Internet Self-Efficacy of Secondary School Students: Effects of Computer Use, Email Use and Student Characteristics

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ABSTRACT

There is a growing emphasis on the use of technology in education. For students to effectively participate in technology assisted learning, they need to be computer literate. Internet self-efficacy is a potential indicator of computer literacy. This research study discusses the factors affecting secondary school students' Internet self-efficacy, made up of general self-efficacy and communicative self-efficacy. The data used in this study is a part of a larger data set of a research project funded between 2008 and 2010. A total of 609 secondary school students from ten different schools participated in the study. A MANCOVA was run to investigate students' Internet self-efficacy scores based on several student-related factors. The results revealed that students were highly confident in their Internet self-efficacy. Daily computer use and weekly email use, in addition to having Internet connection at home, were found to be significantly predicting students' Internet self-efficacy scores. The independent variables varied in terms of which dependent variables they affect. Student grade level and gender interestingly did not have any impact on the results. As the technology integrations are becoming more apparent in Turkish public schools thorough large-scale projects like FATİH, the findings of this study will be of the essence to understand the average student profiles in terms of the confidence with the technology.

Key Words: Internet self-efficacy, Information technology competencies, Internet connection, Computer use, Email use, Gender, Grade level.

İlköğretim Öğrencilerinin İnternet Öz-Yeterlikleri: Bilgisayar Kullanımı, Eposta Kullanımı ve Bireysel Özelliklerin Etkileri

ÖZET

Eğitimde teknoloji kullanımı üzerine artan bir ilgi var. Teknoloji yardımıyla öğrenme faaliyetlerine etkili bir şekilde katılabilmeleri için öğrencilerin bilgisayar konusunda bilgili olmaları gerekiyor. Internet öz-yeterliği, bilgisayar uzmanlığının potansiyel bir göstergesidir. Bu çalışmada ilköğretim öğrencilerinin genel ve iletişim öz-yeterliklerinden oluşan İnternet öz-yeterliklerini etkileyen faktörler araştırılmıştır. Çalışmada kullanılan veriler 2008-2010 yılları arasında desteklenen bir araştırma projesinin parçasıdır. Araştırmaya on değişik ilköğretim okulundan 609 öğrenci katılmıştır. Birçok öğrenci ile ilgili faktöre bağlı olarak öğrencilerin İnternet öz-yeterliklerini araştırmak için MANCOVA analizinden faydalanılmıştır. Araştırmadan elde edilen sonuçlar öğrencilerin İnternet öz-yeterliklerinin oldukça yüksek olduğunu ortaya koymuştur. Öğrencilerin İnternet öz-yeterliğini etkileyen faktörler olarak günlük bilgisayar kullanımı, haftalık e-posta kullanımı ve evde İnternet bağlantısı olması öne çıkmıştır. Öğrencilerin sınıf düzeyi ve cinsiyetin İnternet öz-yeterliği üzerine etkisi bulunamamıştır. Günümüzde FATİH projesi gibi geniş kapsamlı projeler yardımıyla teknoloji entegrasyonu Türk milli eğitiminde daha da ön plana çıkarken, bu çalışmanın sonuçları öğrencilerin teknoloji konusundaki güvenlerini anlayarak hareket etmek açısından faydalı olacaktır.

Anahtar Sözcükler: İnternet öz-yeterliliği, Bilgi teknolojisi yetkinliği, İnternet bağlantısı, Bilgisayar kullanımı, E-posta kullanımı, Cinsiyet, Sınıf düzeyi.

INTRODUCTION

The use of computers in primary and secondary schools has increased 10 fold over the past decade (TURKSTAT, 2010). For many years, teachers struggled to teach computer technology because not every classroom was equipped with a computer on which students could practice what they learned. It is very hard to retain information if a hands-on method is not taken with children, especially if the subject is foreign. Now, 95% (27612) of primary and secondary schools have computers in their classrooms with the Internet connection in Turkey (Muharremoglu, 2010).

