



EXAMINING HIGH SCHOOL STUDENTS' SAFE COMPUTER AND INTERNET USAGE AWARENESS

**Tufan Aytaçⁱ,
Mustafa Erdem**

Assoc. Prof. Dr.,
Kırşehir Ahi Evran University,
Department of Educational Sciences,
Kırşehir, Turkey

Abstract:

The use of Information and Communication Technologies (ICT) is rapidly spreading among high school students. These technologies provide the students to gain learning experiences and also involve many dangers such as addiction, loneliness and stress. The aim of this study is to examine awareness levels of different types of high school students towards Safe Computer and Internet Usage Awareness (SCIUA). The data were collected from 715 students studying in the high school students in Turkey by using a questionnaire developed by the researchers. The data obtained from the questionnaire were analyzed based on the pre-determined themes and the students' information security and computer usage awareness profiles were revealed. It was determined that students mostly use Internet for access to information, playing online games and access to social networks. When the relations among dimensions of students' awareness towards SCIUA were examined, a strong negative relation was determined between students' competencies and the problems and threats they faced. Students' remarks (awareness) vary in terms of social network/communication and dimension of family factor with respect to the places where they connect to the Internet. Also, within the scope of this project, practical information based on the results of this study is offered to implementers of the FATİH project, which is conducted by the Ministry of National Education in Turkey.

Keywords: students, internet, internet usage, information security awareness

1. Introduction

Together with the transition to the information society, the Internet, which enables quick and easy access to information and communication of individuals without the concerns of distance, brings about opportunities and threats with its diversity of

ⁱ Correspondence: email tufana60@gmail.com, t.aytac@ahievran.edu.tr

intended purposes. Non-conscious and insecure use of the Internet negatively influences social relationships and the academic achievements of students in their everyday lives (Aytaç, 2009). specially, students at secondary education level have a close interest and tendency towards the use of technology, when compared to other age groups. (Anastasiades & Vitalaki, 2011; Ersoy, 2011; European Commission, 2008; Gross, 2004). In Turkey, 25% of students between the ages of 11 and 16 frequently use the Internet. This ratio is 30% within European Union (EU) countries. While 36% of the students at the ages between 11 and 16 have proficiency in digital literacy and safety information in Turkey, this ratio is 56% for the EU countries. (Livingstone, Haddon, Görzig, & Ólafsson, 2010). In this context, Safe and Conscious Internet Usage Awareness (SCIUA) of students is becoming a high priority issue which needs due consideration.

2. Literature Review

According to the study of Bulut (2013), 96% of youth between 15 and 29 and their parents use social media, and one third spend at least three hours every day on social media. It is also known that most social network users are not even aware of security and privacy settings of these social network websites (Yavanoğlu, Sağıroğlu, & Çolak, 2012), use untrue information and communicate with strangers (Aksüt & Ateş, 2011). A study in this field revealed that 46% of children in our country are not conscious about how to protect their personal details and publically share their photos and birthdays (Çağıltay et al., 2011). Gökçearslan and Seferoğlu (2016) state that students spend a considerable amount of time on computers and they have a medium or advanced level in computer and Internet usage.

According to the report of EU Kids Online project, which has reached twenty-five thousand students aged between 9 and 16, Turkey is in the group of “low level of Internet usage” and “mildly risky”. 36% of children in Turkey use the Internet for more than one hour a day, with 52% having Internet connection in their homes, whilst a similar number go to Internet cafes. In the same report, Turkey is seen at the bottom of the list that shows Internet usage skills of children and parents in European countries (Livingstone & Haddon, 2012). The study of Park and Hyun (2014) included 970 secondary school students in South Korea, and found Internet literacy has positive impacts on both academic achievements and addiction.

Students' problems towards a safe and conscious usage of Internet have been increasing as a result of the decline in parental and teachers' control (Valcke, De Wever, Van Keer, & Schellens, 2011). In an analysis of 271 different studies conducted between 1997 and 2012, it was revealed that studies on the risks and harms of the Internet were insufficient and such studies had mainly focused on topics such as cyberbullying (Slavtcheva-Petkova, Nash, & Bulger, 2015).

28% of students (aged between 11 and 16) in the European Union make their social media profiles public; whilst this ratio is 49% in Turkey. 46% of children's profiles can be seen by everyone. In related research, half of the students between the ages of 11

and 16 do not know what to do when confronted with images and messages of a sexual or sexually explicit nature, how to block such messages, how to take appropriate security measures, and the necessity for not sharing personal information (Livingstone et al., 2012).

