TECHNOLOGY AND SOCIETY IN THE VIEWS OF SOCIAL STUDIES STUDENT TEACHERS

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In this paper, it was aimed to represent these relationships in views of social studies students teachers who were enrolled in Social Studies Department in Marmara University. Based on qualitative research methodology, 15 social studies student teachers were formed the research group. Semi-structured interviews were done for the aim of data collection. Each participant was interviwed individually and, interview transcripts were analysed through qualitative data analyse methods. Besides examples of activities about technology and society which were done by those students were examined. In conclusion, it was found that social studies student teachers thought that there was a great relationship between technology and society. We saw that they comprehended cultural, social, economic, political and environmental effects of technology; societys' role on technological developments and its' usage and historical effect of technology. Besides, they were aware of the superiority of societies which advanced in science and technology and were called as developed countries and they thought that those countries had a hegemony on others because of their advance technology. Common culture that was created by technology was also expressed by social studies student teachers.

Keywords: Technology, society, social studies student teachers

Technology was described as a process that made modifications on natural environment for the aim of meeting individual desires and needs (Commoner, 1996; AAAS, 1993; NRC, 1996; ITEA, 2000; NAE & NRC, 2002; Pearson & Young, 2002; Garmire & Pearson, 2006; ITEA, 2007). It was born with early humans' inventions of different tools that they couldn't do with their indefensible and deficient bodies; and life became more qualified through those tools.

Although technology is seen as a concept related with science and, studies related with technology are done in connection with science, technology is a social phenemenon as well (Childe, 2007; Ata, 2008). We can see technology everywhere like economy, societal life, communication, transportation, food and etc. (Childe, 2007). People live in houses, work and shop in large buildings, eat prepeared foods, move about in vehicles, reading newpapers, listening radio, watching television and using mobile phones and Internet for communication, so people occupy a technological world (ITEA, 2007). New technologies simply meet the requirements of every person. Technology is among basic factors that shaped the human life because, culture is created parallel with tools which are used by society (Murphie and Potts, 2003). Besides, technology leads to social changes (Childe, 2007; Ata, 2008). Especially, after World War II, the importance of technology was emphasized in political and social platforms (Gökdemir, 2009). In research about "the social shaping of technology" it was stated that the aim of the technological change was not just a technic logic and also it was a social product (Williams & Edge, 1996).

Our health, the ways in which we consume, how we interact and the methods by which we exercise control over one another is affected by technology (Bijker & Law, 1994). Technology influences cultural patterns, political movements, local and global economies, and everyday life (ITEA, 2007).

Technology began with simple tools and, as time passed, humans became more sophisticated at making tools and learned to process raw materials into forms which didn't exist in nature and new technologies were created with the improving existing tools. During the history, technology has had a great impact on changes concerning alimentation, sheltering, health care, protection, tranportation and communication. Together with the rise of science in the sixteenth and seventeenth centuries a new type of technology and design were born (Childe, 2007; ITEA, 2007). Technological changes have been evident especially in the past century.

Language, norms and values, identity, communication and environmental problems are some aspects of modern culture are infused with science and technology (Bijker, 2001). We are living in a technological culture and it is not easily possible to understand modern culture without taking into account the role of science and technology and we have an obligation to try to understand technology and technological culture. Technology reflects peoples' viewpoints and their culture (Maguth, 2009). Individual beliefs and values shape their attitudes towards technology. Besides, the relationship between technology and society can be examined in relation with economic and social changes. At economic level there is an Internet economy that reflected in dot-com businesses and in societal level we can give the cyberspace as example (Warschauer, 2003:11). Besides, information and communication technologies (ICTs) play an important role in transforming the economy and society. And, technology has also an effect on government, industry, military, ethics, education institutions and special interest groups.

In general, the effects of technology on society and society on technology go hand in hand (ITEA, 2007).

As with its' influences on society, technology has an effect on natural environment both positive and negative (Steinbuch, 1983; ITEA, 2007). Its use has the potential both to improve or to cause great damage to the environment We can clean or pollute the environment with technology. Conservation and recycling are among best ways to use technology to protect the environment and we can design new products incorporating waste materials. Thus, if citizens are to participate effectively in polical process for making sound decisions about the usage of technology and soften its' negative effects on environments, they need to be educated about the technology and effects of technology on society and environment.

