Views of Students about Technology, Effects of Technology on Daily Living and their Professional Preferences

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ABSTRACT

The aim of this study is to examine the views of students about technology and their professional preferences and put forth the correlation between professional preferences and views about technology. For this purpose, in a private school in Ankara, 109 students from 6th and 7th grades were asked about their views on what technology is, the benefits and harms of technology and also about the professions they would like to perform in the future. The study was designed with phenomenological method, which is one of the qualitative research designs, and it was found as a result of the study that technology is defined under three main categories as an instrument that makes things / people's lives easier, a technical advancement and improvement tool, a tool for production / an instrument of production. Students explained the benefits of technology as facilitating communication, making life easier and acquisition of information / providing the sharing of information, whereas they expressed its harms as addiction, wasting of time and cyber threats. Lastly, considering the correlation between the professional preferences of students and their views about technology, it was found that there is an existing correlation where the quality of the profession is coherent with the views about technology. From this perspective, suggestions were developed for future studies.

INTRODUCTION

In our day, there is a stunning increase in the use of technology. Such increase resulted in the rapid penetration of technology into the daily lives of children. Wherever they are, the children are surrounded with various technologies and technological elements including smart phones, tablets, wireless internet, game consoles, TVs, videos, mobile devices and applications. Moreover, every year, the diversity of technology increases and goes into the daily lives of children. In a previous research, according to the statistics about the technologies in the homes of children between ages of 8 and 12 in the US, it was revealed that among homes with children, 98% have televisions, 80% have video systems, 72% have computers, 68% have internet connection, 67% have video game systems, 29% have educational game systems, whereas 42% of children have their personal TVs, 2% have personal phones, 11% have personal video game systems and 4% have personal computers (Duggan, Lenhart, Lampe, & Ellison, 2015). According to the results of the Research on the Household Use of Information Technologies by Turkish Statistical Institute (TÜİK) (2016), 96.9% of the household in Turkey has mobile phones or smart phones whereas the percentage of fixed line phones is 25.6%. For the same period, 22.9% of household has desktop computers, 36.4% has laptop computers, 29.6% has tablets and 24.6% has smart TVs (TÜİK, 2016). As may be inferred from the statistics, technological facilities in homes reveal that children are surrounded with technology. In the study by Chaudron (2015) in various European countries, the views and experiences of children aged 0 to 8 about such technologies as tablets, smart phones and computers as well as the awareness of parents about technology were examined. Looking into the results of the research, the children that are digital natives grow up in a technology-rich environment and are in interaction with technology.

At this stage, it is clear that technology is an important part of children's lives. Children are able to acquire basic skills of technology use very easily and quickly and to make creative use of not many but certain kinds of technology creatively. Children express the concept of technology along with game whereas families consider technology as something positive and functional but also reckon that its use may cause some problems and controlling and regulating the use of technology is challenging. Additionally, they also express anxiety about the hazards of technology upon health and the potential of coming across improper content and websites.

Matsumoto et al. (2016) carried out a study similar to the study by Chaudron (2015) in partnership with 13 countries and summarized the example of Spain. In this study, it was revealed that children in Spain defined technology as game and entertainment by 58% whereas 24% defined it as design and 18% defined it as science and that tablets were the most popular tool and technology enriched environments play an important role in the daily lives of children.

Today's students, who have been growing up within a digital environment are called "digital natives", "millennials", "the net generation" and "grasshopper minds". The concept of "digital native" is generally used to coin students of the new millennium (the year 2000 and after). Digital natives are students who were born into a technology-rich world, have met technology earlier in life, make heavy use of technology, create a technological learning environment around themselves and create their own unique language (Oblinger & Oblinger, 2005; Pedró, 2006; Prensky, 2001).