Within this process, the attempt to popularize usage of safe Internet through completing schools infrastructure and students' awareness and consciousness is regarded as one of the main variables. Determination of students' perceptions and perspectives about SCIUA will provide valuable information in constituting politics and education programs like the FATİH (Increasing Opportunities and Improvement of Technology Movement) Project that is being conducted by the Turkish Ministry of National Education (MoNE) and aimed at integrating technology into education. The dimension of conscious and safe internet use. of the FATİH project is aim to raise awareness of the problems that students may encounter while using the Internet. (Duran&Aytaç, 2016; Fırat & Kabakçı, 2010; Senyuva & Kaya, 2013). FATİH project in education was launched with the purpose of providing equal opportunities in education as well as improving the technology in schools. But in practice, high school students are at the highest risk of technology addiction. For this reason, it is important to include content to increase awareness of conscious use in school environment for these students (BTK, 2014). This study will provide feedback on the effectiveness of this aspect of the FATİH project. The number of studies on this dimension is not sufficient. The aim of this research is to reveal the awareness of first grade high schools' students on SCIUA. In this context, answers are sought for the following research questions:

- 1) Why do students use the Internet? What is the frequency of use of social networking sites and which social networks do they use?
- 2) What is the relation among the dimensions constituting the awareness level in SCIUA?
- 3) Do gender, daily internet usage duration and Internet connection place lead to significant differences among students' views on SCIUA?

3. Material and Methods

Research model, data collection, and data analysis sections are presented in this chapter.

3.1. Research Model

General survey models are surveys conducted on an entire population or a sample out of the population to pass general judgments about the population" (Karasar, 2013). In this study, a descriptive model used in quantitative studies was adopted. It is usually aimed to examine an existing situation based on the themes. The descriptive model was adopted in order to find out the profile of the students studying in high school in relation to their SCIUA under a variety of themes. This study used a quantitative method with a correlational design that examines SCIUA. "SCIUA Scale" and "Student Information Form" applied high school students to collect data. In this descriptive

study, it is examined the relationship sub-themes as perceived by the students (Büyüköztürk, 2007).

17 Cities and 52 schools used as pilot subjects of the FATIH project constitute the population of this study. The samples were taken from first grade students at two Anatolian High Schools, one Technical and Industrial Vocational High School, two public High Schools, and one Anatolian Imam and Preacher High School in Ankara, Turkey. Instead of sampling students from many more high schools across different cities, a convenience sampling procedure was chosen, which involved students in schools more easily accessible to the researchers, in order to build a reasonable sample size, in a reasonable time, and in an easy way.

The survey was applied face-to-face with 776 students selected randomly. After some preprocessing, 715 of the surveys were found to be suitable for analysis. The demographics of the 715 students who participated in this study are presented in Table 1, along with the number of students at each school and associated percentages.

Table 1: Numbers of high school students by gender and school type

School type	N	Gender	
		Male	Female
Anatolian High School	286	150	136
Public High School	189	99	90
Technical & Industrial Vocational High School	137	87	50
Anatolian Imam & Preacher High School	103	60	43
	715	396	319

Schools in Ankara province, which were also pilot subjects of the FATIH project conducted by the MONE, constitute the sample of this study. Sufficiency of these schools in terms of physical and technological infrastructure was taken into consideration within the preference process. As the subject schools within the scope of the project spread to a large geographical area, the sample was prepared with representative samples from Ankara province through purposeful sampling method.

3.2 Data Collection Tools

Data collection tools of this study were the "Students' awareness for Safe and Conscious Internet Usage" scale and a questionnaire prepared in order to obtain the demographic features of students and to learn their views on Internet usage.

The questionnaire was prepared using former studies on the same topic, in an understandable form. Seven questions were determined in order to obtain information under two categories; five for students' intended purposes for using the Internet, their environments, occupancy, location, and the social media networks they connect to; and two for students' gender and school type.

There are 58 items in the scale prepared to determine basic factors about participant Students' Safe and Conscious Internet Usage. A Likert-type scale was used in order to measure students' agreement levels as; 1= 'Strongly Disagree', 2 = 'Disagree', 3 = 'Somehow agree', 4 = 'Agree', and 5 = 'Strongly agree'.

3.3 Survey Instrument

The scale for collecting data on Safe and Conscious Internet Usage was developed in accordance with the procedure that follows:

- 1) **Article Pooling:** A survey on literature about similar studies was conducted, and an article pool of 68 prior items created.
- 2) **Scope Validity Detection Phase:** Experts were consulted in determining the content validity of the scale (Büyüköztürk, 2007). Three faculty members from the Computer and Instructional Technology department, two computer teachers and one assessment and evaluation expert were consulted to find out whether it is possible to determine the awareness levels of the students about SCIUA with the draft scale. Also, one Turkish teacher was consulted to assess and increase the understandability of the items in order to give the draft scale its final version.
- 3) **Implementation Phase:** The developed draft scale was applied to the sample group.
- 4) **Structural Validity Detection Phase:** Exploratory Factor Analysis was used to determine the structural validity of the scale (Karagöz & Kösterelioğlu, 2008). In this process, results of "varimax" rotation technique were investigated in order to obtain results of the Kaiser-Meyer-Olkin (KMO) and Bartlett Sphericity tests, common factor variance values of items, eigenvalue line graph, and analysis results of the principal components. As a result of the investigation over the rotated component matrix (Varimax), variables assigned to the factors, factor loads, mean and standard deviation of each variable with its reliability coefficient were calculated.

