

THE USE OF COMPUTER TECHNOLOGIES IN THE SOCIAL STUDIES CLASSROOM

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ABSTRACT

Nowadays, the use of technology in education has become more popular. Special attention has been given to the adaptation of computer technology into teaching-learning process for effective learning and increasing students' achievement. In recent years, it has been realized that there is an immense benefit in applying computer technology in the social studies classroom.

The first purpose of this study is to review computer - and Internet-supported instructional strategies in the social studies classroom. The second purpose of the study is to investigate the degree of application of these strategies in the social studies classroom. Thus, based on the literature review, the results of the research regarding computer technology in the social studies classroom are summarized, and educational implications are discussed. In addition, some suggestions for further research were offered.

Key Words: Computer, Technology, Social Studies, Teaching and Learning, Effectiveness.

SOSYAL ALANLAR SINIFLARINDA BİLGİSAYAR TEKNOLOJİLERİ KULLANIMI

ÖZET

Günümüzde eğitimde teknoloji kullanımı popüler olmuş, etkili öğrenme ve başarı için öğrenme-öğretme süreci içerisine bilgisayar teknolojilerinin adaptasyonuna özel bir ilgi gösterilmiştir. Ancak yakın yıllar içerisinde sosyal alanlar ile ilgili sınıflarda bilgisayar teknolojisine başvurmanın büyük yararı olduğunun farkına varılmıştır.

Bu çalışmanın birinci amacı, sosyal bilimlerde bilgisayar ve internet destekli öğretim stratejileriyle ilgili alanyazını taramaktır ve ikinci olarak bu stratejilerin sosyal alanlarla ilgili sınıflarda uygulama düzeyini araştırmaktır. Bu amaçla, alanyazına bağlı olarak, sosyal alanlarda kullanılan bilgisayar teknolojisiyle ilgili araştırma sonuçları özetlenmiş, araştırma sonuçları eğitim süreciyle ilişkileri çerçevesinde tartışılmış ve yakın çalışmalar için bazı önerilerde bulunulmuştur.

Anahtar Kelimeler: Bilgisayar, Teknoloji, Sosyal Alanlar, Öğrenme-Öğretme, Etkililik.

INTRODUCTION

Technology use in education has become more popular in recent years. There have been major developments in computer hardware and software in the last decades which increase the computer integration in education. The use of computers in education opens a new area of knowledge and offers a tool that has a potential to change some of traditional and ineffective educational methods (Asan, 2003). It is currently considered as crucial to “modernize educational systems on the basis of information and communication technologies” (ICT), as globalization and transformation to the information society “call for new literacy for the information society” (UNESCO, 2002; as cited in Orhun, 2003, p.1).

There is an increasing research on the effectiveness and benefits of the integration computer technology in education in recent years. Sheffield (1996) stated that as a result of the recent developments in technology, computers and the Internet have become more important teaching tools in the social studies classroom. As Vanfossen (2001) points out, there are many supporters who claim that there are many benefits of Internet use in the classroom such as the ability to break down the classroom's physical limitations and expanding students' experiences, development of students' inquiry and analytical skills and expanding students' experiences with visual technologies. It is considered that technology is the main support for the students learning developments and the computers are the main technology support as a tool for effective learning and teaching process. (Isman

et al., 2004; Usun, 2004). Likewise, Whitworth & Berson (2003) point out that, within the social studies, technology has served a dual role as an important instructional tool that may have a significant effect on the global, political, social, and economic functioning of society. According to them, as a method or topic instruction, computers and technology may have significant impacts on social studies education.

There are a number of computer- and Internet-supported teaching strategies that are applied in the social studies classroom as well as other disciplines. According to the National Council for Social Studies (1994), social studies is the integrated study of the social sciences such as anthropology, archaeology, economics, geography, history, law, philosophy, political science, psychology, religion, and sociology, as well as appropriate content from the humanities, mathematics, and natural sciences. According to Berson (1996), the disciplines of social studies are intended to develop effective citizens who possess the critical thinking and decision making skills to function in a democratic society. Likewise, Tezci (2003) reported that the web based teaching do not only improve students' academic skills, but also has positive effects on the development of democratic conscious of students. Thus, reflective inquiry, problem solving and decision making are considered as essential skills for the contemporary social studies education, which promotes effective citizenship in a democratic society (Berson, 1996; Rice & Wilson, 1999).

Research showed that computer and the Internet supported teaching strategies have crucial roles facilitating development of students' critical thinking, problem solving and decision making skills (Berson, 1996; Rice & Wilson, 1999; Adiguzel & Akpinar, 2001). Thus, the first purpose of this paper is to review computer and Internet- supported teaching strategies in the social studies classroom. The second purpose is to investigate the degree of application of these strategies in the social studies classroom.