Although children are interacting with technology in our day (via games, e-mail, chat), the meaning of technology from their eyes and what their understanding of technology can be is still worth dealing with. Children's definition of technology, which shapes life and has become indispensable, the way and according to which means it is used, could impact the way they make effective and conscious use of technology both during childhood and adulthood and even their professional preference. There are many studies about how children make use of technology (Chaudron, 2015; Gronn, Scott, Edwards, & Henderson, 2014; McKenney & Voogt, 2010). The results of these studies demonstrate that children define the purpose of using technology under three main categories as communication, game and research. If children make the right and effective use of technology, they start being productive. This depends on the way they define what technology is. As educationists, if we become aware of these facts, we can guide children. Moreover, the purpose of use of technology and the effective skills of using technology may also affect the professional preferences among children. Ardies, De Maeyer and Gijbels (2015) have noted that the interest of children in technology increases every day and as they age and that the students that use technology effectively or that attend classes about technology tend to make their professional preferences also in the area of technology. In the European Union report headlined "Science Education Now: A Renewed Pedagogy for the Future of Europe" (Rocard, Csermely, Jorde, Lenzen, Henriksson, & Hemmo, 2007), it is underlined that science and technology education is under risk across Europe, especially among the young individuals, interest towards science, technology and maths has decreased, and unless effective action plans are prepared, the long-term innovative capacity of Europe will decline to a significant extent. In the same report, not only the science and technology education at schools but also the skills of processing information that could adapt to the scientific and technological atmosphere of the time are highlighted. The European Union utters great importance to sharing of scientific processes and newly developed technological products in forms that could be perceived by the society and discusses about the ways to raise up individuals with scientific and technological literacy. Similar conclusions were also reported by OECD (2008) and it was underlined that the interest among students towards science and technology is lessening.

Looking into the relevant literature, it is discussed that the influence of the lack of interest or negative approach among students towards science and technology on their future vocation preferences is among the priority topics and it is observed that the use of technology among students, their attitude towards technology and how these attitudes should be managed are also the subjects of primacy. The interest of students towards technology also defines their career objectives (de Vries, 2011; Osborne, Simon, & Collins, 2003; Van den Berghe & De Martelaere, 2012). Ardies, De Maeyer, Gijbels and van Keulen (2015), in a study with students of 12-13 years of age, examined the way the interest of students towards technology impacted on their career preferences. Meanwhile, Ardies, De Maeyer and Gijbels (2015) carried out a longitudinal study about the technology use of students in academic life. At the end of this study, it was highlighted that the education on technology affects the technology-related career planning among students.

Only a few studies can be observed in the literature about the correlation between the views of students about technology, their definitions of technology and their career planning. In this context, the aim of this research is to examine the views of students about technology and their professional preferences and to put forth the correlation between vocational research and the views about technology. Within the framework of this general aim, answers were sought for the following sub problems:

1. What are the views of students about what technology is?
2. What is the views of students about the benefits and harms of technology?
3. What is the correlation between the views of students about technology and their professional preferences?

METHOD
Study Group
The study group of this study consists of students from 6th and 7th grades at a private school in Ankara. The data collection was carried out throughout the educational year of 2015-2016 and among 109 students who volunteered to take part in the study. 55% of the students (n=60) are from the 7th grade and 45% of the students (n=49) are from the 6th grade. 40% of the 7th grade students (n=24) are female and 60% of them (n=36) are

male. 41% of the 6th grade students (n=20) are female and 59% of the students (n=29) are male. Among the entire group of students 40% (n=44) are female and 60% (n=65) are male. On Table 1, the distribution of students according to grade and gender is shown. Additionally, considering the age of all students, 50 students are 12 years old (46%), 58 students are 13 years old (53%) and 1 student is 14 years old (1%).

Table 1: Distribution of Students in the Study Group According to Gender and Grade

Grade	Gender		Total
	Male	Female	
6th Grade	29	20	49
7th Grade	36	24	60
Total	65	44	109

Research Method
This study, which aims at examining the views of students about technology and their professional preferences and putting forth the correlation between professional preferences and views about technology, was designed with the phenomenological method, which is one of the qualitative research methods. The reason why phenomenological study design was used in this study is to be able to make an in-depth examination of the collected data and also to be able to define the potential themes. Yıldırım and Şimşek (2013) note that phenomenological studies develop a convenient ground for research for the studies that aim at examining the phenomena that are not fully alien but that cannot also be grasped fully. In this study, in order to find out the themes, the answers to the 3 open-ended questions directed to students were examined and the analysis continued until certain patterns were reached. There are 2 phenomena examined within the scope of this study. The first one of these contains the views about technology and the second one contains the professional preferences.

