AN EXAMINATION OF THE RELATIONSHIP BETWEEN THE INTEGRATION OF TECHNOLOGY INTO SOCIAL STUDIES AND CONSRUCTIVIST PEDAGOGIES

Cemalettin AYAS
ayas.1@osu.edu
The Ohio State University

ABSTRACT
Educational technologies, specifically computer and the Internet technologies, have apparently become powerful tools in the classroom as they change the way we teach and learn today. That is why pedagogies of school reform are now highly influenced by and built around the "constructivist" theories of learning, assuming the use of technology in education for active and meaningful knowledge construction. Due to these trends it appears inevitable that social studies educators do need know how to use technology effectively in their educational settings. Therefore, after a brief look at the concepts of technology and educational technology including a rationale for the use of technology in education, the current literature specifically on the integration of technology in the social studies with a reference to constructivism is examined. As a result, based on this study it seems that the infusion of technology into educational environments—specifically in the social studies—alinged with constructivist pedagogy bears the potential to inspire new ways of teaching and learning.

Key Words: Technology Integration, Constructivism, and Social Studies Education

"Integrated social studies teaching and learning include effective use of technology that can add important dimensions to student learning."
(NCSS, 1994, p. 165)

INTRODUCTION

Today we cannot deny we live in a technological world, and technology is rapidly changing our world and the way we live. Now it is almost impossible to ignore the pervasiveness of information technology within education as technology has become a valuable resource to educators. In this age of information and computers, simply clicking a button can now access tremendous resources once unavailable. Because of the increase of technology in schools, more is expected from teachers. Especially new teachers are expected to enter the educational field with knowledge not only in their content areas, but of technology as well.

In the 21st century, the new vision of education is to make learning accessible to *all*, but it is hard to reach this goal through the use of traditional methods. Besides, technology in education has the potential for improving teaching and learning. Hence, technology innovations are increasing the demand for reforms in teaching and learning approaches. That is why pedagogies of school reform are now highly influenced by and built around "constructivist" theories of learning that assume the use of technology in education (Windschitl, 2002). Therefore, educational technologies, specifically computer and the Internet technologies, have inevitably become powerful in the classroom as they change the way we teach and learn.

Although there are some concerns with technology, as a social studies educator I think that the integration of technology into social studies can be a very effective way to improve our teaching if done properly. I believe that social studies teachers who effectively integrate technology in their classrooms provide students with great opportunities to express themselves in a meaningful way as technology has become a desirable and supportive *tool* for authentic and meaningful learning (Jonassen et al, 2003). Today kids love learning by doing, discovering, and interacting. Technology makes learning more interesting, enjoyable and interactive for them. Whether we like it or not, our kids are going to use technology. Thus, the question becomes not to use technology but how to use technology effectively and meaningfully.

Educational technologies that can be applied into teaching of social studies are almost countless. However, my purpose in this paper is not to describe how every single technological tool can be used in the social studies; rather, my purpose is to examine the reciprocal relationship between the social studies, constructivism, and integration of technology; and then present some effective examples of how actually technology might work well in the social studies with respect to constructivist principles of teaching and learning. However, although the main focus of this paper is on the integration of technology into social studies education and constructivist pedagogies, for an effective grasp of the discussion in order to set the stage, I first look briefly at the concepts of *technology* and *educational technology* and then shortly examine the field of educational technology, including a

rationale for the use of technology in education. Secondly, I review the current literature on the integration of technology in the social studies with a reference to constructivism, including a concise examination of the *social studies* as a discipline and *constructivism* as a theory of learning, followed by a rationale on the *integration of technology* into the social studies classroom along with an argument regarding the limitations of and/or concerns with technology. Finally, I draw conclusions and point out some implications for further research.

TECHNOLOGY
In order to clearly understand the concept of educational technology, one must have a firm grasp of what technology means. In general, most people think of technology in terms of its artifacts such as computers and software, tools, appliances, automobiles, machines, etc., implying that technology is everything and everything is technology. But, technology is more than just these tangible and visible products. Basically, technology is the process and tool by which humans modify nature to meet their needs and wants and to make life easier and better. Herschbach (1995) defines technology as "organized knowledge for practical purposes" (p. 31). Technology, however, as a distinctive phenomenon refers to the use of knowledge, materials, tools, techniques, systems, and sources of power to make life easier and better and to work more productively and efficiently.