In this paper, the focus is on the factors affecting the perceived Internet and communication competencies of secondary school students because these competencies are one of the leading constructs for children to be capable learners in the information technology era where computer assisted learning is becoming a primary way to convey and conduct instruction. The perceived Internet and communication competencies are defined as the Internet self-efficacy and discussed in the next section below. Change in this construct throughout the grade level is also investigated. It is not the aim of this paper to compare the grade levels in terms of competencies, but the idea is to describe what particular factors affect students' self-efficacy in certain grade levels. All of these factors may have different contribution in competencies depending on the grade level.

According to the results of the "ICT usage survey on households and individuals" carried out by Turkish Statistical Institute in 2010, a dramatic increase in the use of information technologies is clearly underlined. The statistics shows that 41,6% of households have access to the Internet at home by the year 2010. The rapid increase can be clearly seen when this information is compared to the results of the same survey conducted in 2005 when only 8,66% of households had access to Internet. The most popular activity of the individuals who have accessed to the Internet is sending and receiving email with 72,8% (TURKSTAT, 2010). No technology has ever become so universal so fast (Samuel, 2001). Having the Internet gave individuals an alternative way to communicate with distant family and friends when traditional (i.e., telephone and face-to-face) methods were unavailable (Hampton and Wellman, 2001). Internet use seemed to be more attractive to girls than boys. Mumtaz (2001) found that primary school boys spent more time playing computer games whereas girls spent more time on the Internet emailing friends. Martin (1998) showed that girls were more enthusiastic than boys in doing tasks with the Internet. Research investigated specific uses of the Internet suggest a tendency for females to email more often than males on the one hand, and, on the other hand, for males to search the Internet more intensely than females (Durndell andHaag, 2002; Jackson et al., 2001) and to utilize different sites compared to females (Wasserman and Richmond-Abbott, 2005).

According to Deniz (2010), average Internet use of the secondary school students per week is 15 hours. Although the percentage of students who have used a computer has grown tremendously in the last 10 years, not all have experienced the technology evenly. It is reported in the literature that poorer students and females are slower to use computers and the Internet (Harris, 1999).

Computer usage is one of the particular interests affecting the computer knowledge, because different constructs such as computer knowledge, computer-related cognitions, attitudes, and situational factors will all be related to the use of computers. For example, limited access to computers may cause a failure in computerized testing, while negative attitudes towards computers could affect the performance (Schroeders and Wilhelm, 2011).

The gender gap in computer use has been a major concern among educators (Colley and Comber, 2001; Imhof, Vollmeyer, and Beierlein, 2007). Most male secondary students felt more confident with the use of computers than female students (Bovee, Vogt and Meelissen, 2007). A number of studies have investigated the role of gender in computer-related attitudes and in different aspects of computer. In a number of countries, it was found that girls have less computer experience and hold less positive attitudes towards computers than boys (Schroeders and Wilhelm, 2011; Sainz and Saez, 2010; Meelissen and Drent, 2008; North and Nayes, 2002; Kadijevich, 2000; Durndell and Thomson, 1997; Shashaani, 1997; Whitley, 1997; Robertson et al., 1995). Equally, there is evidence that denies a difference (Uzun and Sengel, 2009; Sieverding and Koch, 2009; Teo, 2008).

Computer literacy involves two major issues: knowing what computer can do and how to instruct computer to do things that should be done. For students to effectively participate in computer assisted learning there is a need for them to be computer literate. It is, therefore, essential to appreciate the introduction of Information and Communication Technology (ICT), and computer as useful gadgets not only for communication but also for imparting knowledge. Researchers suggest that the instructional design process should be redesigned in order to introduce the computers to students at early school years. Daniel (2005) also suggests that since students are being introduced to computers and the Internet at an earlier age, technology ethics needs to be introduced at all levels of education.

Students use computers both in and out of school environment for different activities. Relying on these activities, the research shows that computer use/experience affect students' achievement in different subjects (Attewell & Battle, 1999; Mumtaz, 2001) in terms of socio economic (Osin, Nesher, & Ram, 1994) and gender differences (Campbell, 2000). Afnan (2010) reports that secondary school students in Saudi Arabia are using the computer for two main purposes: writing/word processing and Internet. To give an idea of how such uses affect learning related outcomes, Janssen Reinen and Plomp (1997), for example, showed that female students

indicated a higher engagement in word-processing in comparison with male students. In contrast, Comber et al. (1997) found no gender differences in the use of the computer for word-processing and playing games.

