



RESEARCH ARTICLE

THE EFFECT OF SCIENTIFIC-TECHNOLOGICAL DEVELOPMENTS ON SOCIAL CHANGE AND SOCIAL STUDIES PROGRAMS IN TURKEY

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ABSTRACT

In the study, taking into account the relationship between the existing events and conditions of the previous events aimed at the interaction between the situations. In this study the universe, began to be implemented in Turkey was adopted in 2004, 4th, 5th, 6th and 7th grade are learning area (Science, Technology and Society and Production, Distribution and Consumption) of Social Studies Program. In addition, the effects of scientific-technological developments on social change in these areas of learning. One of the major turning points in the history of humanity is the technological developments underlying the Agriculture, Urban and Industrial Revolutions. As a result of developments in agriculture, industry and computer technologies, the social structure has undergone fundamental changes over time. These points are included in "Science, Technology and Society" and partly "Production, Consumption and Distribution" learning areas. It is thought that scientific-technological developments and social change issues should be included in social studies in order to enable students to look at social change more comprehensively and to address it in a broad perspective. Finally, it can be said that the effects of scientific-technological developments on social change in the Social Studies Program should be reconsidered in a structure including major social changes (Agriculture and Urban Revolution, etc.).

INTRODUCTION

Throughout the history of humanity, change concept is always a phenomenon that keeps its importance. In some cases, the concept of change may appear in a "positive, desired" direction as well as in a "negative, unwanted" direction. Change can be defined as variations in a previous state or mode of occurrence. No matter how traditional and conservative, every society and culture is in constant change (Fichter, 2006: 194). Technological changes are seen as an important factor in the development of societies. It is the high rate of technological change that makes a society far ahead (Öner, 2003: 571). Özkalp (2008: 315) has identified the relationship between technology and change with the idea that technology is the driving force of change. The most important element of human evolution is technology (Kongar, 1985: 310). Therefore, it can be said that technology is a direct dominant element in the development of humanity from the first people to the contemporary civilizations.

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It is seen that the effect of technology is increasing in the development of today's societies. Kongar (1985: 310) emphasized the importance of technology for the development of societies. According to Özer (2003: 570), the practical applications of scientific and other knowledge are the main source of social change. Özer stated the effects of scientific and technological developments on social change. In addition, the famous anthropologists Mead and Childe have observe that technology lies at the heart of human evolution (Kongar, 1985: 300). The invention and discovery lies under technology and the necessary processes for their appropriation to society (Kongar, 1985: 300). The long-term and inclusive examples such as the Agricultural Revolution and the Industrial Revolution, as well as the influence of science and technology on society, the theoretical prediction of electromagnetic waves in the nineteenth century, the subsequent discovery, the construction of the radio based on this discovery and the rapid entry into the life of society can be given as examples. Technology not only makes it possible for man to control nature but also affects human relationships (Özkalp, 2008: 315). The development of communication and transportation technologies has increased the relations between people living in different geographies; it has intensified the connections between different cultures. In pre-modern societies, innovations in the field of agricultural production have been the beginning of change. In modern societies, industrialization has been the main engine of social change (Bahar, 2008: 82). With similar

effects, technology has had a direct impact on social change. According to Doğan (2007: 343), technology is both the cause and the result of social change. Doğan emphasized the dialectical relationship between technology and social change and pointed out that social change also affects technology. Scientific discoveries, technological developments, international social movements and regime changes accelerate social change (Bahar, 2008: 82). Yasa (1973: 184) states that technological development affects the material and spiritual elements of the social structure and that these effects form the basis for major social changes and developments. Technology emerges as an element shaping the spiritual culture as well as the material culture of societies. According to Kongar (1985: 24), technology lies under material culture. Thus, technology, meaning that regulates relations between people; power is shaping values and rules. As a result of developing technology, increasing the division of labour affects the organization of social assets and changes the social structure along with human relations (Kongar, 1985: 101). Although different definitions of social change are made, they are essentially similar elements. Kongar (1985: 23) defined social change as the change of relations between people, on which technological change lies. According to Özer (2003: 565), social change is based on the basic fields of the social structure (economy, politics, education, family, culture and beliefs); differences in existing relationships. According to Güven (1999: 214), it is the change of the social relations network and the institutions and values that determine them. Tezcan (1994: 191) defined social change as the change of social structure and the social relations network that constitutes it and the social institutions that determine these relations. In these definitions, it is seen that the determinants of technological developments on social structure are emphasized.

Ergun (1995) stated that technological advances lead to economic developments. Ergun (2008: 159) sees social change as the result of economic development, technical progress and population movements. Besides, Ergun (2008: 377) stated that social change is affected by many factors by listing the factors of social change as demography, technology, economic structure, values, ideologies and inter-human struggles and conflicts. Various definitions of social studies course have been made. Barr see social studies as the fusion of social and humanities. Barth (1991: 7) defined social studies as an interdisciplinary field that fused the concepts of social and humanities in order to apply practical citizenship skills to critical social issues. In the definition, it is seen that social studies is considered as an application of citizenship skills with an interdisciplinary approach. NCSS (The National Council for Social Studies, 1994) cites social studies as a field that integrates the work of social sciences and humanities to support citizenship qualifications. NCSS (1994) is a systematic and coordinated field of study that utilizes disciplines such as anthropology, archaeology, economics, geography, history, law, philosophy, political science, psychology, religion and sociology and that social studies are interdisciplinary.