DRILL AND PRACTICE, TUTORIALS, AND STUDY GUIDES

One of the aspects of social studies education involves the learning of facts, important dates of history, geographic names and so forth. Therefore, drill-and-practice, tutorial, and study guides have been among the most frequently used programs in the social studies classroom (Rice & Wilson, 1999; Berson, 1996). One of the first national surveys in the United States about social studies teachers computer use indicated the significant use of drill and practice and tutorials among social studies teachers (Northup & Rooze, 1990). The data which were collected from the randomly selected members of the National Council for Social Studies showed that approximately 24% of social studies teachers listed these applications as main teaching strategies. In addition, the data indicated that drill and practice was the third common used strategy among the participants whereas tutorials ranked fifth (Northup & Rooze, 1990). Likewise, Pye and Sullivan (2001) in a study among middle school social studies teachers found that almost 22% of social studies teachers used drill and practice and tutorials in their classroom. Although the study indicated that other computer software and the Internet became more frequently used teaching tools in social studies as opposed to drill, practice, and tutorials, it seems that these applications are still important teaching tools for social studies teachers.

Although such computer applications are very appropriate to be used in the social studies classroom, there is not much research on the effectiveness of these applications. According to Ehman and Glenn (1991), "tutorial, and drill and practice programs seemed to have positive impacts on student learning and attitude outcomes" (p. 520). Similar results were reported by Higgins and Boone (as cited in Berson, 1996) and Roedding (as cited in Berson, 1996) who found small, but positive gains in secondary students' performance and attitudes toward the subject matter when computer drill-and-practice programs or hypermedia study guides were implemented. It seems that data on the effectiveness of drill-and-practice, tutorial, and study programs showed positive effects on students' outcomes. According to Berson (1996), however, there is need for further research to address questions regarding the effects of these applications on the taxonomic level of students.

SOFTWARE/CD-ROMS, GAMES, AND SIMULATIONS

In recent years, there have been dramatic changes in the computer-supported technology. More powerful computers and sophisticated programs are used in the schools. According to White (1997), these changes in technology have increased the capability of using more visual aids in the classroom that attract young users. Therefore, many social studies software/CD-ROM programs now available to support teaching strategies in the social studies classroom. Rice and Wilson (1996) state that "those programs allow students to engage in activities, such as simulations and problem solving, that encourage them to construct their own knowledge and conduct their own research" (p. 2). Likewise, Berson (1996) points out how simulations and games can reinforce constructivist learning in the social studies classroom. According to Berson (1996), simulations facilitate the development of students' problem-solving skills and place students in the role of decision maker. Also he points out the practicality of simulations which allow students to engage in activities that would otherwise be too expensive, dangerous, or impractical to conduct in the classroom (Berson, 1996).

Simulations and games are also among the most frequently used computer applications. A national study in the United States showed that 23.7 % of social studies teachers used simulations as an instructional strategy which was the second largest portion (Northup & Roze, 1990). A newer study was conducted by Pye and Sullivan (2001) showed that games and simulations are still among the most common computer-based instructional strategies. The study showed that games and simulations were the most common instructional strategies after the Internet. The data indicated that 28.4% of American social studies teachers participated in the study used games and 22.5 % of them used simulations regularly in their classes.

Although it seems that games and simulations are among the most common instructional strategies used in the social studies classroom, research on the effectiveness of these strategies produce disputable results. According to Ehman and Glenn (1991), although simulations have positive influence on students' outcomes, there is little evidence that they support the influence on students' cognitive growth. A study, conducted on college students in an economic course, showed that the experimental group, which received instruction using computer simulations, demonstrated greater development in critical thinking skills and content knowledge (Grimes & Wiley, 1990 as cited in Berson, 1996). These findings are also supported by a more recent study focusing on the effectiveness of computer-based simulation in teaching history. The study conducted on college-level students showed that there is a significant difference between the students who received computer-based simulation and who did not. The data showed that experimental groups had a greater understanding of the historical content than the control group (Parush, Hamm, & Shtub, 2002).

On the other hand, there are some inconclusive findings from other research studies. Ruef and Layne (1990) studied the effects of computer assisted simulation in the social studies classroom. The study was conducted on thirty-eight seventh-and eighth-grade students who were enrolled at the American International School of Luxembourg. The results indicated that there was no statistically significant difference between the scores of those students who used the computer database simulation to learn the content and those students who learned the content through a traditional method of instruction.

