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THE POSITIVE AND NEGATIVE EFFECTS OF DIGITAL TECHNOLOGIES ON STUDENTS' LEARNING

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ABSTRACT: The technology providing quick and easy online access to information and social activities has undeniable effects on academic lives and study hours of students. It was therefore important to investigate what we know about the impact of digital technologies and social networking sites (SNS) on education. This study investigates the effects of developing technologies and social media on the students' daily life. The research was conducted with 220 university students. Data were collected using a survey designed for gathering the students' opinions about the digital devices and social media. The students were asked some questions such as why/how long/when do they use the digital devices and social media. The results of the research indicated that the digital devices and SNS had negative impact on students' knowledge and learning due to distraction from academic tasks. The study reveals that most of the students spent more time on social media (facebook, twitter, youtube etc.) than academic courses. Detailed results and recommendations based on the academic success are presented in the study.

Keywords: Digital devices, educational technology, higher education

INTRODUCTION

The digital technologies (e.g. mobile phone, tablet, notebook, etc.) and social media (e.g. Facebook, Youtube, Blogs, Twitter, LinkedIn, etc.) have become increasingly popular in recent years. Most common digital technology is mobile phone. Nowadays, the majority of the mobile phones are called as 'smartphone' as they have more advanced computing power and connectivity than a contemporary mobile phone (Osman, Talib, Sanusi, Shiang-Yen, & Alwi, 2012). It has become popular in a short time among the younger generations (Hakoyama & Hakoyama, 2011). "70% of the world's population own at least one mobile phone. Based on statistics, children in United States now are more likely to own a mobile phone than a book, with 85% of kids owning a phone as to only 73% owing books" (Osman et al., 2012). The smartphone enables to communicate with families and friends in case of emergency, to make connection for international trade, and contributing in their socialization process.

Social media, a virtual platform, was started to be after digital technology became common (Boyd &Ellison, 2008). This platform provides people to make new connections and to strengthen friendly relations with other humans (Coyle & Vaughn, 2008). Timm & Duven (2008) reported that there are over 200 different social media sites. The most popular of these sites is Facebook. The statistical data showed that there are now more than 500 million people with Facebook membership and the majority of these people are members of other social networking sites besides approximately 250 million of these memberships visit Facebook site in each day at least one time. Therefore social media has largely effected on the society. Nowadays, the majority of adolescents exchange views, share feelings, personal information, pictures and videos on social media (Wang, Chen, & Liang, 2011). Bryant, Sanders-Jackson, & Smallwood (2006) revealed that many adolescents who had the difficulty of expressing their feelings and thoughts preferred technological communication to face to face communication.

The educational content has also been affected by internet associated with digital technologies and has become an inseparable part of it (Thanuskodi, 2013). Social networking sites (SNS) allow young adults to discuss about class materials, to share academic information and school related issues, to plan for a project (Salas & Alexander, 2008). Not only students but also instructors, teachers, and researchers in the education system

became addicted to the internet to reach the information, follow the latest developments in various fields, search scientific papers, exchange ideas, utilize for academic assistance (Lusk, 2010).

On the other hand, SNS can also make studens into "technocolic or heavy users". Researchers have focused on social interaction, mobile phone dependency/addiction, psychological effect, behavioral changes, etc. (Bianchi & Phillips, 2005; Billieux, Van der Linden, d' Acremont, Ceschi, & Zermatten, 2007; Bond, 2010; Campbell & Park, 2008; Choliz, 2010; Junco, Merson, & Salter, 2010; Zulkefly & Baharundin, 2009). Behavioral deficits, internet addiction, lack of confidence, academic difficulties, loneliness, negative effects on family and community communication were reported for "technocolic" students (Chou, & Hsiao, 2000; Nalwa & Anand, 2003; Thanuskodi, 2013). Schill (2011) claimed that SNS have a series of side effects such as stress, anxiety, mental health problems, severe loss of personal productivity, a sense of guilt and crisis. The grades of extreme-SNS-users were also affected (Duncan, Hoekstra, & Wilcox, 2012; Kalpidou, Costin, & Morris, 2011; Ophir, Nass, & Wagner, 2009; Wang et al., 2011). The SNS still continue to grow and most of the parents are started to worry about their children who are spending plenty of time on SNS, instead of studying courses, doing homework and preparing examinations (Wang, et al., 2011).