Data Collection Tools and Analysis of Data
The data of the research was collected through a survey with 3 open-ended questions sent to the 6th and 7th grade students of the aforementioned private school over their tablet computers. In this survey, the questions directed to students are as follows:

1. What do you think technology is? Can you define with your own words?
2. Can you explain the benefits and harms of technology through examples?
3. What profession do you want to choose in the future?

These questions directed to students were sent over tablet computers and were responded by students within one week and then combined within a central database. This database is called "AROBER - K12NET Student Information System" and contains very detailed information about the education and training of students that are studying at the private school. The information in this system are obtained through optical forms or data entry from the Internet. The information obtained in this study were transferred to the aforementioned database over the Internet. Each student, through their personal tablet computers, has access to the system through the username and password provided to them. The information monitored on this student information system is not regarded as official information and they do not have legal validity. The official information about the students are handed personally to the students and/or parents by the school's administration. However, this database has significant contribution for the institution in the way that it facilitates the monitoring of the academic achievement of the students, the recording of personal information about the students and the customization of various education systems and curricula.

The answers from the students aim at making an assessment and these answers were examined with content analysis. Fraenkel, Wallen and Hyun (2012) express that content analysis has a wide area of practice in research about education and provides the researchers with a viewpoint about the problems that can be tested through more direct methods. In this study, cross checks were made on the codes and themes determined by the researcher and thus the validity and reliability of the research was ensured as much as possible. Additionally, during the presentation of the findings, detailed descriptions were made. The purpose here is to report some of the examples provided by the participants fully in order to increase the quality of the study (Yıldırım, 2010). In these findings, some citations were made from the expressions of students and the students were coded as Ö1, Ö2, Ö3, etc. Additionally, another coding was made by another by another researcher and a consensus was

sought for. At this point, Cohen's Kappa coefficient was calculated as 0.78 and a significant compatibility was found.

FINDINGS
The answers to the questions directed to the students were examined and in the context of sub problems, they are provided respectively as follows.
Findings about the Definition of Technology
Considering the answers given by students about what technology is, the answers can be grouped under three main categories as an instrument that makes things / people's lives easier, a technical advancement and improvement tool, a tool for production / an instrument of production. In this categorization, the most common answer was around the theme that it is an instrument that makes things / people's lives easier (n=80, 73%). It was followed by the category of a technical advancement and improvement tool (n=15, 14%) and the category of a tool for production / an instrument of production (n=14, 13%). The students that regard technology as an instrument that makes things or people's lives easier are found to be the students that are aware of the contribution of technology into the daily life, that are openly interested in technology and that can think concretely and exemplify their answers. The following sentences can be given as examples to the expressions by the students that regard technology as an instrument that makes things or people's lives easier and that are coded under the first theme;

"Technology are the devices that make my daily life easier. For example, thanks to technology, I can make research on the web, play games and read books on the computer ." Ö14
"It makes it easy for someone to do something. For example, like the smartboard we use during classes." Ö46
"I think that technology is all of the scientific inventions that make people's lives easier. We can play games and we can use it for fun. Of course we can also learn things through it." Ö67
"It is science that makes life easier. For example, the cars we use, smart homes, phones computers etc…" Ö81

The students that regard technology as a technical advancement and improvement tool are the ones that know of the potential contributions that technology can bring about and are aware of the benefits of these contributions to industry, society and service industry. The following sentences can be given as examples to the expressions by the students that regard technology as a technical advancement and improvement tool and that are coded under the second theme;

