrences in their computer use self-efficacy levels and their information literacy levels. Finally findings showed that there was a positive relationship between the students' computer use self-eficacy levels and information literacy skills.

Keywords: Computer use self-efficacy level; Information literacy level; Secondary school students

---

[*] **EskişehirOsmangazi University**

Introduction

Nowadays, many improvements and innovations take place due to technological advancement. As a result of these developments and innovations, transition to information society gained speed and the speed of information production increased. The production and the transition of the information so intensely and quickly has altered our understanding of qualified person as individual who knows how to get the information rather than who simply knows it (Koç&Koşaner, 2005). Moreover, individuals need to have skills to find and use the information- that is information literacy skills- to be successful in this day and age (Kurbanoğlu&Akkoyunlu, 2002).

Information literacy is the skill to access and use the information (AASL/ACCT, 1998). An information literate person is someone who recognizes that he needs information, accesses the needed information, evaluates and uses it effectively (Korkut&Akkoyunlu, 2008). In other words, information literate person is someone who finds the information quickly, accesses the changing information from different sources, uses and shares the accessed information (Korkut&Akkoyunlu, 2008). The ability to find, access, evaluate and use information in effective and ethical ways is necessary for students to be successful in their educational program and also in their work and personal lives (Saunders, 2012). In our age, getting the information by using traditional methods has given its place to learning approaches in which learners are quite active (Adıgüzel, 2005). This change in accessing the information resulted in the change of curriculums and the roles of the students. The effect of this is obviously seen in the curriculums applied recently in Turkey. Students do not only receive the available information, they are active learners, researchers and discoverers of the information (Aldemir, 2003). Students do not limit their learning only with school, they develop their life-long learning by acccessing the needed information by themselves (Adıgüzel, 2005).

Some skills required in an information literate person has been identified by the help of some recent studies about the topic (Başaran, 2005). These skills can be stated like these;

An information literate person can,

- identify the needed information exactly.
- formulate questions based on needed information.

- determine the potential sources.
- develop effective research strategies.
- access the information by using computer and other technological devices effectively.
- evaluate the accessed information.
- organizethe information to be able to use in pratice.
- combine the new knowledge with the foreknowledge.
- use the accessed knowledge effectively in decision making and critical thinking.

As mentioned, information literate person also needs to use computers and other technical devices effectively. Use of technology as a tool in accessing, using and sharing information has a big importance (Korkut&Akkoyunlu, 2008). The effective use of computer is regarded as a prerequisite of information literacy. Hence, people's basic knowledge on computer and their abilty to use it in daily life is quite significant (Geçer&Dağ, 2010).Bozionelos (2003),stated the importance of feeling competent and secure to be able to use computer efficiently. Accordingly, as the high level of anxiety cause a decrease in computer use, the individuals need to have high self-efficacy level. Computer use self-efficacy is someone's belief on how well he uses the computer (Compeau & Higgins, 1995).Self-efficacy is developed from external experiences and knowledge from one's own experiences (Bandura, 1977). For this reason, only thethe individual's experience had by using computer can improve this belief. Accordingly, it is important to train the students on computer use during elementary education by starting the last years of primary education (Kılınç&Solmaz, 1995).

Information Technology is seen as a supportive tool in learning environment for both teachers and students and thus the use and proliferation of computer-based learning environments gain importance day by day (Geçer&Dağ, 2010). Today's students need to have some skills to be able to adapt to the computer-based learning environments. The evaluation of these skills is thought to be important in terms of improving the information literacy and the computer use skills. For this reason, the objectives of this research are to identify the students' computer use self-efficacy levels and information literacy levels, to determine the relation between them and to decide whether these skills differ according to students' gender and class level. This paper seeks to address the following questions:

1. What are the computer use self-efficacy and information literacy levels of the high school students?

2. Does participants' gender make a significant difference in their computer use self-efficacy and information literacy levels?

3. Does participants' class level make significant difference in their computer use self-efficacy and information literacy levels?

4. Is there a relation between computer use self efficacy and information literacy levels of the participants?

Methodology

In this descriptive study the cross-sectional survey design was used. The cross-sectional survey is a research design which aims to examine a situation as it is, and to compare according to some variables. In this study, this design was used to determine computer use self-efficacy and information literacy levels, to compare their scores in terms of gender and class level, and to determine relationship between computer use self-efficacy and information literacy levels.