Internet Self-Efficacy

A computer by itself does not mean much to an ordinary user anymore unless the Internet connection accompanies it. As indicated earlier, one of the primary uses of the Internet is to use it for e-mail communication (TURKSTAT, 2010; Samuel, 2001). Therefore knowing how to accomplish Internet tasks and how to communicate through e-mail are important indicators of use of information technology. When measured through one's own understanding of possessing such knowledge, these two skills or competencies can be combined under the concept of Internet self-efficacy.

Self-efficacy, the underlying concept, is defined as the faith "in one's capabilities to organize and execute the courses of action required to produce given attainments" (Bandura, 1997, p. 3) and depending on the context may be used in different meanings such as judgment about one's own or another person's ability to perform a task or a future event (Barbalet 1998). Relatedly, Internet self-efficacy indicates one's belief in his/her abilities about accomplishing Internet tasks and is used to mean this way throughout this current study. Several Internet self-efficacy scales exist in the literature. For example, Daugherty, Eastinand, and Gangadharbatla (2005) define people's Internet self-efficacy as "confidence in their ability to successfully understand, navigate, and evaluate content online" (p. 71). Eastin and LaRosa, 2000 use items such as "I feel confident using the Internet to gather data" and "I feel confident turning to an online discussion group when help is needed" to measure the Internet self-efficacy.

Several studies examine Internet self-efficacy as a factor influencing other individual-related factors. Gangadharbatla (2008), for example, connects Internet self-efficacy with students' attitudes toward social networking sites because he claims that beliefs affect behaviors. Similarly, Kao and Tsai (2009) studied teachers' opinions about web-based professional development as a means of Internet self-efficacy and other belief-related factors. This current study focuses on how Internet self-efficacy itself is influenced by other student-related factors.

As the technology integrations are becoming more apparent in Turkish secondary schools thorough country-wide, large-scale projects like FATİH and DynEd initiated by the Turkish Ministry of National Education, the findings of this study will be of the essence to understand the average

student profiles in terms of the confidence with the technology in one of Turkey's biggest cities. It is essential to conduct studies investigating the student readiness on technology-related subjects and identifying the needs in order for such programs to be successfully applied. No adequate studies of this sort exist – at least on factors as examined in this study – in Turkey, which makes the study particularly expedient.

Research Questions

This study aims to identify what factors affect secondary students' Internet self-efficacy. In this perspective the following research questions were investigated:

1. What is the students' current level of Internet self-efficacy? Specifically, what is the level of general self-efficacy and communicative self-efficacy?

2. What are the effects of the following factors on Internet self-efficacy?

   - Having Internet connection at home.

   - The frequency of email use.

   - The amount of daily computer use.

   - Grade level.

   - Gender.

METHOD

The data used in this study is a part of a larger data set of a research project funded between 2008 and 2010. A survey instrument (specified in the next section) was administered to primary and secondary school students in 10 different public schools in Bursa, Turkey. The purposive sampling was utilized to select subjects due to funding and project related limitations. There were students from 4th, 5th, 6th, and 7th grades. For the purposes of the study, 6th and 7th grade students' knowledge on Internet and communication technologies was examined.

Instruments

This study utilized a survey as the data collection instrument, as stated previously. The survey had 11 questions about the possessing computer-related resources and 52 questions about the competencies on

computer and Internet related tasks, in addition to the questions about descriptive information like grade and gender.

The independent variables came from the 11 questions and this study utilized three of those questions: Internet connection at home (0 = does not have, and 1 = have); frequency of email check/use (0 = Less than once a week, 1 = Once a week, 2 = Once in two days, 3 = Once a day, and 4 = More than once a day); Frequency of computer use (0 = Less than 15 mins, 1 = 16 to 30 mins, 2 = 31 to 60 mins, and 3 = 61 to 120 mins, 4 = More than 120 mins). Student gender (0 = Male, and 1 = Female) and student grade level (Grade 6, and Grade 7) were also included as independent variables.