"It is a name given to all instruments that are used in factories and in private sector thanks to technology. For instance, steam machines, thermal plants and the propellers that transform wind into energy. All of these are technology. Developed countries are into these technologies and we, as a nation, should also develop and make these widespread." Ö3
"I think that technology is now beyond simple inventions. There are bigger scale devices, instruments, technically developed planes and UAVs etc. Yes, computers, televisions are also technology but they are getting out of date now. Each day, new and different technologies emerge. The countries that are technically more powerful are ahead from this aspect." Ö19
"We know that powerful countries are advanced in terms of industry and economy. Thanks to technology, they are making progress. When used consciously technology in a way takes effect on the improvement of countries." Ö22
"Technology means being ahead in terms of technique, economy and wealth. The countries with powerful technology always win and make progress." Ö50
"Technology is a sign of development. It is used at schools, health institutions and court houses." Ö68

The students that regard technology as a tool of production draw attention to production supported by technology. It can be asserted that these students focus on products and exemplify technological production concretely. The following sentences can be given as examples to the expressions by the students that regard technology as a tool of production and that are coded under the third theme;

"I think that technology means production. Simply a steel door is technology. Locks were not safe before and now the doors are safer. Steel doors are now serially produced. This means that there is a need and therefore they are produced." Ö10
"The rapid change brought along improvements and new technologies. This has facilitated production. Even copier machines are faster than before. They do your work quickly." Ö31
"I heard something called the Industrial Revolution. Technology has played a great role in it. A job done by 10 people before can now be done simply by pressing a button." Ö77

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Findings about the Benefits of Technology

Looking into the responses given by students about the benefits of technology, it is possible to assert that the responses can be categorized under three groups as facilitating communication, making life easier and acquiring information / sharing of information. The most significant share in this group is that of the theme making life easier (n=61, 56%). It is followed by the theme acquiring information / sharing of information (n=31, 28%) and by the theme facilitating communication (n=17, 16%). The students that describe the benefit of technology as making life easier are observed to draw the attention to the characteristics of various technologies and define at which points it facilitates daily life. It can be asserted that among these students, the perception of benefit has significance. The following sentences can be given as examples to the expressions by the students that point out to benefits of technology in making life easier and that are coded under the first theme;

"Thanks to technological devices, things get easier to achieve every day. The houses that used to be built in 3 years are now built in 3 months. Our daily lives have now become easier. We are able to get to anywhere easily thanks to cars and airplanes that are also technologies." Ö2
"I think that technology is all improvements that make our lives easier and move it to a higher level. Its greatest benefit is that it makes our daily lives easier." Ö27
"There are now big screen televisions. We watch better TV. This is also a benefit isn't it? We also have smart boards in our classrooms. Our teachers are better at teaching classes." Ö33
"My father is a doctor and he uses robots. The operations are now easier than before as I heard." Ö56
"We have all kinds of electric appliances in our homes. These are all products of technology. Without our refrigerator and freezer, we would not be able to store our food. We are luckier than the older generations." Ö97

It was observed that the students that express the benefits of technology as facilitating communication draw the attention that with the support of technology, communication has become easier and more effective. These students have also highlighted social life and focused on the benefits of social media, telephones, the Internet and mobile phones. The following sentences can be given as examples to the expressions by the students that point out to benefits of technology in making communication easier and that are coded under the second theme;

"Thanks to the Internet, I can communicate with my friends. Through Skype we can communicate for free. I communicate through the smart phone they bought me." Ö4
"Social media keeps us together all the time. Even when there is no school, I can see what my friends are doing. I'm glad that there is Internet. It is a technology, I think. Maybe it is not a device but I can communicate through it." Ö37
"My friends and I can communicate whenever we want. We have a class group. We chat through that. We share photographs." Ö39
"I think that the Internet is the greatest technology so far. Thanks to it, I can follow my friends from my old school. We have an ongoing communication." Ö40