Table 2: Results of the Factor Analysis of Students' Awareness Levels in SCIUA

Dimension	Eigen value	% Variance	% Cumulative	α
Competencies	7.15	17.32	44.65	.88
Possible Problems and Dangers	3.89	39.06	19.65	.86
Social Networking/Communication	3.45	15.78	33.35	.83
Family Factor	1.86	11.35	41.86	.78

Total Variance: 49.85%, Cronbach's α = .8990

KMO Measure of Sampling Adequacy: .892

Bartlett's Test of Sphericity: χ^2 = 3995; p = .000

Factor analysis was conducted in order to examine the factor structure of the scale. Items with factor loads of more than .30 were included in the process and factors with eigenvalues more than 1.0 were used (Tabachnick & Fidel, 2001). Four factors were found with eigenvalues more than 1.0 as a result of factor analysis. These factors are; competencies (knowledge and skills towards Internet usage), risks and dangers (possible problems in Internet usage), social networking/communication (using social networks of the Internet), and family factor (the effect of family on Internet usage). Total variance explanation ratios, reliability values and eigenvalues of the dimensions obtained as a result of the factor analysis are presented in Table 2.

Principal component analysis was performed to investigate the factor structure of the scale. Items with load factors greater than .30 are considered in the process and

operations applied on factors with eigenvalues greater than 1.0 (Tabachnick & Fidel, 2001). Four factors were found with eigenvalues greater than 1.0. These factors are competencies, risks and dangers, social networking/communication, and family factors. Explanation rates of total variances, reliability values and eigenvalues of the dimensions obtained from the factor analysis are presented in Table 1.

- 5) **Reliability Calculation Phase:** A Cronbach alpha reliability coefficient value greater than 0.70 is accepted as sufficient for test reliability (Büyüköztürk, 2007). Cronbach alpha values of all dimensions of the scale are presented in Table 2. It can be inferred that the dimensions of the scale are efficient in terms of the goals pursued.
- 6) **Finalizing Scale:** By removing the screened material, the final shape of the scale was obtained (58 items). Feedback on the survey's clarity were received from a group of 44 students during implementation of a pilot scheme and final changes applied to the scale.

3.4 Analysis of Data

The data obtained was processed electronically through SPSS statistical software. Factor analysis and correlation analysis were conducted in order to determine students' awareness on Safe and Conscious Internet Usage and the strength of relations between different dimensions; Multiple Variance Analysis (MANOVA) was used in order to reveal the relevance between different variables (duration of daily Internet usage, connection location). Scheffe test was used in multiple comparisons. The relation between gender and motivation was revealed through Independent Samples *t*-Test. In the analysis, Hotelling's T2 test was applied to measure the validity of the model as a whole.

4. Results

4.1 Aims and Frequencies

A questionnaire was used together with the scale in order to obtain information about students' personal details, places where they connect to the Internet and the social networks that they use. According to the answers given to the personal questions of the questionnaire, 86% of the 715 first grader high school students are 15 years old. 53% of these students are female and 47% are male. 86% of the students have computers at home and 28% of them have tablet computers. 94% of the students have e-mail accounts and 72% of them have taken Information and Communication Technology courses. Aims of the students in Internet usage are shown in Table 3 according to the gender variable. These aims were determined with the data obtained through the questionnaire given to students.

Table 3: Distribution of Students' Aims in Internet Usage According to Gender Variable

Aims	Total		Female		Male	
	f	%	f	%	f	%
Doing homework, project, activity etc. assigned at school	582	81.4	251	43.0	331	56.9
Social networking	580	81.2	300	51.8	280	48.2
Watching films/listening to music (download)	527	73.7	241	45.8	286	54.2
Doing research	495	69.3	235	47.5	260	52.5
Playing online games	374	52.4	136	36.2	238	63.7
Instant messaging	282	39.5	131	46.4	151	53.5
Reading news, magazines etc.	252	35.3	83	33.0	169	66.9
Spending time in virtual world	172	24.0	67	38.8	105	61.2
Trade and shopping	59	8.2	14	22.9	45	77.1
Playing lottery games	30	4.2	-	-	30	100.0
Other	25	3.5	11	42.8	14	57.2

Students claimed that they mostly use internet to carry out tasks such as homework, projects and presentations assigned by school teachers. Other purposes of their internet usage are to enter social networking sites, download movies, listen to music or play online games. Male students use the Internet more frequently for the purposes of playing online games, reading newspapers and magazines, doing business and shopping, and for playing lottery games.

Table 4 shows the distribution of the place's students use for their Internet connection with respect to gender. According to the results given in Table 4, 76.6% of the students connect online from home; and it is an interesting fact that while 77.1% of female students connect to the Internet from home, this ratio is only 22.7% for males. 88.1% of the male students connect to internet in Internet cafes while only 11.8% of the females use these places.

Table 4: Places Students Use for Internet Connection, According to Gender Variable

Places	Total		Female		Male	
	f	%	f	%	f	%
Home	540	76.6	301	77.1	173	22.7
Internet Cafe	211	29.5	25	11.8	186	88.1
School	149	20.9	63	42.1	86	57.9
Working Places of family members	122	17.1	50	41.3	72	58.7
Public locations	142	19.8	55	38.7	87	61.3
Other	41	5.7	17	40.2	24	58.8

Internet connection frequencies of first graders from various high schools are given in Figure 1. 54.8% of the first grade high school students use the Internet every day. This fact shows that students' awareness and competency levels towards SCIUA are of high importance. According to Figure 1, more than half of the students connect to the Internet at least once a day. This finding shows that first grade high school students connect to the Internet frequently.