However, although technology is always considered as good and desirable for most people, there also are some serious critiques of technology. For example, similar to Neil Postman (1993) and Johnsen & Taylor (2002), McDermott (1962) defines technology as follows: "technology, in its concrete, empirical meaning, refers fundamentally to systems of rationalized control over large groups of [people] events and machines by small groups of technically skilled [people] operating through organizational hierarchy (as cited in Johnsen & Taylor, 2002, p.13-14). In sum, like McDermott, Neil Postman (1993) and Johnsen & Taylor (2002) are more concerned with the human effects of technology than its origination, believing that technological development is motivated by the desire to control—drawing attention to what technology takes away from us.

EDUCATIONAL TECHNOLOGY
What does technology have to do with education? Where does the concept of educational technology come from? In fact, technology in the classroom has been around for a quite long time in the form of blackboards, chalks, pencils, slates and more recently overheads, movies, computers and even newer technologies (Roblyer & Edwards, 2000). However, although the use of technology in education is not new, educational technology as a field is rather new. Educational technology is a term widely used in the field of education as well as in other areas, but it is often used with different meanings. For many educators, any mention of educational technology immediately brings to mind the use of some device or set of equipment, particularly computers (Roblyer & Edwards, 2000).

Educational technology as a field has evolved and been systematized over the past few decades (AECT, 2004; Kearsley, 1998; Roblyer & Edwards, 2000; Salomon & Almog, 1998; Wiley, 2002). Due to new understandings of the processes of human learning and of the nature of knowledge underlying teaching methods, the field has experienced many changes and challenges to the theory and practice of educational technology (AECT, 2004; Salomon, 1998; Salomon & Almog, 1998; Reiser, 2001; Wiley, 2002; Wilson, 1997). Correspondingly, conceptions of educational technology have been evolving as long as the field has, and they continue to evolve (AECT, 2004; Roblyer & Edwards, 2000; Salomon & Almog, 1998; Wiley, 2002).

The professional association with the most extensive history in the field of educational technology is the *Association for Educational Communications and Technology* (AECT). AECT has defined technology several times for the past few decades. The last definition of technology as follows:

> Educational technology is the study and ethical practice of facilitating learning and improving performance by creating, using, and managing appropriate technological processes and resources (AECT, 2004, p. 3).

Believing that the times have created a new context for thinking about the meanings of educational technology, AECT (2004) provides us with a conceptual framework through its most recent definition of educational technology, which basically refers to the use of technological *processes* specifically for teaching and learning. In today's conception, the last definition of educational technology first uses the term "*study*" claiming a broader field; then, focuses "*facilitating learning*" as the purpose of the field; next, makes an explicit commitment to an "*ethical*" practice; and finally is viewed as a construct that is larger than instructional technology, as education is more general than instruction.

Besides, educational technology as a general term also brings some confusion or misuse of the concept. For instance, the term educational technology is often used interchangeably with the term "instructional technology," which refers to the concept, theory, and field that focus on facilitating learning through technology under conditions that are "purposive and controlled" (AECT, 1977, p. 3). Therefore, educational technology is a broader concept as the framework, while the term "instructional technology" is a subset of educational technology, just as instruction is a subset of education (AECT, 1977 & AECT, 2004).

Similarly, educational technology is often confused with "technology in education," even though "technology in education" is *not* the same as educational technology. *Technology in education* is the application of technology to any of those processes involved in operating the institutions which house the educational enterprise (AECT, 1977). In other words, technology in education involves the application of technology to support education within institutions, such as food, health, and finance. Other terms such as instructional development, educational or instructional media, and instructional systems design also refer to particular parts of the field, which are sometimes used to refer to the field as a whole (AECT, 2004).

Therefore, although educational technology is an "evolving" field, one thing is correct for sure in the field over time is its central emphasis on the "process" as "the historical function of educational technology is a proce*ss* rather than a product" (Roblyer & Edwards, 2000). Hence, useful definitions of educational technology must focus on the *process* of applying tools for educational purposes. Educational technology thus becomes a particular approach to achieving educational ends.