Students that regard the benefit of technology as the acquisition of information / sharing of information are able to get access to information at anytime and anywhere, to share information, do their homework and follow up their personal portfolios. The following sentences can be given as examples to the expressions by the students that point out to benefits of technology in providing information and sharing of information and that are coded under the third theme;

"There is a beautiful technology called the Internet and through it we can make research. I can do my homework. I now go to the library merely for getting a story book. Everything is on the Internet now." Ö6
"I can even view my school marks on the e-state now. This is something good for us. We also do our homework ad study on our tablets. Life is more fun now through technological devices." Ö15
"We have this AROBER system. Even this can be an example of technology, right, Teacher? It seems so to me. We ensure the sharing of information with this system." Ö48
"With the phone in my hand, I can go online wherever I want. I search about something I wonder and learn about it instantly. Was there any such thing before?" Ö66
"The thing I most enjoy doing online is listening to music. Somebody uploads a video and the whole world watches it. Everyone likes it. Information on the Internet get better when shared." Ö78

Findings about the Harms of Technology

Looking into the responses given by students about the harms of technology, it is possible to assert that the responses can be categorized under three groups as addiction, wasting of time and cyber threats. The most significant share in this group is that of the theme addiction (n=80, 73.4%). It is followed by the theme wasting

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of time (n=19, 17.4%) and by the theme cyber threats (n=10, 9.2%). The students that describe the harm of technology as addiction are focused on the addition to technology among individuals and point out to the potential consequences, results and signals of such addiction. It was observed that these students offer clues about the levels of addiction among their friends from school and exemplified these. The following sentences can be given as examples to the expressions by the students that point out to harms of technology in terms of addiction and that are coded under the first theme;

"I cannot help but check my mobile phone all the time. I do not take it to school with me but when I come home, I never leave it aside. The same with the tablet, although I also study on it." Ö5

"When I have too much of TV or computer, my fingers get numb. My eyes are defected now too, I'm using eyeglasses. I really love playing games, I can do that for hours." Ö11

"Some of my friends are so much into technology. They even forget to eat their meals. They may even be coming to school without sleep and doze off during lessons. I think they play games all night." Ö19

"When I put too much time on the computer, I started doing poorly at school. Therefore I use it less. I do not want to get addicted." Ö44

"At home I devote most of my time for the pone, tablet and the computer. My parents get cross with me as I do not speak to them. They tell me I am not sociable." Ö49

"Addiction to technology is a bad thing. So is the addiction to the internet. I both takes up my time and harms my health. Teachers talk about these in the classes too. I am actually afraid to become addicted." Ö68

It was observed that the students that describe the harm of technology as wasting of time point out to the potential negativities that they may face when they spare too much time for technology. These students regard the overuse of technology as a significant waste of time and note that technology may obstruct social life. The following sentences can be given as examples to the expressions by the students that point out to harm of technology in terms of wasting of time and that are coded under the second theme;

"When we get carried away watching television, we do not have time for homework. For this reason, I plan my time. Each day I watch for maximum 1 and a half hour. There is nothing on television actually but I sit in front of it anyway." Ö23

"In fact, phones and tablets are useful devices. But overusing these makes us forget how time passes. Sometimes I cannot do my homework on time because of playing games on the tablet." Ö67

"I use my computer less and less each day. The tablet has been replacing it. The more the technology diversifies, the more time we start losing. You have to allocate certain amount of time for each." Ö72

"I think both technology and the Internet takes time. It would be better if both did not exist. People would go towards books, encyclopedias and libraries." Ö77

"I wish we could spare the time we normally spare for technology for one another and our families." Ö89

The students that describe the harms of technology as cyber threats focus on threats, psychological oppressions, the cyber crimes such as insults and bullying that could take place through technological devices. The expressions of students also make the distinction that in fact such acts are not directly through a technological device but through the Internet. The following sentences can be given as examples to the expressions by the students that point out to harm of technology in terms of cyber threats and that are coded under the third theme;

"In fact you should be careful when surfing the Internet. There are inappropriate sites, about swindling or threats. We were taught about it in class." Ö40