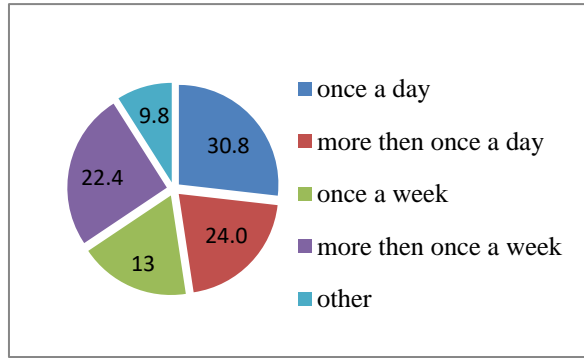


Figure 1: Students' Internet Usage Frequency

According to Figure 2, 53% of the students spend 1-2 hours a day using the Internet, which raises concerns over the purposes of their Internet usage and students' awareness on the time they spend (Figure 2).

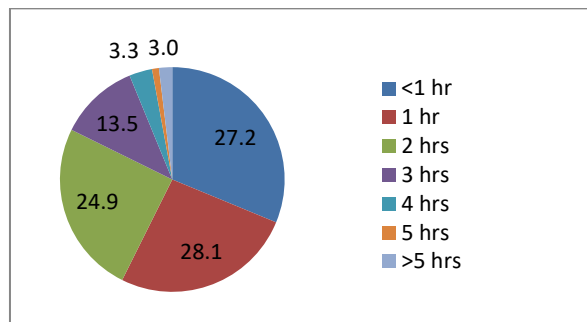


Figure 2: Students' Daily Internet Usage (hours)

90% of the students are members of the social networking site, Facebook. After Facebook, Instagram is the second most used social networking site, of which 82,8 % of students are members.

4.2 Relation between Dimensions of Students on SCIUA

When the results of the correlation analysis were considered to identify the level of relations between the factors that make up the scale, the most powerful relationship was shown to be a negative relation between the dimension of Risks and Dangers and Competencies ($r = -.63, p < .01$). In other words, as the students' competencies about SCIU decreased, the challenges and risks increased (Table 5).

Table 5: Correlation Analysis among SCIUA Dimensions of Students (Pearson, r)

Dimensions	Competencies	Problems and Dangers	Social Networking / Communication	Family Factor
Competencies	1			
Problems and Dangers	-.632 **	1		
Social Networking/Communication	.512 **	.551 **	1	
Family Factor	.213 **	.392 **	.253 **	1
Arithmetic Mean (\bar{x})	3.20	3.55	3.09	3.00
Standard Deviation (SD)	0.83	0.79	0.73	0.81

Note: ** $p < .01$

Between the Social Networking/Communication and Problems and Dangers dimensions ($r = .55, p < .01$) and Competencies and Social Networking/Communication dimensions, there is a mid-level positive relation ($r = .51, p < .01$). Between the Family Factor and Competencies ($r = .213, p < .01$) and again the Family Factor and Problems and Dangers, there is relatively a low-level positive relation ($r = .392, p < .01$) (Table 5). It can be inferred that there is a reverse relation between students' competencies in computer and Internet usage and the problems they encounter. It can also be said that as students' competencies in the use of information and Internet technologies decrease, the level of problems they encounter increases.

4.3 T-Test Results of Students' Answers on SCIUA Dimensions According to Gender

Results of the Independent Samples *t*-Test, which was conducted to determine whether or not there is a significant difference between the awareness of the students about the dimensions of SCIUA depending on their gender, are provided in Table 6.

Table 6: T-Test Results of Students about the SCIUA Dimensions by Gender

Dimensions	Number		Arithmetic Mean \bar{x}		t	Sd	P
	Male	Female	Male	Female			
Competencies	335	380	3.34	3.06	-.567	713	.023
Problems and Dangers	335	380	3.86	3.24	-2.57	713	.010
Social Networking/Communications	335	380	3.43	2.76	2.39	713	.000
Family Factor	335	380	2.98	3.02	.311	713	.666

According to the analysis results, the views of students about Competencies, Problems and Dangers and Social Networking/Communication vary depending on their gender ($t(713) = -.567; -2.57; 2.39, p < .05$). According to Table 6, males have more competencies about SCIUA and use Internet mostly for Social Networking/Communication. It can be said that males have higher levels of awareness on the Problems and Dangers they may face than females have. There was no significant difference between students' awareness on the Family Factor (Table 6). It is seen that the impact of Family Factor in Safe and Conscious Internet Usage is not sufficient. As Family Factor does not show any significant difference according to gender, we can say in a holistic approach that families also do not have a sufficient level of awareness on this subject.

4.4 Relation between Students' Views about SCIUA Dimensions and Daily Internet Usage Duration

Multi-dimensional variance analysis of the relation between students' views about SCIUA dimensions and daily Internet usage is given in Table 7.