RATIONALE FOR THE USE OF TECHNOLOGY IN EDUCATION

Why do we use technology in education? Why do educators integrate technology into their teaching? What does technology have to offer in regards of teaching and learning? Although this is one of the hot topics currently discussed in the field, there evidently are incentives to use technology in educational settings. During the 20th century, education has embraced technology, believing that educational technology can facilitate unique learning environments or contribute unique features to make traditional learning more powerful and effective (Fulton, 1998; Jonassen, 2000; Jonassen, 2000a; Jonassen et al., 2003; Roblyer & Edwards, 2000; Thornburg, 1999). Technology has promised smarter, better educated, and more fulfilled learners (Jonassen, 2000). Many educators, parents, and students believe that the reasons for using technology seem so obvious that everyone should recognize them based on two major beliefs: (1) "technology is everywhere and therefore should be in education" and (2) "research has shown how and where computer-based methods are effective" (Roblyer & Edwards, 2000, p. 12).

Moreover, according to Jonassen (2000a), technology has always been zealously promoted as a modern solution to the problems of education—lack of productivity, inefficiency, and lack of focus. Likewise, one of the most important elements of a rationale for using technology in education is *motivation* (Roblyer & Edwards, 2000). Therefore, educational technologies, especially but not limited to computers, have become as powerful in classrooms as they are in the world outside the classroom. They changed the way people think about problems and solutions. Jonassen (2000) calls them "mindtools," which refers to "computer applications that have been adapted or developed to function as intellectual partners with the learner in order to engage and facilitate critical thinking and higher-order learning" (p. 9). For him, computers as mindtools promote meaningful learning— which has five elements: active, constructive, intentional, authentic, and cooperative— and meaningful learning occurs when students are making meaning (Jonassen et al., 2003). In sum, research shows that application of technology improves student performance, student motivation, teacher satisfaction, and other important educational results in technology-rich classrooms (Fulton, 1998; Jonassen, 2000a; Thornburg, 1999).

Consequently, the field of educational technology has grown and changed greatly over the past century, affected by various influences including historical forces, paradigm shifts in educational psychology, emerging technologies, and evolving approaches to inquiry (AECT, 2004; Kearsley, 1998; Reiser, 2001; Roblyer & Edwards, 2000; Salomon, 1998; Salomon & Almog, 1998; Wiley, 2002; Wilson, 1997). In the 1980s and 1990s, computer technology dominated the field (Roblyer & Edwards, 2000), while in educational psychology, theories of constructivism and situated cognition offered new ways of thinking about instruction (Jonassen, 2000; Jonassen, 2000a; Roblyer & Edwards, 2000; Salomon, 1998; Salomon & Almog, 1998). Toward the turn of the century, the World Wide Web made significant inroads in telecommunication, enabling both asynchronous and synchronous communication and information sharing on a global scale (Jonassen, 2000a; Jonassen et al., 2003; Merryfield, 2003; Roblyer & Edwards, 2000). It seems that academia is becoming highly dependent on the use of Internet for administrative purposes as well as for teaching and research.

Above all, in spite of the strong critiques regarding effectiveness of educational technology (Becker 98; Becker & Ravitz, 2001; Cuban, 2001; Kearsley, 1998; Kirkpatrick, & Cuban, 1998), as a new field educational technology has come to serve as a dual function. On one hand, it provides the tools needed for the realization of learning as construction and as a social process of meaning appropriation; on the other hand, it offers novel opportunities that suggest novel learning activities and ways of teaching, which in turn require novel psychological insights (Jonassen, 2000; Jonassen, 2000a; Jonassen et al., 2003; Salomon, 1998; Salomon & Almog, 1998). As a result, while there is much research to be done to provide a better understanding of why and how technology benefits the educational process—both teaching and learning, a body of evidence to date (Fulton, 1998; Jonassen, 2000a; Roblyer & Edwards, 2000; Thornburg, 1999) suggests that new educational technologies provide powerful vehicles for educational improvement.