Therefore, it seems that there are disputable results on the effectiveness of simulations in the social studies. Yet, it seems that they are still commonly used as an instructional tool in the social studies classroom.

DEVELOPING DATABASE

Another common instructional strategy used among social studies teachers is database development. According to Berson (1996), databases are especially useful for managing the extensive knowledge base in the social studies; they also foster students' development of inquiry strategies through the manipulation and analysis of information. Likewise, Rice and Wilson (1999) states that "Database development aids constructivism by encouraging collaboration in problem solving, the use of higher-order thinking skills to develop and test hypotheses, the construction of knowledge by the students who relate learning to their own experiences" (p. 4). As Garcia & Michaelis (2001) assert, making databases help to build skills in locating, organizing, indexing, retrieving, and analyzing information. Databases can be made to organize information on students and their families, the community, states, regions, countries, careers, notable people and any other topics. For example, children in primary grades can make mini databases that include drawing, pictures, charts, and local maps related to topics of study. Similarly, students in the middle grades can create more detailed databases with card file and cross-reference systems (Garcia & Michaelis, 2001).

Although teachers have become more capable in using the database software programs, it is still not enough for teachers to integrate these programs into their classroom (Vanfossen, 2001). In fact, a national survey in the United States indicated that only 11.3% of social studies teachers listed databases as a mainly used teaching strategy among computer-based strategies (Northup & Rooze, 1990). Likewise, Pye and Sullivan (2001) did not find a significant increase regarding social studies teachers' database use. Although there is a significant improvement in software technology in the last decades, the data showed that there is only a slight increase (approximately 3.5 %) in social studies teachers' database use. The study showed that only 14.7 % of social studies teachers used databases in their classrooms (Pye & Sullivan, 2001). Thus, it seems that teachers still are not proficient enough to apply these programs into their classrooms. As Sheffield (1996) points out, there is a need to integrate computer programs such as word processing, spreadsheets, and databases into the teacher education curriculum.

On the other hand, reviewing several studies about the effectiveness of computer databases, Berson (1996) concluded that databases encourages problem solving and facilitates inquiry-driven approaches for learning as well as fostering students' decision making skills. Berson (1996) noted that "from the elementary through

college levels, database projects have been the foundation for problem-solving activities involving computers” (p.491).

MULTIMEDIA / HYPERMEDIA

Multimedia/hypermedia provides students with visual support in order to develop mental models of the problems they are trying to solve. Multimedia/hypermedia refers to the combination of sounds, graphics, texts, and images with a single information delivery system (Rose & Fernlund 1997). The origin of the word hypermedia comes from the term “hypertext” which was used first by Ted Nelson in the early 1960s. Nelson, later, defined the term and began using the word hypermedia (Braun, Fernlund, & White, 1998). With multimedia/hypermedia, students can create individual or group presentations to develop skills in information retrieval and communication, or they can create presentations that promote evidence of understanding of social studies content and their own perspectives (Rice & Wilson, 1999). There are a number of multimedia software programs such as Authorware, Hypercard, Hyperstudio, or Linkway which help students to create productions that include video and audio clips of various social studies topics. Likewise, concept mapping, clustering, mind maps, and other types of graphic organizers can be used effectively in social studies classes today. These visual learning symbols, pictures, and other representative techniques allow students to go deeper into ideas and concepts (Chandler, 2003).

The integration of multimedia technologies in the social studies has made it possible for students to become more involved in their studies and create multimedia applications as part of their project requirements. Kocoglu and Koymen (2003) point out those students who use the multimedia technology as designers have higher creative thinking skills than those who do not. In other words, it seems that using multimedia in learning process has a positive effect on students’ creative thinking skills.

The current research clearly shows that multimedia technologies significantly influence on students’ learning by broadening their scope of learning and knowledge. In the light of above, it is said that multimedia technology can provide an alternative to the traditional teacher-centered learning and it enables students to enjoy a richer constructivist learning environment. It can support students to become active learners rather than memorizing knowledge and display their ideas and information in terms of the multimedia format and use their higher order thinking skills like analysis, synthesis, and evaluation (Mai Neo & Ken Neo, 2003).

THE INTERNET

The tremendous growth in telecommunication has brought online services, specialized electronic networks, WebPages, E-mail, software and global information resources to our homes as well as to schools (Rose & Fernlund, 1997). The Internet provides an environment in which millions of people participate and engage in the creation and exchange of information (Rose & Fernlund, 1997). Internet use has become very popular in many areas as well as in education in recent years. Accordingly, Internet access in schools has increased greatly over the last 20 years (Berson, 2000). According to a national survey, conducted in the United States, over 90% of schools now have some sort of access to the Internet, someplace in their building (Becker, 1999). On the other hand, “when it is compared with other developed countries, the educational use of the Internet in Turkey is still in the infancy period “(Usun, 2003, p.10). Yet, it seems that there are more efforts to integrate the Internet into the Turkish higher educational context than the primary and secondary education (Usun, 2003).