Table 7: Relation between Students' Views about SCIUA Dimensions and Daily Internet Usage

Dimensions	Internet Usage Time								F	Sig.
	Arithmetic Mean,									
	Less than 1hr	1 hr	2 hrs	3 hrs	4 hrs	5 hrs	5 hrs +			
Competencies	3.641	3.74	3.70	3.72	3.77	3.85	4.246	2.487	.035	
Problems and Dangers	2.959	3.01	2.86	3.35	3.23	3.37	3.586	2.758	.029	
Social Networking/ Communication	2.687	2.77	2.76	2.85	3.52	3.42	3.512	5.126	.000	
Family Factor	3.326	3.14	3.25	3.29	3.37	3.23	3.266	0.708	.68	

F Value of the Hotelling's T^2 test= 1.838 Level of Significance: 0.018

According to daily internet usage times, there are significant differences among Competencies ($F = 2.487$, $p < .05$), the Problems and Dangers ($F = 2.758$, $p < .05$), and Social Networking/ Communication ($F = 5.126$, $p < .00$). No significant difference is observed between students' daily usage of Internet and the Family Factor dimension ($F = 0.708$; $p > .05$) (Table 7).

In the Scheffe test results, a significant difference at .05 level is observed between the Competencies factor and the size of Problems and Dangers and daily internet usage.

4.5 Relation between Students' Views about Internet Connection Places and SCIUA Dimensions

Results of the multi-dimensional variance analysis of the relation between students' choice about Internet connection places and SCIUA dimensions are given in Table 8.

Table 8: Relation between Students' Views about Internet Connection Places and SCIUA Dimensions

Dimensions	Internet Connection Places									F	Sig.
	Arithmetic Mean										
	Home	Home (outside bedroom)	Home (bedroom)	Cell phone	Internet cafe	School	Work places of family member	Public	Other		
Competencies	3.76	3.72	3.80	3.74	3.69	3.89	3.62	3.74	3.82	0.72	.38
Problems and Danger	3.41	3.15	3.68	3.98	4.20	3.01	3.25	4.09	2.89	16.57	.00
Social networking/ Communication	3.75	3.25	4.25	4.35	4.23	2.98	3.29	3.99	2.25	18.35	.00
Family Factor	3.95	4.02	3.89	3.75	2.51	3.76	3.79	2.56	3.39	2.66	.02

F Value of the Hotelling's T^2 test = 1.630, Significance Level: 0.012

A meaningful difference between the internet connection places and Problems and Dangers ($F = 16.57$; $p < .000$), Social Networking/Communication ($F = 18.35$; $p < .000$) and Family Factor is observed ($F = 2.66$; $p < .05$), when evaluating whether or not their views on SCIUA dimensions change depending on the places from which they connect to the

Internet. There is no significant difference between Internet connection places and the Competencies ($F=0.725$; $p>.05$) dimension (Table 8).

In the Scheffe test, a meaningful differentiation level of .05 is observed among the Family Factor and Social Networking/Communication dimensions and internet connection places. Students prefer connecting to the Internet through their cell phones, at home (bedroom) and in internet cafes, rather than other ways and places.

5. Discussions, Conclusions and Recommendations

Although internet access and use by students in secondary schools is a part of learning, it has been associated with some negative effects on students' academic achievements (Aboderin, Fadare, Kumuyi, & Lawal, 2011). In the context of the results of this study, it can be concluded that the internet is a useful tool for doing homework, project, activity etc. assigned at school and social networking.

Research results show that students use the internet mostly for access to information, playing games and for connecting to social networks. The fact that students use the internet as an information source can be evaluated as a positive result. These results are in parallel with the outcomes of other related research (Aboderin, Fadare, Kumuyi, & Lawal, 2011; Colley & Maltby, 2008; Gök, 2015). Apart from this, in the related literature, the symptoms of problematic internet use arises from certain Internet usage such as entertainment and social interaction (Livingstone et al., 2010; Senyuva & Kaya, 2013; Sonck, Livingstone, Kuiper, & de Haan, 2011). Kuhlemeier & Hemker (2007) found that home access to e-mail and the extent to which students use the home computer for surfing, e-mailing, chatting and text processing accelerated students' computer skills and educational achievement. In the context of the results of this study, it can be predicted that students' digital literacy levels will increase. In the context of FATIH project, it can be predicted that students' digital literacy levels will increase. Tosun and Baris (2011) revealed through their study that while the rate of Internet usage among students increases, their main purposes are entertainment and socialization and they do not use the Internet in an adequately efficient and conscious manner. In this regard, content and activities within the context of the FATIH project may be proposed as supportive facts towards students' perception about SCIUA dimensions. As the FATIH project becomes more widespread, safe and conscious Internet usage becomes more of an issue.

According to the findings obtained, we can see that students use the Internet mostly for socializing seeing the Internet as a means to socialize or to escape in adolescence brings to light various dangers. The fact that half of the students spend between one and two hours per day on the internet, and that an important part of this time is used for social networks, require students to use such media in a careful and effective way. Most of the students are members of social networking sites and this means that they may be using the Internet effectively for social communication. As for the FATIH Project, in addition to certain activities towards SCIUA, it is also important

to inform students about the potential risks and problems they may face when using social networking sites.