SOCIAL STUDIES

Social Studies have been regarded as a major school subject and is taught in K-12 schools across the United States, as well as around the world (NCSS, 1994). However, because social studies is multidisciplinary and interdisciplinary, it is often difficult to define it. Definition of social studies has therefore tended to change as knowledge of subject matter increased and developed and as more was learned about how children construct meaningful knowledge (Sunal & Haas, 2002). However, most educators agree that the social studies in essence is the study of humankind from a multitude of perspectives, and at the core of the field is citizenship education (Dynneson, Gross, & Berson, 2003). The National Council for the Social Studies (NCSS), the leading national social studies organization, has adopted the following formal definition for the social studies:

> Social studies is the integrated study of the social sciences and humanities to promote civic competence. Within the school program, social studies provides coordinated, systematic study drawing upon such disciplines 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. The primary purpose of social studies is to help young people develop the ability to make informed and reasoned decisions for the public good as citizens of a culturally diverse, democratic society in an interdependent world (NCSS, 1994, p. 3).

NCSS, thus, not only emphasizes the field precisely as "promoting knowledge of and involvement in civic affairs," but also defines it as *multidisciplinary* and *interdisciplinary* in nature (p.3).

Additionally, the national social studies standards include ten themes that serve as organizing strands for the social studies curriculum in order to foster student achievement at every school level (NCSS, 1994):
1. Culture,
2. Time, Continuity, and Change,
3. People, Places, and Environments,
4. Individual Development and Identity,
5. Individuals, Groups, and Institutions,
6. Power, Authority, and Governance,
7. Production, Distribution, and Consumption,
8. Science, Technology, and Society,
9. Global Connections,
10. Civic Ideals and Practices.

Each theme incorporates one or more of the disciplines contributing to social studies content, such as history, geography, government, economics, and sociology. In addition, NCSS has outlined five principles of powerful social studies teaching and learning. These five principles tell us that social studies teaching and learning are powerful when they are *meaningful*, *integrative*, *value-based*, *challenging*, and *active* (NCSS, 1994).

In addition, the NCSS sees the knowledge as constructed by learners as they attempt to fit new information, experiences, feelings, and relationships into their existing or emerging intellectual, aesthetic, and emotional constructs (NCSS, 1994). Besides, the skills that should be promoted in an excellent social studies program include the following (NCSS, 1994):
- acquiring information and manipulating data;
- developing and presenting policies, arguments, and stories;
- constructing new knowledge;
- and participating in groups.

As will be discussed later in this paper, the social studies as a field itself, ten themes of the social studies national standards—specifically the eighth theme: Science, Technology and Society, the knowledge construction in the social studies classroom, and the social studies skills clearly promote a constructivist theory of learning as well as integration of technology into the social studies.

CONSTRUCTIVISM

There has been a visible paradigm shift from the behavioral to constructivist theories in answering the question of what learning theories schools use today. Constructivism entered mainstream educational thought and research in the 1970s through the work of disciples of Piaget and Vygotsky (Damarin, 2004; Roblyer & Edwards, 2000; Windschitl, 2002). Constructivism is a learning theory based on the notion that people are "active" knowledge seekers powered by innate curiosity (Sunal & Hass, 2000). Thus, constructivism challenges the traditional goals of education and proposes re-structured and innovative teaching approaches. Unlike the traditional and/or behaviorist theories of learning, constructivism fundamentally promotes the idea that the learner constructs his or her own knowledge (Boyer & Semrau, 1995; Damarin, 2004; Doolittle & Hicks, 2003; Fosnot, 1996; Jadallah, 2000; Jonassen et al., 2003; Rice & Wilson, 1999; Roblyer & Edwards, 2000; Sunal & Hass, 2002; Windschitl, 2002). Whereas traditional and/or behaviorist pedagogies claim that learning is transmitted knowledge and teaching should be teacher-centered, systematic and structured, constructivist pedagogies claim that learning is constructed knowledge and teaching should be student-centered and meaningful so that learners can construct their own knowledge (Boyer & Semrau, 1995; Damarin, 2004; Doolittle & Hicks, 2003; Fosnot, 1996; Jadallah, 2000; Jonassen et al., 2003; Rice & Wilson, 1999; Roblyer & Edwards, Sunal & Hass, 2002; 2000; Windschitl, 2002). In other words, the idea that knowledge is not transmitted from teacher to student but actively constructed by each student or group of students is central to constructivism, which is perhaps the most current psychology of learning.