The purpose of the research was to examine *i)* the concrete effects of both digital technologies & SNS and *ii)* how technology usage, habits and daily life activities vary with gender.

METHOD

The present study used survey methodology with questionnaire items measured on Likert scales. The questionnaire was designed to provide the opinions of female and male students related to using digital technologies and social networking sites, activities and study habits. The questionnaire consisted of 14 questions including demographic information (e.g., gender, the educational level of father/mother, age, household income level monthly), digital technologies (smartphone, computer, internet, etc.), social networking sites (facebook, youtube, foursquare, blogs, twitter, etc.) and finally study habits. All of the questions were optional. The students were given approximately five minutes to fill out the questionnaire.

The research was performed on four departments offering two-year programs (Industrial Glass and Ceramics, Geotechnic, Drilling Technology, Natural Building Stone Technology) in Torbali Technical Vocational School of Higher Education at Dokuz Eylul University, Turkey. The study sample consisted of 220 volunteer college students (33% female and 67% male) whose ages were between 18 and 20.

The collected data were analyzed by IBM-SPSS Statistics 22. Twelve different statements were coded on a scale of 1 to 6, with 1 being "Least or None" and 6 being "Most". The frequency distributions, means and standard deviations of female and male students' values were calculated and independent-samples t-test was conducted to the statistical difference of means between male and female students according to the statements. The difference between genders was considered significant with p values less than 0.05.

RESULTS and FINDINGS

The effects and possible reasons of digital technology and SNS orientation were investigated by the parameters of *educational level and income of their parent*s, *age of smartphone ownership and spare time activities* (reading a book, using computer and/or smartphone, physical exercise, study on the course). Independent-samples t-test was conducted to the statistical difference of means between genders for all parameters.

The findings indicated that the half of family members of students had high school degree. Only 2.8% mothers were illiterate. Mean values for the educational level of fathers and mothers of students were 4.01 (standard deviation, sd = 0.75) and 3.76 (sd = 0.94), respectively. The difference in the values between genders was not statistically significant [degree of freedom, df = 218, t = 1.963, p>0.05].

When the results are evaluated, the income of the students family was between 400$ and 800$/month. Considering that minimum wage is approximately 360$/month, most of the student declared that they had to work part-time to meet their expenses. Insignificant difference was found between the values of genders [df = 215, t = 0.972, p>0.05]. Mean values for female and male students were 2.18 (sd = 1.03) and 2.05 (sd = 0.87), respectively.

Results revealed that the majority of the students had their smartphone between the age of 15 and 20. The number of males who has the smartphone for the first time at this range of age was higher than females. Mean values for female and male students were 3.76 (sd = 0.68) and 3.66 (sd = 0.56), respectively. Most of the students spend their 1 to 2 hours to play with smartphone. Mean values for spent time for female and male

students were 3.68 (sd = 1.14) and 3.51 (sd = 1.09), respectively. There was not any significant difference between genders [df = 218, t = 1.017, p>0.05]. The students also were asked how they spent spare time on the smartphone. The students' answers were analyzed in five categories (make phone calls, message, applications, game and study). The majority of female and male students were declared that they were using the phone for calling friends (90%). They also send text messages (70%), listen/download music video (75%), watch sports news (70%), log in SNS (85%) and study (10%).