The positive relation between awareness levels of students about Social Networking/ Communication and Problems and Dangers they may face, requires these environments to be used more carefully. In this context, the development of consciousness and awareness levels of the students, especially when playing games and using social networking sites, is an important issue. Social media like instagram, facebook, twitter etc. have the potential to fundamentally change the character of students social lives in school and learning environment.

It is seen that two third of the participants of this study connect to the Internet at home and through mobile phones. This means that parents' awareness towards children's Safe and Conscious Internet Usage should be increased. This result is a supportive fact for the finding obtained by Gökçearsan and Seferoğlu (2016), that almost a half of students use Internet in their rooms and parents impose restrictions on certain usages.

In a study conducted in Taiwan, researchers Yang and Tung (2007) found a positive relation between the time spent on the Internet per week and Internet addiction. Similarly, in a research conducted with Singaporean youth, Mythily et. al. (2008) observed that excessive internet usage increases risks and dangers. According to the study by Mythily et. al. (2008) which shows parallelism with this current study, necessary measures should be taken for the reasons that make students use the internet excessively and all stakeholders of the education system should be educated regarding safe use of the Internet.

Spending their Internet usage time mostly on social networking sites negatively affects students' daily lives. Many researchers have put forward that excessive and instinctive use of the Internet endangers academic achievements and results in behavioral and health problems such as aggression, insomnia, and fatigue (Bayzan, 2013; Bayraktar & Gün, 2007; Kubey, Lavin, & Barrows, 2001; Young & Case, 2004). Researchers revealed that a negative relation exists between problematic use of the internet and the perceived social support.

According to the results of the current research, males use the Internet more for social networking and communication than females do. There are studies showing different results in terms of gender variable. Ayhan and Balcı (2009), Aktaş (2005), Morahan-Martin and Schumacher (2000), and Yang and Tung (2007) all found that males use the Internet more than females. Male students, especially, prefer Internet cafes, which can be evaluated as a demonstration of the fact that they want to socialize and play games without the control of their schools and/or families. There is a significant difference between male students and female students using Internet cafes. Together with the FATIH project, school environments will be used in a more widespread manner within this context.

Knowledge and competence levels of the students in Turkey (9-16 years age group) with regard to digital literacy and safety are rather low (Sonck et al., 2011). As a result of this current research, students since first grade high school students are found

to have moderate competencies in SCIUA, it was found that more efficient and alternative routes are needed within the education process. Increasing students' SCIUA knowledge and competencies in both the schools and family environment will eliminate many negative effects on children's physical, emotional and mental development. In the context of the results of this study have important implications for the most effective use of the internet in the teaching-learning process if students were to be informed and educated on the correct use of the internet.

Raising awareness among children on health-related problems such as internet addiction, decrease in school success, probability of encountering harmful content and images, spending less time with family and friends, reduced desire to work because of extreme games, eye fatigue, poor posture, insomnia, and fatigue, and teaching them ways to cope with these problems which they may face as the duration of Internet use extends, first by their families and in schools, is a vital issue. It is particularly important to teach effective and productive use of the Internet without prohibiting or depriving them of computers and/or the Internet in order to overcome these problems. In this process, it is observed that there is a strong need for education programs and activities which will raise awareness among students first through their families and then in schools within the context of the FATIH project. Teachers are more influential than friend groups and families on raising the awareness among students on SCIUA dimensions (Anastasiades&Vitalaki, 2011; Ktoridou, Eteokleous, & Zahariadou, 2012). In this context, teachers should possess sufficient knowledge on and competencies in technological leadership. Families do not have the necessary consciousness about duration of internet usage because there is no meaningful difference between the duration of internet usage and Family Factor. Raising the awareness of parents and educating them about guiding their children towards Internet usage durations and harmful contents are of high importance. Although parents think that their children can be protected against harmful Internet contents with the help of Internet filters, Demirel, Yörük, and Özkan (2012) emphasized that it is not a sufficient method to eliminate some of the aforementioned risks and dangers.

Among the preferred places for Internet connection, schools follow homes and cell phones. Therefore, it is vital to support students and raise their awareness in terms of digital competencies and e-security. In-service training programs for teachers within the scope of the project should take place not only for the use of interactive whiteboard and tablet computers, but also for the increase in creative SCIUA competencies of students. In this process, the Education Information Network website should be used by students, especially for achieving accurate and scientific content. Upon completion of the FATIH Project and widespread provision of Internet usage at schools, students' literacy in information technologies and their safety in Internet usage should increase. Therefore, findings of this study could decrease the problems students encounter with when they use the Internet.

About the Author(s)

Tufan Aytaç received his master's degree in Education Management and Inspection department from Ankara University in 1996. In 1999, he completed his PhD degree on Education Management and Inspect department from Ankara University. His doctorate thesis was on the school-based management. In 2016, he became associate professor of Education Administration. He published books, book chapters and articles on information technology in education, education management, talent management, school leadership and meta-analysis studies. He is currently working at Education Faculty, Kırşehir Ahi Evran University in Kırşehir.