Participants

Participants of the study were 243 students in a public secondary school in 2012-2013 academic year in Turkey. The demograficdistributions about the participants are given in Table 1.

Table 1: Demographic distribution of participants

		f	%
Gender	Male	111	45.7
	Female	132	54.3
Level	9	75	30.9
	10	74	30.5
	11	49	20.2
	12	45	18.5

	Never	-	-
Computer	Rarely	37	15.2
Use	Sometimes	91	37.4
Frequency	Often	70	28.8
	Very Often	45	18.5

The distribution indicated that %54,3 of these students were female while %45,7 were male; %30,9 of the students were 9th graders, %30,5 were 10th graders, %20,2 were 11th graders and %18,5 of them were 12th graders. When the computer use frequencies of the students who answered the scale examined, the %15,2 of the students stated that they use computer "rarely" while %37,4 stated "sometimes", %28,8 "often" and %18,5 "very often".

Instruments

The data of this study was collected thorugh "Computer Use Self-efficacy Scale" and "Information Literacy Scale".

Computer Use Self-efficacy Scale (CUSS): It was developed by Sipahi, Yurtkoru and Orhan (2006). It aimed to reveal the students' self-efficacy levels on computer use.Six point likert-type scalehad 19 test items and were divided into two categories. The highest possible score was 114 and the lowest was 19. Students who score between 19-50 show low level efficacy, 51-82 medium level efficacy, and 83-114 high level effficacy.The reliability coefficient calculated was 0.94 and 0.85 respectively. In this study, the cronbach alpha reliability coefficient was 0.95.

Information Literacy Scale(ILS): It was developed by Adıgüzel (2011). Five point likert-typescale, which aimed to assign the information literacy levels of the students, had 29 items. The highest possible score was 145 and the lowest was 29. Students who get score between 29-67 have low level information literacy, 68-106 medium level literacy, and 106-145 high level literacy. The reliability coefficient calculated was 0.928. In this study, the cronbach alpha reliability coefficient was 0.96.

Data Analysis

To detetermine and comparestudents' computer use self-efficacy levels and their information literacy levels,descriptive statistics (frequencies, percentages, means and standard deviations),

A Quarterly Double-Blind Peer Reviewed Refereed Open Access International e-Journal - Included in the International Serial Directories
Indexed & Listed at: Ulrich's Periodicals Directory ©, U.S.A., Open J-Gage, India as well as in Cabell's Directories of Publishing Opportunities, U.S.A.

International Journal of Research in Social Sciences
http://www.ijmra.us

594

Independent Sample T-Test and One - Way ANOVA tecniqueswere used. Post-hoc comparison test (Tukey HSD Test) was used to indicate where the differences occur. To examine the relationship between the two variables, Pearson corrleation analysis was used. Significance level in the study was set to 0.05.

Findings

The first concern of the study was to determine the students' computer use self-efficacy levels and information literacy levels. The results were shown in Table 2.

Table 2: The computer use self-efficacy and the information literacy levels of the students

	f	Mean	SD
Computer use self-efficacy	243	72.78	22.80
Information literacy	243	89.22	24.63

The findings indicated that the mean of the students' computer use self-efficacy levels is 72.78. This value shows that the students' computer use self-efficacy levels are at medium level when it is compared with the highest score got from the scale. The mean of the students' information literacy levels is 89.22. When considering the maximum score for the information literacy scale, the revealed mean indicated that information literacy levels of the students were at medium level.

The second concern of the study was to compare participants' scores in CUSS and ILS according to their gender. İndependednt samples t test was conducted to determine the differences. The results of the analysis were shown in Table 3.