The definition of social studies is discussed in detail in the Social Studies Program. Social studies, in order to help the individual realize his / her social existence; reflecting the social sciences and citizenship issues such as history, geography, economics, sociology, anthropology, psychology, philosophy, political science and law; combining learning areas under one unit or theme; the interaction of human with social and physical environment is examined in the context of

past, present and future; It is an elementary education course based on collective education (MEB, 2005). This definition appears to be in conformity with constructivist philosophy. In the social studies course, the relationship between scientific-technological developments and social change is given.

Ata (2008) emphasized that the importance of the concept of social change will increase in the future and emphasized that there is a big job in social studies education for individuals to be the subject of social change. He emphasized the importance of adapting to new conditions by stating that scientific-technological developments in our age lead to rapid social change. Naturally, social studies course has important tasks in dealing with this problem.

MATERIALS AND METHODS

In the study, taking into account the relationship between the existing events and conditions of the previous events aimed at the interaction between the situations (Kaptan, 1991: 59). Therefore, descriptive method was used in the research. Since Karasar (1998: 77) aims to describe such a situation as it exists in the past, this research is based on a screening model. In this study the universe, began to be implemented in Turkey was adopted in 2004, 4th, 5th, 6th and 7th grade are learning area of Social Science Program. The sampling areas are "Science, Technology and Society", "Production, Distribution and Consumption". In addition, the effects of scientific-technological developments on social change in these areas of learning. For data analysis, the relevant literature was first searched. Then, in the 4th, 5th, 6th and 7th grades of the Social Studies Program, necessary data were collected by examining the information and gains on the effects of scientific-technological developments on social change in the fields of "Science, Technology and Society", "Production, Distribution and Consumption". The data obtained were evaluated within the framework of the impact of scientific-technological developments on social change.

FINDINGS AND COMMENTS

Human evolutionary history is based on the history of technology (McCellan III and Dorn, 2006: 9). Significant technological developments throughout history have led to changes in social structure. One of the major turning points in the history of humanity is the technological developments underlying the Agriculture, Urban and Industrial Revolutions. As a result of developments in agriculture, industry and computer technologies, the social structure has undergone fundamental changes over time. These points are included in the "Science, Technology and Society" and partly "Production, Consumption and Distribution" learning areas of the primary school Social Studies Program. In the Elementary Social Studies Program, the learning area is defined as the structure that organizes learning (MEB, 2004), in which related skills, themes, concepts and values can be seen as a whole. The aim of using information and communication technologies by understanding the development process of science and technology and its effects on social life, emphasizes that science and technology are effective on social life. This aim is included in the Program and it is understood that the students are expected to understand which factors are effective on social change. The effects of scientific-technological developments on social change in the field of Science, Technology and Society learning of the 4th and 5th Grade

Social Studies Program in primary education are given as follows (MEB, 2004):

Technology starts with the first people making the first simple tools. Today's advanced technology is a factor that facilitates our work in social life. The modern life we live is impossible without technology and without science. However, technology brings many problems. Is new technology always better than before? What can we learn from the past regarding the social change caused by new technology? Primary education 4-5. Grade students in this learning area; that creative, critical and scientific thinking are the basis of developments in science and technology; comprehends the development process of science and technology and its effects on social life.

In the field of "Science, Technology and Society" learning, simple tools made by the first people were taken as the beginning of technological developments. The effects of scientific and technological development on social life are clearly stated in this field of learning. In the 4th and 5th grades of primary education, the effects of scientific and technological developments on social life were generally mentioned instead of past social changes such as Agriculture, Urban and Industrial Revolutions. This can be explained by the fact that 4th and 5th grade students are primarily asked to learn about the technologies they live, use, face and the changes created by the technology. In the fourth grade, students were asked to compare the changes created by technological products in the context of past and present. Based on this acquisition, it can be said that the effects of technological products on social change have started to be given in accordance with the level starting from 4th grade. It is seen that the effects of scientific-technological developments on social change are generally included in the 5th grade Realized Dreams unit of the program. In this class, it is aimed to discuss the effects of technological products on social life in the period of their lives without mentioning the past developments. Thus, in the 4th and 5th grades, students learn the effects of scientific-technological developments on social change in general and prepare for the 6th and 7th grades where they will see the same subject in detail.