The dependent variables came from the 52 questions, which were grouped under six categories. This study used two of those categories as scales for the purpose of Internet self-efficacy, which fit into the general framework defined by Wu and Tsai (2006). They divide Internet self-efficacy into (1) general self-efficacy and (2) communicative self-efficacy (defined below). Each scale consisted of six questions. These questions had items with three-point Likert scale where 0 = no (not knowledgeable), 1 = maybe (somewhat knowledgeable), and 2 = yes (knowledgeable). Items for the two scales were derived from the work of Duvel and Pate (2004) who identified survey items after a thorough examination of information technology-related courses taught in technical degree programs offered at 30 different schools and consultation with faculty members in associated departments. Descriptions of the scales are as follows:

General self-efficacy scale measures students' general confidence in terms of using Internet related tools. Items of this scale included statements like "I can add a web site to Favorites" and "I can search on the Internet by using keywords."

Communicative self-efficacy scale measures students' confidence in performing Internet-based communications. In this study, the Internet-based communications specifically meant the perceived electronic mail (email) competencies. Items of this scale included statements like "I can send mail to more than one address simultaneously" and "I can forward mail to someone else."

Data Analysis

The research questions were examined through a MANCOVA analysis. The two scales to represent the dependent variables, general self-

efficacy and communicative self-efficacy consisted of separate mean scores of the respective survey items. Using the sample (considering all grade levels), the items had acceptable coefficient reliability values of 0,86 and 0,91, respectively.

The independent variables of Internet connection at home, gender, and student grade level were used as is. The grade level was entered into the analyses as a fixed factor because normally one could easily consider grades to be two distinct groups and would expect the two grades to possess significantly varying values regarding the dependent variables. All remaining independent variables were considered as covariates to determine their magnitude-wise impact on the dependent variables. For this purpose, the response items in the questions of the frequency of email use and the frequency of computer use were transformed into separate dichotomous variables. For each of those questions, the lowest values were considered to be the base variables and, therefore, were excluded from the analyses.

RESULTS

There were a total of 609 students in grade 6 and 7. Not all students responded to every question in the survey so the numbers are given per analysis. The last column in Table 1 shows the participants who responded to whether they had email account and also shows the maximum number of participants in the study. The participants consisted of 317 males and 292 females. When the simple descriptive statistics were checked, more than half of the students reported that they had Internet connection at home (see the last row in Table 1). Majority of the students indicated they have email accounts. Males and females had similar ratios considering these two resources.

Table 1: Number of Participants with Internet and Email Capabilities

	Grade	Have Internet Connection at Home			Have Email Account		
		No	Yes	Total	No	Yes	Total
Male	6	77	147	224	22	207	229
	7	23	62	85	10	78	88
	All	100	209	309	32	285	317
Female	6	73	120	193	25	171	196
	7	32	61	93	12	84	96
	All	105	181	286	37	255	292
All	6	150	267	417	47	378	425
	7	55	123	178	22	162	184
	All	205	390	595	69	540	609

The question on weekly email usage was answered by 363 6th graders and 160 7th graders. Majority of the students were checking their email either once a day or more than once a day (Figure 1). Students from different grade levels showed similar distributions.

Another independent variable is about the daily computer usage of the students. The question was answered by 359 6th graders and 154 7th graders. The statistics show that majority of the students daily spend 1 to 2 hours (61 to 120 minutes) in front of the computer (Figure 2). This mass corresponds to about 33-34% of the participants for both grades 6 and 7. Again, the grade levels show similarities in terms of the computer use, too. It can also be said from Figure 2 that a great deal of students spends more than half hour on computers everyday as the cumulative frequencies are put into consideration.
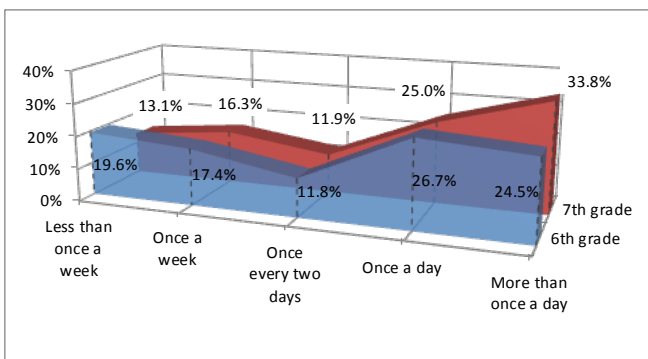