Table 3: Comparison of students' scores in CUSS and ILS according to their gender

	Gender	F	Mean	Sd	t	df	*p*
CUSS							
	Female	132	65.50	21.96	-5.777	241	.000*
	Male	111	81.44	20.74			
ILS							
	Female	132	84.68	26.16	-3.245	240.92	.001*
	Male	111	94.62	21.58			

A Quarterly Double-Blind Peer Reviewed Refereed Open Access International e-Journal - Included in the International Serial Directories
Indexed & Listed at: Ulrich's Periodicals Directory ©, U.S.A., Open J-Gage, India as well as in Cabell's Directories of Publishing Opportunities, U.S.A.
International Journal of Research in Social Sciences
http://www.ijmra.us

595

*(p<0.05)

The results indicated that both female participants' scores (M=65.5; SD= 21.96)and male participants' scores (M=81.44; SD=20.74) in CUSS were at medium level. The t test indicated a significant difference between the groups (t= -5.777, p=.000<0.05). The results showed that male students outperformed in computer use than did the female students.

The results of the analysis also manifested that scores of both groups in ILS were at medium level. However, their scores were close to higher level. Female participants' mean score was 84.68; SD=26.16 while male participants' mean score was 94.62;SD=21.58. An independent t test indicated that their gender made signifincat difference in their ILS scores in favour of male participants (t= -3.245, p=.000<0.05). The results showed that the information literacy levels of the male students were higher than the female students.

The third concern of the study was to examine the effect of participants' class level on their scores in CUSS and ILS. A one way analysis of variance was used to examine the differences. The results were indicated in Table 4.

Table 4: Comparison of the mean of the students' computer use self-efficacy levels according to class and the frequency of computer use *(ANOVA test results)*

Descriptives					*ANOVA*				
	N	M	SD		SS	df	MS	F	p
CUSS									
9th G	75	64,35	20,67	Between Groups	14262,10	3	4754,03	10,183	,001*
10th G	74	71,19	23,49	Within Groups	111578,77	239	466,85		
11th G	49	75,61	23,65	Total	125840,87	242			
12th G	45	86,40	17,09						

A Quarterly Double-Blind Peer Reviewed Refereed Open Access International e-Journal - Included in the International Serial Directories
Indexed & Listed at: Ulrich's Periodicals Directory ©, U.S.A., Open J-Gage, India as well as in Cabell's Directories of Publishing Opportunities, U.S.A.
International Journal of Research in Social Sciences
http://www.ijmra.us

596

	N	Mean	SD		SS	df	MS	F	p
Total	243	72,79	22,80						

ILS

	N	Mean	SD		SS	df	MS	F	p
9th G	75	79,52	21,38	Between Groups	16470,17	3	5490,05	10,063	,001*
10th G	74	87,31	25,81	Within Groups	130389,82	239	545,56		
11th G	49	95,18	23,91	Total	146860,00	242			
12th G	45	102,04	21,59						
Total	243	89,22	24,63						

*(p<0.05)

The results indicated that 12th grade students' mean score (M=86.40; SD=17.09) in CUSS was higher than the other groups. All groups mean scores, except 12th graders, were at medium level. The results also indicated that as the class level increased students' computer use self-efficay levels increased, as well. This higlights that younger students consider themselves as novice in using computers.A one-way between-group analysis of variance manifested that there was a statistically significant difference at the p <0. 05 level in computer use self-efficacy levels for four groups, [$F_{3,242}$= 10.183, p=.001<0.05]. Further analysis using the Tukey HSD test indicated that the mean score for 9th grade students was significantly different from 10th and 11th grade students. These findings indicated that 10th and 11th grade students were more successful than 9th grade students. Moreover a significant difference was found between 10th and 12th grade students which showed that 12th grade students were more successful than 10th graders.

The results of analysis also indicated that all groups performed at medium level in ILS. However, the mean scores are close to higher level (106-145). 12th grade students' mean score (M=102.04; SD=21.59) in ILS was found higher than the other groups.The results also manifested that as the

A Quarterly Double-Blind Peer Reviewed Refereed Open Access International e-Journal - Included in the International Serial Directories
Indexed & Listed at: Ulrich's Periodicals Directory ©, U.S.A., Open J-Gage, India as well as in Cabell's Directories of Publishing Opportunities, U.S.A.

International Journal of Research in Social Sciences
http://www.ijmra.us

597

grade increases students' scores in ILS increase, as well. A one-way between-group analysis of variance revealed that information literacy levels of the students differed significantly according to their class level [$F_{3,242}$= 10.06, p=.000<0.05]. Further analysis using the Tukey HSD test indicated that 9th graders' scores differed significantly from the 10th and 11th graders' scores.The 11th and 12th graders significnalty outperformed in ILS than did the 9th graders.