Throughout history technology has had an important effect on life-styles of society and, in turn technological developments have been determined by society interms of wants and needs of people. Knowing the history of technology helps people understand the world around them and equips them to make more responsible decisions about technology and its' place in society. Science-technology-society (STS) developed in the 1970s (Wajcman, 2006) and has got a new statute in primary school curricula for the aim for helping school-age citizens develop the capabilities with STS issues like acid rain, food additive use, global warming, acces to and application of medical technology, waste management, water quality and quantity and world hunger (Rubba & Harkness, 1993).

To take full advantage of the technology people must become better stewards of technological change. Although the nation and the whole world depend on technology, citizens are not equipped to make decisions consciously and think about technology critically. Many people are not fully aware of technologies which they use every day. Our use of technology is increasing but, there is no sign of a corresponding inprovement in our ability related with technology and it seems that educational institutions and educators have not recognize the importance of technology and technologica literacy (Young, Cole & Denton, 2002).

Understanding dimensions and limitations of technology and knowing its' advantages and disadvantages are among important obligations of active and participatory citizenship. Besides, skill of using existing technologies in connection with wants and needs takes place among requirements of global citizenship. Societal issues and citizenship are studied in the context of social studies course in primary school level in some countries like Turkey and, relationships between technology and society are examined through this course. As suggested in research (Aikenhead, G. S., Fleming, R. W., Ryan, A. G., 1987; Ben-Chaim & Zoller, 1991; Kaya, Yager & Doğan, 2009) special effort in the STS literacy domain should be made within teacher training programs their views should be get in this process. Thus, in this paper, it was aimed to represent these relationships in views of social studies students teachers who were enrolled in Social Studies Department in Marmara University.

Method

This research was a qualitative study. It was a descriptive study through analysis a pre-service social studies students' views and semi-structured interviews were the main tool of data collection. Each participant was interviwed individually and, interview transcripts were analysed through qualitative data analyse methods.

Participants

Based on qualitative research methodology, 15 social studies student teachers who were enrolled in Social Studies Department in Marmara University were formed the research group. The selection of student teachers was based on purposeful sampling with no gender-specific selection. The logic and power of purposeful sampling lie in selecting information-rich cases for studying in depth. By choosing the key informants purposefully selected, the researcher had the opportunity to gather information-rich data.

Data Collection

The data were collected from December 2010 through February 2011. The primary source of the data included semi-structured interviews. During the interview, student teachers were asked the following:

1. According to you, is there a relationship between technology and society? If your answer is yes, what do you think about this relationship?
2. What are the positive effects of technology on society?
3. What are the negative effects of technology on society?
4. What do you think about our designed world?
5. Is there any effect of society on technology?

All of the participants allowed tape recorder use. Interview sessions were held in their classroom. Each interview took about 25 to 35 minutes and was tape-recorded.

Data Analysis

Interviews were audio taped and regularly transcribed. Data were indexed, labeled, and coded according to the major topics. The data were analyzed by content analysis. By using the content analysis, the discourse was systematically observed based on various coding categories. While doing content analysis, first, data were read many times to ascertain any patterns. A matrix was developed according to the given answers to each question. In

order to understand the general category, open coding was used. Furthermore, in order to see the related subcategories, axial coding was applied. These categories and their sub-categories emerged from axial coding are presented as data display in the findings section.

Findings

Findings about Our Designed World Dimension

Our Designed World is among dimensions of technological literacy and it also takes part in our technology education program. When we asked their opinions towards designed world pre-service social studies teachers stated that we were living in a technologically designed world and this was among natural and social worlds. According to them the designed world includes all the modifications that humans have to the nature. In this context "*various technologies*" was the first common category. We can give the statements of the participant with code ST6 as an example about it. Some participants mentioned her/his views like this: *Everything in our lives are related with technology. Even for the building which we stay in is a technology. Our live styles, cultures are affected by technology, we can see it everywhere* (ST5). Besides GMO and vaccines were highlightened by them.