Figure 1: Participants' average frequency of checking/using email (N=363 for 6th grade, N=160 for 7th grade)
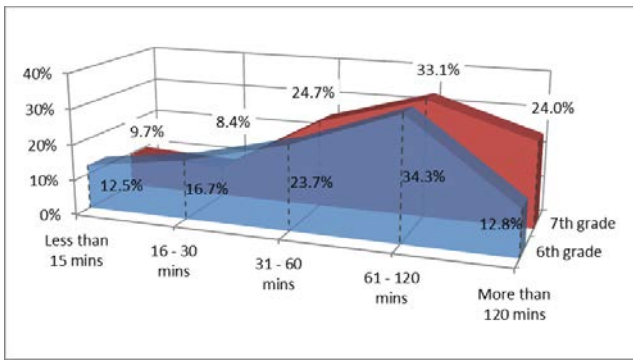
Figure 2: Participants' average daily computer use
(N=359 for 6th grade, N=154 for 7th grade)

As mentioned previously, participants' Internet self-efficacy was inquired through two scales. For both scales, the minimum observed value was 0 (not knowledgeable) and the maximum observed value was 2 (knowledgeable). Table 2 shows the overall mean scores and the standard deviations for the two dependent variables as organized into gender and grade groups. By and large, the cells in the table have values close to each other. But, more importantly, the table shows that the students are highly confident in Internet self-efficacy as the mean scores are close to the maximum possible score of 2.00.

Table 2: Mean Scores (M) and Standard Deviations (SD) of the Dependent Variables (0=not knowledgeable to 2=knowledgeable)

	Internet skills			Email skills		
	6th grade	7th grade	Total	6th grade	7th grade	Total
	M/(SD)	M/(SD)	M/(SD)	M/(SD)	M/(SD)	M/(SD)
Male	1,81	1,92	1,84	1,75	1,83	1,78
	(0,36)	(0,21)	(0,33)	(0,44)	(0,37)	(0,42)
Female	1,81	1,80	1,80	1,71	1,79	1,74
	(0,33)	(0,31)	(0,32)	(0,49)	(0,40)	(0,46)
Total	1,81	1,86	1,82	1,73	1,81	1,76
	(0,34)	(0,27)	(0,32)	(0,46)	(0,39)	(0,44)

As specified in the Data Analysis section, a MANCOVA was run. The analysis showed that, except for Gender, Grade level, and Frequency of

daily computer use (16 to 30 minutes), all other variables appeared to significantly affect either general self-efficacy or communicative self-efficacy (Table 3). This means that, all things considered, student Gender and student Grade level, which are the two distinct student characteristics, do not have any effect on any of the dependent variables. Analyses also showed that Internet connection at home predicted both of the dependent variables. Frequency of email check/use was only related to the communicative self-efficacy. And, the remaining variables about the Frequency of daily computer use only affected general self-efficacy scale.

Table 3: Results of the Multivariate Statistics and the Statistical Meaning of the Independent Variables on Individual Dependent Variables

| | Multivariate Tests | | | | Tests of Between-Subjects Effects | | | | | |
| | *Wilks'* | | *Hyp.* | | *General self-efficacy* | | | *Communicative self-efficacy* | | |
Effect/Source	*Lambda*	*F*	*df*	*Sig.*	*df*	*F*	*Sig.*	*df*	*F*	*Sig.*
Corrected Model					11	7,83	0,00	11	7,94	0,00
Intercept	0,16	1153,29	2	0,00	1	2038,78	0,00	1	1195,66	0,00
Gender	1,00	0,05	2	0,95	1	0,11	0,74	1	0,02	0,89
Internet connection at home	0,95	11,23	2	0,00	1	21,94	0,00	1	7,41	0,01
Frequency of email check/use										
Less than once a week (base)										
Once a week	0,94	14,07	2	0,00	1	2,89	0,09	1	27,75	0,00
Once in two days	0,95	11,78	2	0,00	1	0,64	0,42	1	21,72	0,00
Once a day	0,91	21,51	2	0,00	1	2,83	0,09	1	41,53	0,00
More than once a day	0,92	18,55	2	0,00	1	3,45	0,06	1	36,42	0,00
Frequency of daily computer use										
Less than 15 mins (base)										
16 to 30 mins	0,99	1,72	2	0,18	1	3,42	0,07	1	0,90	0,34
31 to 60 mins	0,97	8,26	2	0,00	1	12,05	0,00	1	0,16	0,69
61 to 120 mins	0,96	9,51	2	0,00	1	14,70	0,00	1	0,04	0,84
More than 120 mins	0,98	4,51	2	0,01	1	8,00	0,01	1	0,10	0,76
Grade level	1,00	0,97	2	0,38	1	0,92	0,39	1	1,76	0,19