The Individual versus the Social

Multiple literatures within the domain of constructivism support various conceptions of learning and instruction as philosophers have suggested more than a dozen different *constructivisms* (Boyer & Semrau, 1995; Damarin, 2004; Fosnot, 1996; Windschitl, 2002). However, according to the debate in the literature between those who place more emphasis on the individual cognitive structuring process and those who emphasize the sociocultural effects on learning, constructivism can be divided into two main categories: (1) cognitive constructivism and (2) social constructivism (Fosnot, 1996 & Windschitl, 2002).

According to Piaget (1971), *cognitive constructivism* is a system of explanations of how learners as individuals adapt and refine knowledge (as cited in Windschitl, 2002). Piaget thus advocates that knowledge is constructed in the mind of the individual. Moreover, Brown, Collins, & Duguid (1989) believe that meaningful learning is rooted and indexed by personal experience and learners maintain ideas that seem intuitively reasonable to them (as cited in Windschitl, 2002). That has been interpreted to mean that the teacher creates a learning environment and of hands-on exploration and discovery that allows students to make connections between any new subject matter and their prior knowledge (Jadallah, 2000).

Unlike Piaget, Vygotsky's *social constructivism* (1978) suggests that knowledge is not solely constructed within the mind of the individual; rather, interactions within a social context involve learners in sharing, constructing, and reconstructing their ideas and beliefs (as cited in Jadallah, 2000). Therefore, social interactions provide the necessary language skills and understanding of cultural norms that facilitate learning (Damarin, 2004 & Jadallah, 2000) through the use of tools available. Students participate in activities relevant to the discipline using tools commonly available as they carry out their works. Hence, tools are seen as powerful mediators of learning, which can include language itself, computers, diagrams, maps, and math symbols—anything that can facilitate the co-construction of knowledge among learners (Windschitl, 2002). Thus, social interactions with the teacher and other students become a significant part of the learning process. Vygotsky also introduced the concept of the *zone of proximal development*, which means that developing mental functions must be fostered and assessed through collaborative activities in which learners participate in constructive tasks or problem solving with the assistance of more knowledgeable others (Fosnot, 1996 & Windschitl, 2002).

RATIONALE FOR TECHNOLOGY INTEGRATION INTO SOCIAL STUDIES

As the study of humankind from a multitude of perspectives with a citizenship education at its core (Dynneson, Gross, & Berson, 2003), social studies education has been affected by the impact of technology perhaps more than any other subject mater (Roblyer & Edwards, 2000). However, researchers report that social studies educators are somewhat less likely to integrate technology into the curriculum than instructors in other disciplines (Berson, 1996; Doolittle & Hicks, 2003; Rice & Wilson, 1999; White, 1998; Whitworth & Berson,

2003), such as mathematics and science education (Damarin, 2004). Likewise, Martorella (1997) characterized the field of social studies as "sleeping giant" because of the gap between current and potential uses of educational technologies in the field.

Traditional classrooms tend to involve students in a passive learning and direct instruction through lectures, textbooks, and other largely expository learning materials, resulting with lack of motivation and disengagement in students (Fairey, Lee & Bennett, 2000; Jonassen et al, 2003; Roblyer & Edwards, 2000; Sunal & Hass, 2002; Rice & Wilson, 1999; White, 1998). According to the literature, however, technology has the potential that technological tools can foster students' abilities; revolutionize the way they work, think, and learn; give them access to information; promote critical thinking and problem solving, and meaning in learning (Berson, 1996; Boyer & Semrau, 1995; Doolittle & Hicks, 2003; Fairey, Lee & Bennett, 2000; Jonassen et al, 2003; Rice & Wilson, 1999; Roblyer & Edwards, 2000; Rose & Ferlund, 1997; Sunal & Hass, 2002; White, 1996; White, 1998; Whitworth & Berson, 2003). In other words, according to the literature above, technology as a personal supportive "tool" for communication and exploration can be meaningfully used to expand the student control over their own learning by increasing the quality and extent of their experiences with information.