Most of the students (70% male and 40% female) also indicated that they use personal computer 2 to 3 hours in a day. Mean values for female and male students were 3.58 (sd = 0.97) and 3.58 (sd = 0.84), respectively. It was found that the difference in the values between genders was not statistically significant [df=218, t=0.035, p>0.05]. They used computers for similar activities what they did on a smartphone such as posting on facebook or twitter, listening music, watching a movie, playing games, checking e-mail, studying, and surfing on the internet.
The preference of half of the students on reading printed books, newspaper, etc. was lower than on following social networks. Mean values for female and male students are 1.72 (sd = 1.10) and 1.79 (sd = 1.08), respectively. It was found that the difference in the values between genders was not statistically significant [df = 218, t = 0.435, p>0.05].

Approximately 60% of the student do not find time or prefer going to gym or doing sport. Mean values for female and male students are 1.72 (sd =1.17) and 1.54 (sd=0.82), respectively. The difference in the values between genders was not statistically significant [df=218, t=1.323, p>0.05].

According to students' study patterns presented in Table 1 and Table 2, they do not find studying physical (physics, chemistry, etc.) and social sciences exciting. 80% of female students and 65% of male students study major courses less than one hour prior to the exam. There was insignificant difference between genders for these parameters.

Table 1. Spent Time for Studying Physical Science Per Day

Gender		none	h<1	1≤h<2	2≤h<3	3≤h<4	5≤h
F	f	57	13	2	-	-	-
	%	79.20	18.10	2.80	-	-	-
M	f	115	29	4	-	-	-
	%	77.70	19.60	2.70	-	-	-

Table 2. Spent Time for Studying Social Courses Per Day

Gender		none	h<1	1≤h<2	2≤h<3	3≤h<4	5≤h
F	f	56	12	4	-	-	-
	%	77.80	16.70	5.60	-	-	-
M	f	116	23	9	-	-	-
	%	78.40	15.50	6.10	-	-	-

CONCLUSION

The positive and negative effects of digital technologies and social networking sites on the students were examined in this study. The research was performed on 220 volunteer college students. The data of the study was collected with a questionnaire. The findings showed that higher educational level of both father and mother enhances the awareness of current technologies and provides easier adaption to community. The income of parents is also a necessary factor to get an idea about the technology perspective. The lower income limit was found to be close to minimum wage. This indicates that the student forces the family members to buy them a smartphone even if their income is not convenient for this expense. This is also supported with finding in which students had their first smartphone at the age of 15-20. In addition, 90% of female and male students do not know how much they pay monthly for calling service.

Research results presented that half of the students spend time one and half hour/day on smartphone. They generally use the smartphone for calling friends, messaging, listening to music, watching video/clips, and especially using social networking sites (Facebook, Youtube, Blogs, Foursquare, Twitter, etc.). Female and male students (65%) spend more than two hours per day on computer and internet for similar purposes. However, to study on a course or science oriented research on internet is the last and least activity they do. The outcomes related to reading book and newspaper, and doing physical activities indicated that 60-65% of responding students do not have enough time for reading books, newspaper, magazine, doing physical exercise and going to the gym.

The time they spent for social media is limiting and taking their studying/learning time. The findings for studying science, major, and social courses presented that over 78% of female and male students do not have time for studying both science and social courses and 15% of them spend less than one hour in one day. It should be noted that students generally do not prefer to study or learn the courses. 80% of female students and 65% of male students prefer to study major courses prior to the exam.

Although the studies on gender revealed that male students technology usage were better, their confidence and attitude towards using of technology were higher than female students (Dhindsa & Emran, 2011; Hwang, Fisher, & Vrongistinos, 2009; Joiner, Iacovides, Owen, Gavin, Clibbery, Darling, & Drew, 2011; Kadijevich, 2010, Kaino, 2008; Li & Kirkup, 2007; Valkenburg & Peter, 2009; Yau & Cheng, 2012), in this study the gender was found not to be a definitive parameter for technology-dependent behavior for each item.

RECOMMENDATION

It is clear that the digital technology and SNS have really become an integral part of students in their daily lives. There are many side effects such as technology addiction, time loss, isolation, lower academic performance together with its benefits. It is obvious that it is not easy and rational way to entirely keep students away from social media. However, the time interval for each vital activity could be organized by increasing the cognition to this situation and auto-control habit.

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