Since computer and Internet integration in the Turkish educational system are at the beginning stages, it might be a possible reason that the research studies in Turkey mostly have focused on the level of the internet use among teachers, students, and school administrators and their attitudes toward computer integration into education rather than focused on the effectiveness of computer technologies in learning and teaching process.

Usun (2004) examined the attitudes of undergraduate students toward the use of computers in education. According to results of this research, it seems that the undergraduate students are eager to use computers in education. Similarly, Isman et al. (2004) found that high percentages of students have positive attitudes towards computers. Thus, it seems that Turkish students from different grade levels have positive attitudes toward computer integration into education. On the other hand, another study, examined the level of information technology use and the level of reading comprehension, produces positive results about the effectiveness of the Internet (Akpınar, 2002a). The survey was conducted on 1150 eight graders both from 21 public and 15 private schools of metropolitan cities in Turkey. The results of this study showed that the students who had an access to the Internet scored higher on reading comprehension than students who did not.

Likewise, research suggests that Turkish teachers also have positive attitudes toward computer and Internet use in education. Asan (2002) examined that the computer attitudes of 265 preservice teachers majoring in science education and social science education. The findings of the study indicated that preservice teachers had positive

attitudes towards computers and felt quite comfortable with computers. However, although it seems that there are positive beliefs about the computer and the Internet integration among the Turkish teachers, it is important to know their computer and the Internet using capabilities as well as the administrators’.

Altun (2000) examined the level and purposes of school administrators' computer use. The data showed that 69.9 % of the school administrators used computers at the “intermediate” or “beginner” level. Although the use of computers seems high among the Turkish administrators they do not seem to be proficient and effective users. Accordingly, the proficiency of teachers in using computer seems very low. Asan (2003) studied elementary school teachers’ perceptions and attitudes about specific technologies and the role of technology in education. The results indicated that many teachers were not computer users and the computer literacy level of teachers was very low. 39 % of elementary school teachers in this study did not feel that they were competent in using computer technologies and majority (67 %) of teachers were not familiar with computer technologies.

In other research, Isman (2002) found out that elementary school teachers cannot effectively use new technologies in learning and teaching processes. Similarly, the results of Akpınar’s (2003) study showed that 30 % of teachers do not use the computer to support teaching in educational process. Akpınar (2002b) states that the majority of Turkish teachers prefer traditional teaching methods to cope with the learning problems of students rather than computer-based teaching methods. Gomleksiz (2004) point out that although teachers have positive attitudes towards the use of technology, they cannot use technology at the desired level. According to Asan (2003), lack of proficiency seems to be one of the most important barriers for common and effective use of the technologies in educational process.

On the other hand, as stated above, the availability of computer and Internet connection is very high in American schools. Thus, it is expected that all teachers including social studies teachers might be able to integrate Internet-based instructional studies into their teaching. However, a study conducted in the state of Missouri among middle school social studies teachers indicated that only half of the participants used the Internet in the classroom (Pye & Sullivan, 2001). Another survey, conducted on secondary social studies teachers in the state of Indiana, indicated that the majority (more than 85%) of teachers who participated in the survey were employing the Internet in some way for professional use including planning, research and so forth (Vanfossen, 2001). The data showed that 42.5 % of teachers encourage students to use the Internet to gather background information while 38.5 % of teachers themselves use the Internet frequently for this purpose. The data indicated that the second common reason for using the Internet among teachers is to gather information for lesson planning. Slightly more than half of the respondents indicated that they use the Internet for this purpose “occasionally” while almost 20% of them use the Internet “frequently” for this purpose. Therefore, it is clear that teachers use the Internet basically for personal purposes such as to find information and other resources, and to gather background information for planning rather than in teaching and learning activities in the classroom.

Accordingly, Vanfossen’s survey shows that “developing WebPages for lesson” or “taking students on a virtual trip” are the rarest Internet uses among the teachers who participated in the survey. Only 12 % of the participants developed web pages for lessons occasionally and slightly less than 7 % of the participants took students on a virtual trip.