The last concern of the study was to examine the relationship between computer use self-efficacy and information literacy levels of students. The results of the correlations analysis was shown in Table 5.

Table 5: The relation between the computer use self-efficacy and information literacy levels of the students.

	n	r	p
Computer use self-efficacy Information literacy	243	.601	.001*

*p<0.05

The results indicated that that there was a significant relation between the computer use self-efficacy and information literacy levels of the students (*r*=.60; *p*< 0.05). This relation is a medium-level positive correlation. The findings indicate that as students'computer use self-efficacy levels increase their information literacy levels increase, as well.

Discussion and Conclusion

As the students with computer use self-efficacy and information literacy skills are concious of the importance of lifelong learning, it is significant for secondary education students to have these skills to be able to be successful in the future. In this study the computer use self-efficacy and information literacy levels of the students were examined.

The first concern of the study was to examine students' computer use self-efficacy and information literacy levels. The results revealed that both computer-use self-efficacy levels and information literacy levels of the students were at medium level. Compeau and Higgings (1995) argue that individuals' perceptions of computer self-efficacy influence their computer

A Quarterly Double-Blind Peer Reviewed Refereed Open Access International e-Journal - Included in the International Serial Directories
Indexed & Listed at: Ulrich's Periodicals Directory ©, U.S.A., Open J-Gage, India as well as in Cabell's Directories of Publishing Opportunities, U.S.A.

International Journal of Research in Social Sciences
http://www.ijmra.us

598

behaviours. Therefore the students' self-efficacy levels have an affect on their perceived ease of use and hereby their success on computer use. This finding of the study indicates that students are neither good nor bad at computer use. They can use it at medium level. They are information literate individuals at medium level, too. However, being information literate person has a crucial place in the success of individuals and accordingly in the education of a society as individuals who know how to get, evaluate and use information are needed in todays' world.

The second concern of the study was to compare participants' scores in CUSS and ILS according to their gender. The results indicated that both computer use self-efficacy and information literacy of the students were at medium level. However, there has been found a significant difference between male and female students in their CUSS and IL levels. According to the results, male students outperformed in CUSS than did the female students. This finding of the study corroborates the findings of a great deal of previous work in this field (Beyer, 2008; He & Freeman, 2010; Young, 2000). The difference in computer use self-efficacy levels of the male and female participants can be explained by gender schema theory introduced by Bem (1981). According to her teory, individuals learn gender role standards and expectations in society, and they develop behaviours and attitudes according to these standards. In society the subjects like information technologies, mathematics, physics and engineering are in tendency to be seen as male dominant. Gender schema theory asserts that females can not perform well in computers when they view them as a male domain (He& Freeman, 2010).

The third concern of the study was to examine the participants' class level on their scores in CUSS and ILS. The results clarified that as the class level increases, students' computer use self-efficacy and information literacy levels increase as well. It seems possible that this result of the current study is due to experience the students have with computers as they go through the class level. According to Bandura (1977), people with high self-efficacy are more likely to view the task as something achievable rather than something avoidable. In order that self-efficacy is developed from external experiences and knowledge from one's own experiences, the level of one's experience or knowledge on computers is positively related with computer self-efficacy. That means that as the class level increases, the students experience and accordingly knowledge on computers increase. That induces a rise in computer use self-efficacy levels of the students.

The last concern of the study was to examine the relationship between CUS and IL levels of the students. The results presented that there was a significant positive correlation between CUS and IL levels of the students. This means that as the students' knowledge and experience in computers increase, their skills to access, evaluate and use the information increase as well. Hence, the level of computer use self-efficacy of the students should be increased if information literate individuals are desired in the society. As the self-efficacy is developed by experience, the students should be given more chance to use and manage computers in schools to have more experience. Moreover, female students should be given a chance to do some activities which contain joy and communication with computers as they are uneasy about using computers and have more anxiety in computer use. According to King and collegues (2002), using computers frequently for communication helps females not to view computers as a threat.