"They steal credit card information on the web. This is something important. One should be careful not to lose money." Ö55

"When I surf on the web with my tablet, suddenly some websites open. Such sites about online gambling. These are in fact inappropriate sites. But I cannot block them." Ö61

"People may threaten each other online. They do it a lot on Facebook. There are also those who insult. I did not come across but one of my friends was intimidated by such people." Ö101

Findings about Professional Preferences
Looking into the responses given by students about the professions they would like to choose in the future, it can be asserted that the responses can be grouped into three different categories as professions based on science and maths skills, professions based on verbal skills and liberal professions. In this grouping, the most significant share is that of professions based on science and maths skills (n=65, 59.6%). It is followed by the theme professions based on verbal skills (n=32, 29.4%) and by the theme liberal professions (n=12, 11%). It is observed that the students that are willing to choose professions based on science and maths skills want to be engineers, doctors, pharmacists or branch teachers. It was observed that the students that are willing to choose professions based on verbal skills want to become lawyers, judges, presenters, academics or journalists and the

students willing to have liberal professions want to become jewelers, artists, photographers, real estate agents or self-employed lawyers. From these findings, a correlation could not be established between the views of students that want to have liberal professions about technology and the profession they want to choose. It is presumed that these students express their choice of profession largely because they are influenced by their parents' professions. However, it is possible to assert that the students that have high awareness about technology and express the benefits of technology clearly and properly prefer the professions based on science and maths skills and that the students that focus more on the harm of technology prefer the professions based on verbal skills.

CONCLUSION, DISCUSSION AND SUGGESTIONS

In this study, the views of students about technology and professional preference are examined and the correlation between vocation preferences and the views on technology are studied. As a result of the study, it was found that from the eyes of students, technology is regarded in three categories as an instrument that makes things / people's lives easier, a technical advancement and improvement tool and a tool for production / an instrument of production. Especially the definition of technology as an instrument that makes people's lives easier has yielded a parallel result to the study by Özdemir, Aksal and Gazi (2006). In this study, it was concluded that technology is a phenomenon that makes people's lives easier and the materials of teaching were regarded as a tool in education.

Within the scope of the study, the students have defined the benefits of technology as facilitating communication, making life easier and acquiring information / sharing of information. Considering the expressions of the students in the study group and the patterns among their expressions, it can be asserted that the students are aware of the advantages of technology and can define at which points it facilitates daily life. Another cause for this finding can be that the students are receiving education at a private college. For this reason, this phenomenon should be studied in different types and levels of schools.

The students categorized the harm of technology under three groups as addiction, wasting of time and cyber threats. Within the body of literature there are studies about the threatening aspect of technology, computers, and Internet (e.g. Canbek and Sağıroğlu, 2007; Çelen, Çelik and Seferoğlu, 2011) and studies that point out to addiction (e.g. Arısoy, 2009; Şahin and Tuğrul, 2012). From this perspective, it can be inferred that the awareness of students about the negativities that could be caused by technology is high.

Lastly, considering the correlation between the professional preference of students and their view about technology, the existence of a correlation where the character of the profession matches the views about technology. However, this finding was not obtained as a result of a direct inquiry among students. Therefore, the existence of such correlation can also be studied in a different data collection process with direct expressions from students in future studies. Additionally, Ardies, De Maeyer and Gijbels (2015) noted that the students that make effective use of technology or attend classes about technology make professional preferences also in the area of technology. Thus, this inference is also coherent with the findings of this study.

Although Ardies, De Maeyer and Gijbels (2015) indicate that the willingness and interest of students towards technology may change over time, since no longitudinal research was not carried out in this study, the change over time could not be examined. It can be asserted that for future studies, there is need for a longitudinal research as to whether there is a change in the views of students about technology, its benefits and harm.

In conclusion, it can be asserted that there is a need to examine how the varying viewpoints about technology and their changes in time influence professional preferences. Likewise, within the body of literature, there is no adequate amount of research as to how a potential change in the students' definition of technology could influence their professional preferences.

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