Our second common category was "*technology in life*". Our participants gave some examples about technologies in our life and they specified those life areas as transportation, communication, education and health.

As we can see, social studies pre-service teachers thought that we were living in a technologically designed world and it includes all the modifications that humans have to the nature. We use different technologies in our lives like cars, buildings, vaccines, Internet and computer and, technology is everywhere in life. When we go anywhere, speak with anyone and doing something with any tool we use technology and we live better lives with the help of technology.

Findings about Technology and Society Dimension

To understand technology properly, it must be put on cultural, environmental and societal context. Thus, Technology and Society is another dimension of both technological literacy and our technology education program. Individual and societal wants and needs determine the issues that technology seek to address and, when we asked the opinions of pre-service social studies teachers towards technology and society they stated that, wants and needs have lead to new requirements. Besides societal adoption was very important in development process of new technologies. In this context "***society***" was the first common category in this theme. We can give the statements of the participant with code ST3 for give an example about it. Another participant (ST1) mentioned her/his views related with culture which was created together with technological developments.

Our second common category was "*environment*". Our participants gave some examples towards the effects of technology on environment and they stated that physical environment in turn could play an important role by causing some needs.

"*Technology in history*" was other common category in this dimension and pre-service social studies teachers thought that the use of technology drives changes in society throughout history and the technology define the era for example Stone Age, Bronze Age, Iron Age, Industrial Age, Information Age and so on. Technology shapes the the environment in which people live and it has become increasingly the larger part of our lives. Besides, they were aware of the superiority of societies which advanced in science and technology and were called as developed countries and they thought that those countries had a hegemony on others because of their advance technology.

As we can see, social studies pre-service teachers thought that there was a great interaction between technology and society. Although many of technologies' have effect on society regarded as desirable by them, they stated that technology have negative effects on society in some areas like environmental problems. Besides, societys' effects on technology were seen by them and they emphasized it through opinions towards peoples' preferences and, they said that if enough people found a technology satisfying it would be continued and developed.

Results and discussion

In conclusion, it was found that social studies student teachers thought that there was a great relationship between technology and society. This result is consisted with the results of the study which was done by Rubba and Harkness (1993). In their study it was also detemined that the majority (79%) of the in-service teachers and the largest percentage of the pre-service teachers described technology as, "*the application of science to enhance life*". Besides, in a study which was done by Fleming (1988), undergraduate science students' views about the nature of the relationship between science, technology and society were got and two hundred students responded to the items on the instrument. Based on these responses, questions were designed and semi-structured interviews posed to 30 students. The interview results showed that scientific facts were the central concern when dealing with the nature of science and when discussing the role of science in society, mission-oriented science clashed with pure research.

We saw that our participants comprehended cultural, social, economic, political and environmental effects of technology; societys' role on technological developments and its' usage and historical effect of technology. Besides, they were aware of the superiority of societies which advanced in science and technology and were called as developed countries and they thought that those countries had a hegemony on others because of

their advance technology. Common culture that was created by technology was also expressed by social studies student teachers. As similar, in a study which was done by Kahyaoğlu (2004) for the aim of determining pre-service science teachers' opinions towards science-technology and society, participants stated that scientific research would be done to be independent country and to earn economic income. In same study, participants advocated that technological developments would be controlled by citizens. Besides, they said that boundaries among counties were nearly removed and there was a common culture by force of globalization. This relationship between technology and culture was emphasized in research of Özaydın (2010) and it was determined that university students had common behaviors like removing earphones when encounter with anyone, disapprobation to playing with cell phones while speaking with their friends, muting their cell phones in common areas, responding to e-mails punctually and beginning to e-mails with a special salutation sentence. And, in a study which was done by Şimşek and Şimşek (2010), it was seen that pre-service social studies teachers had inaccurate and deficient knowledge about Turkish-Muslim scientists and contributions of geographical explorations on modern science. As a result, we can say that there is a requirement towards courses concerning with technology and both teachers and students must get fully knowledge about technology and society.

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