Althogh the study presents valuable findings and adds to a growing body of literature on computer use self-efficacy and information literacy, it has several limitations. Firstly, this study was conducted quantitavely. A qualitative research can also be conducted to increase the reliability, validity and the generalizability of the study. When the literature was reviewed, it is seen that the related researches were generally conducted on university students. For this reason, it can be suggested for further researchers to conduct their study on secondary education students. And lessons related to computer use and information literacy skills can be integrated in secondary education curriculums to increase these skills.

References

AASL/AECT (American Association of School Librarians & Association for Educational Communications and Technology).(1998). Information Literacy Standards for Student Learning. Chicago, American Library Association.

Adıgüzel, A. (2011). The Development of the Scale of Information Literacy.*Dicle UniversityJournal of ZiyaGökalp Faculty of Education,* 15-28.

Adıgüzel, A. (2005). A new dimension in teacher qualifications during the orientation period to the European Union: Information Literacy. *Journal of National Education: (Quarterly) Education and Social Sciences, 33(167).*

Aldemir, A. (2003). A new approach in accessing to information: Information literacy. Aytaç Yıldızeli, Canan Duran, Hatice Kübra Bahşişoğlu. Ankara, 25-26.

Bandura, A. (1977). Self-efficacy: toward a unifyingtheory of behavioralchange.*Psychologicalreview*, *84*(2), 191.

Bem, S. L. (1981). The BSRI andgenderschematheory: A replytoSpenceandHelmreich. *PsychologicalReview, 88*, 369-371.

Başaran, M. (2005).Evaluation of Preservice Primary School Teachers' Information Literacy.*Journal of Gazi Faculty of Education, 25*(3), s. 163-177.

Beyer, S. (2008). GenderDifferencesandIntra-GenderDifferencesamongst Management Information SystemsStudents. *Journal of Information Systems Education*, *19*(3).

Bozionelos, N. (2003). Socio-economic background: Relation to computer experience, anxiety, and use. Unpublished manuscript.

Compeau, D., & Higgins, C. (1995). Computer self-efficacy: Development of a measure and initial test. *MIS Quarterly, 19*(2) s. 189-212.

He, J.,&Freeman, L. A. (2010). Are Men MoreTechnology-OrientedThanWomen? The Role of Gender on the Development of General Computer Self-Efficacy of CollegeStudents. *Journal of Information Systems Education*, *21*(2), 203-212.

Geçer, A. K., &Dağ, F. (2010).Identifying the computer literacy skill levels of university students: The case of Kocaeli University.*YüzüncüYıl University, Journal of Faculty of Education, 7*(1), 20-44.

A Quarterly Double-Blind Peer Reviewed Refereed Open Access International e-Journal - Included in the International Serial Directories
Indexed & Listed at: Ulrich's Periodicals Directory ©, U.S.A., Open J-Gage, India as well as in Cabell's Directories of Publishing Opportunities, U.S.A.

International Journal of Research in Social Sciences
http://www.ijmra.us

601

King, J., Bond, T., &Blandford, S. (2002).An investigation of computer anxiety by gender and grade.*Computers in Human Behaviour, 18*(1), 68-84.

Koç, S., &Koşaner, Ö. (2005).*Information literacy and Active Education: An Application Sample.*2nd Active Education Congress Book. İzmir: DokuzEylül Publications, 74-89.

Korkut, E., &Akkoyunlu, B. (2008). Foreign Language Teacher Candidates' Information and Computer Literacy Perceived Self Efficacy. *Hacettepe University Journal of Education*, 178-188.

Kurbanoğlu, S. S., &Akkoyunlu, B. (2002).Information Literacy: A Study Applied in a Primary School. *Turkish Librarianship, 16*(1), s. 20-40.

Saunders, L. (2012). Faculty Perspectives on Information Literacy as a Student Learning Outcome.*The Journal of Academic Librarianship, 38*(4), 226-236.

Sipahi, B., Yurtkoru, E. S., &Orhan, M. A. (2006).The impact of computer use competency on computer use attitude and office program use skills. *Marmara University Journal of Faculty Of Economics And Administrative Sciences, 21*(1), 459-476.

Young, B.J., (2000). Genderdifferences in studentattitudestowardcomputers. *Journal of Research on Computing in Education*, *33*(2), 204-16.