As can be seen, in the field of "Science, Technology and Society" learning, technological developments have been included rather than scientific studies. As an explanation of this situation, it can be said that scientific studies are not needed as much as technological developments in a very long period of world history. According to Bernal (2008: 446), science was not a necessary requirement for any technical purpose until the 16th century; until the 19th century, it only benefited in a limited area. The effects of scientific developments, especially developments in social sciences, on social change are explained in more detail in the Social Studies Program (6 and 7). In the field of "Science, Technology and Society", the effects of scientific-technological developments on social change are mentioned as follows (MEB, 2005):

By understanding some practical consequences and impacts of social sciences' sub-disciplines on daily and social life, they will be asked to reflect on new issues that may arise in future life based on some developments in science and technology in the 21st century. They will give examples of the contributions of civilizations to science and technology in the prehistoric period, starting with the first people making simple tools, thus summarizing the formation process of the scientific heritage to

date and recognizing the parallel between creative, critical and scientific thinking and developments in science and technology.

It is emphasized that students in the 6th grade "Science, Technology and Society" learning area should produce creative ideas about the effects of scientific and technological developments on future life. This thought expressed in the field of learning is expressed in the first three acquisitions of the 6th grade "Electronic Century" unit as follows (MEB, 2005):

- *Gives examples of the effects of social sciences on social life based on the studies and findings in social sciences.*
- *Propose creative ideas about the effects of scientific and technological developments on future life.*
- *Recognize the relationship between medical developments and human life and social solidarity.*

In the first acquisition, it is seen that the effects of the findings in social sciences on the life of society rather than technological developments. In this class, unlike the 4th and 5th grades, the relationship between scientific developments and social change is mentioned. In the explanation of the gain, it was stated that social sciences are "psychology, philosophy, anthropology, archaeology, etc.. In the explanation of the second acquisition of the same unit, it is stated that scientific and technological developments should be given in the fields of urbanization, transportation, communication, communication, nuclear energy, gene technology, nano-technology and space studies. Students are expected to produce creative ideas about the effects of scientific and technological developments on future life. In this acquisition, it is seen that the effects of scientific-technological developments on social change are tried to be discussed in the context of past-present-future. In the third acquisition of the Electronic Century unit, it is aimed that the students will be able to realize the relations between human life and social solidarity especially in the developments in medicine. Based on the fact that the inventions and developments in medicine prolong the average human life and provide people with a better quality of life, tissue and organ transplantation, blood donation and vaccines developed against infectious diseases are important factors in the explanation of the acquisition.

It is seen that scientific and technological developments are generally mentioned in the 7th grade "Science over Time" unit of the program. The gains related to science and technological developments in this unit are as follows (MEB, 2005):

- *Give examples to the contributions of the first civilizations to scientific and technological developments.*
- *Evaluates the contributions of scholars raised in Turkish and Islamic states to the scientific development process.*
- *Discusses the impact of the developments that began in Europe with Renaissance and Reform on the formation of today's scientific accumulation.*

Although the above three achievements include scientific and technological developments, it is seen that the interaction between these developments and social change is not included. In the first acquisition, the contributions of the first civilizations to scientific-technological developments were mentioned, but social change was not included in these civilizations. In particular, no relation was established between the emergence of the first civilizations and the Urban

Revolution. In the third acquisition, it is aimed to evaluate the contributions of scholars in Turkish and Islamic states to the scientific development process. It is seen that there is no relationship between scientific-technological developments and social change in Turkish and Islamic states. In the fourth acquisition, students were asked to discuss the effects of the developments that started with the Renaissance and Reform on the formation of the current scientific level. The “Science, Technology and Society” learning area is directly involved in the effects of scientific-technological developments on social change in the units of Grades 4, 5 and 6, and indirectly in the “Science Over Time” unit. Social Studies In the 7th grade program, unlike the other classes, the relationship between scientific-technological developments and the change in the social structure is mentioned in the “Economy and Social Life” unit. The unit gives examples of this subject from the history and the present day and evaluates the effects of developments in production technology on social and economic life (MEB, 2005). Here, it is seen that the effects of the developments in production technologies on social and economic life are examined from a comprehensive perspective. In the explanation of the gain, it was stated that the Industrial Revolution will be emphasized; thus, the importance of this event, which is one of the turning points of world history, was revealed. In addition, in the explanation of the gain, when the other important revolutions in the history of the world together with the Industrial Revolution (Agriculture, Urban, etc.) are included, it is thought that the gain will be embodied and will go away from insignificant details. As the reason why the gain is included in the “Economy and Social Life” unit, it can be shown that the effects of technological developments related to economy on economic life are considered in the acquisition.

RESULTS

Today, while trying to follow scientific-technological developments on the one hand, on the other hand, it tries to adapt to the social change that emerges with these developments. Social studies emerge as a course that fulfils very important functions in following scientific-technological developments and adapting to social change. The fact that people of our age are not only those who follow what is happening in the society, but who are affected by their environment, but who interact with it and change their environment when necessary, can be considered as an important element in capturing the modern age of society. It is thought that scientific-technological developments and social change issues should be included in social studies in order to enable students to look at social change more comprehensively and to address it in a broad perspective. Finally, it can be said that the effects of scientific-technological developments on social change in the Social Studies Program should be reconsidered in a structure including major social changes (Agriculture and Urban Revolution, etc.).

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