Mustafa Erdem received his master's degree in Education Management from Yüzüncü Yıl University. In 2008, he completed his PhD degree on Education Management from Ankara University. Her doctoral thesis was on the relationship between teachers' quality of work life and organizational commitment. In 2009, he became assistant professor at Yüzüncü Yıl University. Between 2009 and 2016 he served as the Head of the Department of Educational Management at the Yüzüncü Yıl University. In 2016, he started to work in Kırşehir Ahi Evran University. In 2018, Erdem became associate professor of Educational Administration. He presented papers and wrote books, book chapters on educational management and organization management. He is currently working at Ahi Evran University in Kırşehir.

References

- Aboderin, O. S., Fadare, O. G., Kumuyi, G. J., & Lawal, O. O. (2011). Pedagogical appraisal of internet and computer usage among secondary school teachers and students in Southwest Part of Nigeria. *World Journal of Young Researchers*, 1(4), 54-9.
- Aksüt, M., & Ateş, S. (2011). Çocukluk Çağındaki Bireylerin Sosyal Paylaşım Sitelerindeki Profillerinin Değerlendirilmesi (Facebook Örneği), 28. Ulusal Bilişim Kurultayı, Ankara, 26-29 October, 2011.
- Aktaş, Y. A. (2005). 3-18 Yaş Grubu genç ve gençlerin interaktif iletişim araçlarını kullanma alışkanlıklarının değerlendirilmesi. *The Turkish Online Journal of Educational Technology (TOJET)*, 4(4), 59-66.
- Almasi M., Machumu H., Zhu C. (2017). Internet Use Among Secondary Schools Students and Its Effects On Their Learning. *Proceedings of INTED2017 Conference 6th-8th March 2017, Valencia, Spain*.
- Anastasiades, P. S., & Vitalaki, E. (2011). Promoting internet safety in Greek primary schools: the teacher's role. *Educational Technology & Society*, 14(2), 71-80.
- Ayhan, B., & Balcı, Ş. (2009). Kırgızistan'da üniversite gençliği ve internet: bir kullanımlar ve doyumlar Araştırması. *Bilig*, Kış/2009, 48, 13-40.
- Aytaç, T. (2009). *Eğitimde Bilişim Teknolojileri*. Ankara: Asil Yayın Dağıtım.
- _____. (2013). Interactive Whiteboard factor in Education: Students' points of view and their problems. *Educational Research and Review*, 8(20), 1907-1915.

- Bayraktar, F., & Gün, Z. (2007). Incidence and correlates of internet usage among adolescents in north Cyprus. *Cyberpsychology & Behavior*, 10,191-197.
- Bayzan, Ş. (2013). İnternetin bilinçli ve güvenli kullanımı, In M. Kalkan & C. Kaygusuz (Eds.), *İnternet Bağımlılığı, Sorunlar ve Çözüm Önerileri* (pp. 45-59). Ankara: Anı Yayıncılık.
- BTK. (2014). *İnternetin Bilinçli Kullanımı ve Teknoloji Bağımlılığı Çalıştayı Raporu*, Ankara: Bilgi Teknolojileri ve İletişim Kurumu.
- Bulut, M. (2013). *Gençlik ve Sosyal Medya Araştırma Raporu*, Gençlik Ve Spor Bakanlığı Eğitim, Kültür ve Araştırma Yayın No: 79, Ankara, 16-20 October, 2013. 11.
- Büyüköztürk, Ş. (2007). *Sosyal Bilimler için Veri Analizi El Kitabı* (Seventh edition). Ankara: Pegem A Yayıncılık.
- Çağıltay, K., Karakuş, T., Kurşun, E., Kaşıkçı, D. N., Cankar, I., & Bayzan, Ş. (2011). *The Use of Social Networks Among Children in Turkey*, Paper presented in EU Kids Online II Final Conference, London, UK, 22-23 September, 2011.
- Colley, A., & Maltby, J. (2008). Impact of the Internet on our lives: Male and female personal perspectives. *Computers in Human Behavior*, 24, 2005–2013.
- Demirel, M., Yörük, M., & Özkan, O. (2012). Çocuklar İçin Güvenli İnternet: Güvenli İnternet Hizmeti ve Ebeveyn Görüşleri Üzerine Bir Araştırma. *Mehmet Akif Ersoy Üniversitesi Sosyal Bilimler Enstitüsü Dergisi*, 4(7), 54-58.
- Duran, M., & Aytaç, T. (2016). Students' opinions on the use of tablet computers in education. *European Journal of Contemporary Education*, 15(1), 65–75.
- Ersoy, A. (2011). Turkish Primary School Children's Opinions Related to the Internet Awareness. *International Journal on New Trends in Education and Their Implication*, 2(1), 21-25.
- European Commission (2008). *Towards a safer use of the Internet for children in the EU-a parents' perspective, Analytical report*. Hungary: The Gallup Organisation. Retrieved from http://ec.europa.eu/public_opinion/flash/fl_248_en.pdf.
- Fırat, M. & Kabakçı, I. (2010). Use of visual metaphors for navigation in educational hypermedia: Effects on the navigational performance. *Journal of Educational Multimedia and Hypermedia*, 19(1), 5-22. Chesapeake, VA: AACE.
- Gök, T. (2015). The Positive and Negative Effects of Digital Technologies on Students' Learning. *The Eurasia Proceedings of Educational & Social Sciences (EPESS)*, Vol. 2, 173-177.
- Gökçearslan, Ş., & Seferoğlu, S. (2016). Öğrencilerinin İnternet Kullanım Biçimleri: Riskli Davranışlar ve Fırsatlar. *Kastamonu Eğitim Dergisi*, 24(1), 383-404.
- Gross, E. F. (2004). Adolescent internet use: What we expect, what teens report. *Applied Developmental Psychology*, 25, 633-649.
- Karagöz, Y., & Kösterelioğlu, İ. (2008). İletişim becerileri değerlendirme ölçeğinin faktör analizi metodu ile geliştirilmesi. *Dumlupınar Üniversitesi Sosyal Bilimler Dergisi*, 21, 81-98.
- Karasar, N. (2013). *Bilimsel Araştırma Yöntemleri*. Ankara: Nobel Yayın Dağıtım