Parameter estimates were also calculated as part of the MANCOVA analysis to further define the magnitude-wise contribution of the independent variables on the dependent variables. The significantly affecting parameters were framed in Table 4. The table visibly shows that the items about the Frequency of email use are directly related with the communicative self-

efficacy, and the items about the Frequency of computer use are directly related with the general self-efficacy.

Table 4. Parameter estimates predicting the dependent variables (*Set to zero because of redundancy). ⌐⁻⁻⌐ = significant predictors and their corresponding values.

Parameter	General self-efficacy				Communicative self-efficacy			
	B	Std. Error	t	Sig.	B	Std. Error	t	Sig.
Intercept	1,67	0,04	41,82	0,00	1,61	0,05	32,18	0,00
Gender	-0,01	0,02	-0,33	0,74	-0,00	0,03	-0,14	0,89
Internet Connection at home	0,12	0,03	4,68	0,00	0,08	0,03	2,72	0,01
Frequency of email check/use								
Less than once a week (base)								
Once a week	0,06	0,03	1,70	0,09	0,23	0,04	5,27	0,00
Once in two days	0,03	0,04	0,80	0,42	0,22	0,05	4,66	0,00
Once a day	0,05	0,03	1,68	0,09	0,26	0,04	6,45	0,00
More than once a day	0,06	0,03	1,86	0,06	0,25	0,04	6,04	0,00
Frequency of daily computer use								
Less than 15 mins (base)								
16 to 30 mins	0,08	0,04	1,85	0,07	0,05	0,05	0,95	0,34
31 to 60 mins	0,13	0,04	3,47	0,00	-0,02	0,05	-0,40	0,69
61 to 120 mins	0,14	0,04	3,83	0,00	-0,01	0,05	-0,20	0,84
More than 120 mins	0,12	0,04	2,83	0,01	0,02	0,05	0,31	0,76
[Grade Level=6]	-0,02	0,02	-0,96	0,34	-0,04	0,03	-1,33	0,19
[Grade Level=7] (base)	0*				0*			

The analyses returned an R^2 value of 0,16 for both the general self-efficacy and communicative self-efficacy. Because the Grade level, the only categorical independent variable in the analysis, did not turn out to be a significant predictor, it can be said that the remaining independent variables' proportional contribution on the dependent variables are directly comparable to each other through the beta coefficients. Based on this fact, it is seen from Table 4 that general self-efficacy has predictors with almost equal (very close) coefficients ranging from 0,12 to 0,14. For communicative self-efficacy, however, Frequency of the email use had items with similar coefficients, but the power of having Internet connection at home was about the one third of the contribution of the email frequency items.

DISCUSSION AND CONCLUSIONS

This research has been concerned with the factors affecting secondary students' Internet self-efficacy, namely general self-efficacy and communicative self-efficacy. The first research question was specifically about the current level of Internet self-efficacy or competency. Participants responded to the competency-based survey items with very high marks. The scores were skewed towards the high end. This easily leads researchers to speculate that students may be over confident in what they think they know. That is the students might actually know less than they believe because they may not be able to judge their skills properly. Considering the age span of the participants, this in fact may be true. Participants of this study were 12 to 13 years old. This study depended on the *perceived* competencies. There are always issues with regard to the reliability and validity of the student-reported scores. The best way to approach this issue would be to actually test student skills with hands on applications and observations, but such applications and observations require much more resources to conduct than could be afforded by the project fund. Therefore, this study did not utilize such methods and only relied on student self-scores.