WEBQUEST

Webquest is one of Internet-supported instructional strategies used in the social studies classroom. “A webquest is a structured exercise is created by teacher that asks students to solve a problem or find an answer to a question or questions by finding information on the web” (Zukas, 2000, p.68). Webquest, developed in the mid-1990s by Bernie Dodge at San Diego State University, (Teclhaimanot & Lamb, 2004; Zukas, 2000) has become one of the most popular form of internet use in the classroom. Webquest is defined as “inquiry-oriented activity in which most or all of the information used by learners is drawn from the web... designed to learners time well, focus on using information rather than looking for it, and to support learners thinking at the levels of analysis, synthesis and evaluation” (Educational technology Department of San Diego State, 2001; as cited in Whitworth & Berson, 2003, p.480). Thus, webquest is an inquiry and problem solving oriented instructional strategy in which students can construct their own knowledge and truths (Zukas, 2000).

March (2003) points out that the best webquest motivates students to see richer thematic and conceptual relationships, to provide the real world learning, and to reflect on their own metacognitive skills which are very important to evaluate at the level of higher-order thinking. According to March (2003), scaffolding is at the heart of the webquest mode and can be used to apply such approaches as constructivist strategies, differentiated learning, and situated learning.

TELECOLLABORATION

Telecollaboration can be used efficiently in communication process between students, teachers and faculty members in a distant place. Telecollaboration allows students from one classroom interacting with other students in a distant class and has the potential to offer effective communication and educational experiences for students. According to Driscoll (2000), collaborate technologies are now finding their way into instruction to support learning of students engaged in a learning task as members of a group. Collaborate technologies can be designed for use within a classroom, across classrooms, and outside of classrooms. In this way, students can communicate to others within and outside the immediate learning community.

Harris (1999; as cited in Whitworth & Berson, 2003) pointed out telecollaboration can not only support global education by exposing students' contrary opinions, perspectives, beliefs, experiences, and thinking processes but also encourages students to compare, contrast, and/or combines similar information collected in similar locations. "Students have begun to cooperate with each other on world issues and research topics of interest compiling them into multimedia presentations and participating in online national and international summit meetings with classrooms around the world "(Quesada, 1996; as cited in Whitworth & Berson, 2003, p. 481).

According to Lee (2001), telecollaboration seems to support to social constructivist learning environment. As Lee asserts, Vygotsky's self regulated learning approach can be used for teaching and assessing analytical, creative, and practical thinking via e-mail project. According to Vygotsky's social constructivist view, students construct knowledge by involving in social contexts such as interacting with peers, teachers, experts, and classmates. In a telecollaborative learning environment, students can have an opportunity to build their own knowledge through the interaction going on between their peers and teachers. That seems to be a representation of Vygotsky's social constructivist learning environment.

CONCLUSION

As Berson (1996) asserts, one of the major purposes of social studies is to promote effective citizens who possess the critical thinking and decision making skills to function in a democratic society. Thus, reflective inquiry, problem solving and decision making skills are considered essential for the contemporary social studies education. Research shows that computer- and Internet-supported teaching strategies have crucial roles in facilitating the development of students' critical thinking, problem solving and decision making skills (Berson, 1996; Rice & Wilson, 1999).

In this paper, a number of computer-based instructional strategies used in the social studies education are reviewed. It seems that the Internet has become the most popular one among all computer-based instructional strategies in the social studies classroom. It is clear that the current development in telecommunication technology makes the Internet more accessible to anybody. Furthermore, Internet use is not a difficult task when compared to other software programs. Therefore, it is not surprising why teachers use the Internet.

In addition, social studies content requires substantive content knowledge and the Internet is a great source for this. The Internet provides a wide variety of sources, which represent different points of view. Using sources, which represent different worldviews is one of the best ways to foster students' critical thinking, creative thinking, problem solving and decision making skills. However, literature review shows that teachers use the Internet basically for personal purposes such as to find information and other resources, and to gather background information for planning rather than a teaching and learning activities in the classroom.

On the other hand, other strategies such as database development, games, multimedia, hypermedia, webquest and telecollaboration also significantly contribute to students' critical thinking, problem solving and decision making skills. Moreover, these kinds of strategies might foster students' creativity because these strategies require creation and construction abilities and ideas from students.

In our opinion, all computer-based instructional strategies somehow reinforce the constructivist classroom environment. However, social studies teachers still are not comfortable with applying all or some computer-based instructional strategies. We believe that a follow up study can be done to review the beliefs and attitudes of social studies teachers toward these strategies. The results of the study might reveal the reasons for the lack of using computer-based instructional strategies among social studies teachers.

In addition, there is still need for research in the field of technology and social studies, particularly how the usage of new and innovative ways of integrating technology into the classroom impacts outcomes of learning (Whitworth & Berson, 2003).

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