- Ktoridou, D., Eteokleous, N., & Zahariadou, A. (2012). Exploring parents' and children's awareness on internet threats in relation to internet safety. *Campus-Wide Information Systems*, 29(3), 133-143.
- Kuhlemeier, H., & Hemker, B. (2007). The impact of computer use at home on students Internet skills. *Computers & Education*, 49, 460-480.
- Kubey, R. W., Lavin, M. J., & Barrows, J. R. (2001). Internet Use and Collegiate Academic Performance Decrements: Early Findings. *Journal of Communication*, 51(2), 366-382.
- Livingstone, S., Haddon, L., Görzig, A., & Ólafsson, K. (2012). *Risks and safety on the internet: The perspective of European children. Initial Findings*. London: LSE, EU Kids Online. Retrieved from www.eukidsonline.net.
- Morahan-Martin, J., & Schumacher, P. (2000). Incidence and correlates of pathological internet use among college students. *Computers in Human Behavior*, 16(1), 13-29.
- Mythily, S., Qiu, S., & Winslow, M. (2008). Prevalence and Correlates of excessive internet use among youth in Singapore. *The Annals, Academy of Medicine, Singapore*, 37(1), 9-14.
- Park, C. J., & Hyun, J. S. (2014). Internet Literacy vs. Technology Addiction: Relationship Analysis with Time Perspectives of Secondary School Students. *Advanced Science and Technology Letters*, 59, 23-26.
- Senyuva, E., & Kaya, H. (2013). Metaphors for the Internet used by nursing students in Turkey: a qualitative research. *Eğitim Araştırmaları-Eurasian Journal of Educational Research*, 50, 87-106.
- Slavtcheva-Petkova, V., Nash, V. J., & Bulger, M. (2015). Evidence on the extent of harms experienced by children as a result of online risks: implications for policy and research. *Information, Communication and Society*, 18(1), 48-62.
- Sonck, N., Livingstone, S., Kuiper, E., & de Haan, J. (2011) *Digital literacy and safety skills*. London, UK: London School of Economics & Political Science.
- Soule, L. C., Shall, W., & Kleen, B. A. (2003). Exploring internet addiction: demographic characteristics and stereotypes of heavy internet users. *Journal of Computer Information Systems*, 44(1), 64-73.
- Tabachnick, G. B., & Fidel, L. S. (2001) *Using multivariate statistics* (fourth edition). USA: Allyn and Bacon Press.
- Tosun, N., & Baris, M. F. (2011). Using information and communication technologies in School improvement. *The Turkish Online Journal of Educational Technology*, 10(1), 223-231.
- Valcke, M., De Wever, B., Van Keer, H., & Schellens, T. (2011). Long-term study of safe Internet use of young children. *Computers & Education*, 57(1), 1292-1305.
- Yang, S. C., & Tung, C. J. (2007). Comparison of internet addicts and non-addicts in Taiwanese high school. *Computers in Human Behavior*, 23(1), 79-96.
- Yavanoğlu, U., Sağıroğlu, Ş., & Çolak, İ. (2012). Sosyal Ağlarda Bilgi Güvenliği Tehditleri ve Alınması Gereken Önlemler. *Politeknik Dergisi*, 15(1), 15-27.
- Young, K. S., & Case, C. J. (2004). Internet Abuse in the workplace: new trends in risk management. *Cyberpsychology and Behavior*, 7(1), 105-111.

Creative Commons licensing terms

Author(s) will retain the copyright of their published articles agreeing that a Creative Commons Attribution 4.0 International License (CC BY 4.0) terms will be applied to their work. Under the terms of this license, no permission is required from the author(s) or publisher for members of the community to copy, distribute, transmit or adapt the article content, providing a proper, prominent and unambiguous attribution to the authors in a manner that makes clear that the materials are being reused under permission of a Creative Commons License. Views, opinions and conclusions expressed in this research article are views, opinions and conclusions of the author(s). Open Access Publishing Group and European Journal of Education Studies shall not be responsible or answerable for any loss, damage or liability caused in relation to/arising out of conflicts of interest, copyright violations and inappropriate or inaccurate use of any kind content related or integrated into the research work. All the published works are meeting the Open Access Publishing requirements and can be freely accessed, shared, modified, distributed and used in educational, commercial and non-commercial purposes under a [Creative Commons Attribution 4.0 International License \(CC BY 4.0\)](https://creativecommons.org/licenses/by/4.0/).