The second research question was about the factors affecting students' Internet self-efficacy scores. Two of the items in the second research question dealt with having Internet connection at home and the amount of daily computer use. Having Internet connection at home was a significant contributor for both of the dependent variables. Having connection at home especially meant a 0,12 point increase in an average student's general self-efficacy score. This item was as equally powerful as spending more than half hour on the computer daily for a student to score greater on the general self-efficacy scale. Spending half hour a day in front of the computer was actually a threshold. Studying less than this amount have no impact on any of the dependent variables. And interestingly, spending more and more time did not mean additional points either. So, about half hour to one hour could be an ideal time span for students to be confident on general Internet-related tasks.

When the effects of frequency of email use on Internet self-efficacy are examined, the findings show that, checking emails or using email at least once a week increases students' likelihood of having communicative self-efficacy by at least 0,22 point in comparison to students who do this activity less than once a week or not at all. This easily is interpreted as the argument that a student who claims to use email would know the terminology behind it, even though spending various times on email have slightly different

impacts on the communicative self-efficacy. Previous research positively links email checking/usage with student competencies on communication technologies (Kuhlemeier and Hemker, 2007). However, conflicting with the literature, our findings indicate that Frequency of email use do not have any effect on general self-efficacy although it is powerful in predicting the communicative self-efficacy. The former is not an expected finding. One could easily ask if students are checking and using email, are they not doing it through Internet and most likely through browsers.

One interesting situation was the fact that the independent variables formed chunks; in other words, they did not mix with each other in predicting the dependent variables. In Table 4, the researchers framed the significant relationships in order to help visualize this finding.

Another aspect of the second research question was the student grade level. One could easily expect that students from different grade levels have significantly varying degrees of Internet self-efficacy. However, the findings indicate that grade level did not affect students' Internet self-efficacy – neither of the two scales forming it – when all variables were considered in a multivariate analysis. The reason might originate from the fact that the curricula of computer literacy courses for both 6th and 7th grades do not cover all topics related to the Internet self-efficacy.

The last factor in the second research question was the student gender. In the literature, it has repeatedly been reported that girls generally have considerably lower computer competencies than boys do. In this study, girls' Internet self-efficacy was hardly different than those of boys. However, the data support the conclusions drawn from previous findings stating that girls and boys approach computers in the same way. With regard to the Internet access, the findings in this research study are consistent with other studies that found no variation in Internet self-efficacy depending on the access (Uzun and Sengel, 2009; Sieverding and Koch, 2009; Teo, 2008). The Internet access and Email use has become an integral part of our live. Since both male and female students have equal opportunity to access the Internet, it can be argued that secondary students' level of Internet self-efficacy is about the same. As seen in Table 1, males are more likely to use email communication than females do, and had more Internet self-efficacy (Table 2) but the differences were not statistically significant (Table 3). Findings from 1990's indicate that there was a significant difference between male and female students' competencies on ICT (Durndell and Thomson, 1997; Shashaani, 1997; Whitley, 1997; Robertson et al., 1995). The differences in Internet self-efficacy may not be as stubborn as it has

been stated by various researchers (e.g., Bovee, Vogt and Meelissen, 2007; Meelissen and Drent, 2008; North and Nayes, 2002; Schroeders and Wilhelm, 2011; Sainz and Saez, 2010; Wasserman and Richmond-Abbott, 2005), because students' computer habits are increasingly becoming similar. The growth on Internet applications increasingly lets females to engage in new technologies and this development decreases the gender gap with regard to Internet competencies (Wasserman and Richmond-Abbott, 2005).

The R^2 value of 0,16 for both the general self-efficacy and communicative self-efficacy indicates that although the contribution of many of the independent variables entered into the model are significant, their effect on population is limited. The findings are representative of only about 16 percent of the population. This representation is quite low and indicates that much of the variation in the dependent variables remain unexplained. One could easily speculate that as the frequency of email use increases, the students' general Internet-based competencies increase. But, as stated previously, email use was not significantly related to general self-efficacy. A future study could be useful with a more diverse sample especially focusing on the email usage as the independent variable and general self-efficacy as the dependent variable along with other related constructs to understand the dynamics of this dilemma. It would be appropriate to draw the conclusion that students appear to have confidence in technology use, especially computer use. Whether they are over-confident or not, they are unlikely to resist the technology integration. Similar studies can be repeated by using different Internet self-efficacy scales or different data collection methods such as interviews, focus groups, and observations to find out factors affecting the level of general self-efficacy and communicative self-efficacy.

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