Moreover, the NCSS (1994) has adopted the "Thematic Standard 8: Science, Technology, and Society" which calls for educators to encourage students to consider the impact of technology critically and thoughtfully. Thus, students who consider the impact of past and current technologies may be better able to maximize the positive capabilities of technology.

Furthermore, current educational technologies can help students achieve the expectations of powerful social studies teaching and learning, of the social studies skills, of a meaningful knowledge construction in the social studies (Rose & Fernlund, 1997) that are addressed in the publication of *Expectations of excellence: Curriculum standards for the social studies, NCSS, 1994*. Consequently, White (1998) and Rose & Fernlund (1997) similarly suggest that it is essential to improve the integration of educational technology in schools in order to prepare children for the future. Likewise, White (1998) proposes that it is vital that integration of technology be viewed as a major component of student-centered approaches to social studies education at K-12 levels.

LIMITATIONS OF AND CONCERNS WITH EDUCATIONAL TECHNOLOGY

I recognize that there are some limitations of and concerns with technology and its educational use in the classroom. For example, despite the power and popularity of technology, many educators have expressed the opinion that although technology should be viewed as important, it should not be allowed to dominate all classroom instruction (Dynneson, Gross, and Berson, 2003). Also, modern technology is rapidly changing and technological tools often are outdated at the time of purchase. Thus, it becomes a real challenge for schools to keep up with technology and not to fall behind in this rapidly changing technological race. Additionally, Dynneson, Gross, and Berson (2003) recognize that educational technologies are limited by several important factors, including the curriculum, physical plant (or the physical limitations of the school buildings), and psychological concerns. They also remind that in considering technology use within the school environment, loud audio sounds and student noise are important factors to think about as they cause distractions (Dynneson, Gross, and Berson, 2003).

In spite of a strong support for the use of technology in education, research has evoked considerable controversy over the use of educational technologies. As an example, in California, an investigation by the San Jose Mercury News found that on the 1994 California Learning Assessment System (CLAS), schools that spent heavily on technology did no better on test scores than schools that did not (as cited in Dynneson, Gross, and Berson, 2003). Besides, technology has also been viewed with suspicion by some researchers. For instance, while Larry Cuban—an educational researcher—identifies a technological cycle in which new technologies are (too) heavily promoted for school use, Neil Postman—the technology critic—remains completely skeptical on the use of technology. Dynneson, Gross, & Berson (2003) in response assert that "suspicion often is based on budgetary restraints, teacher resistance, and a paralyzing educational bureaucracy" (p. 148).

On the one hand, while educational technology is presented as the remedy for the modern problems of today's education; on the other hand, there are some serious critiques of the use of technology in education (Cuban, 2001; Kearsley, 1998; Kirkpatrick, & Cuban, 1998). Basically, these educational researchers claim that effectiveness is not achieved through the use of technology in educational settings and there is no correlation between computer use and test scores. For them, educational technologies, specifically computers, play no significant role in teachers' instructional practices. Kearsley (1998) emphasizes that the enormous amount of attention and resources devoted to the use of technology in the education distracts us from the really important

problems and issues that needed to be addressed, and then he urges us to start to thinking about a different perspective and approach to technology in education. Likewise, Cuban (2001) points out that computers have been oversold by policy makers and promoters, and underused by those in education. Therefore, for him, computers in the school are not worth the investment. He then asks, "How can technology build stronger communities and citizens and how monies can achieve larger social and civic goals?" Unlike Cuban (2001), Oppenheimer (1997) argues that "the solution is not to ban computers from classroom altogether. But it may be to ban federal spending on what is fast becoming an overheated campaign. After all, the private sector with its constant supply of used computers and the computer industry's vigorous competition for new customers seems well equipped to handle the situation" (as cited in Dynneson, Gross, and Berson, 2003, p.173). Overall, it seems that, for the opponents, the major problem with the use of technology is to find out how and why educational technology fails; and then to work on how we can actually use technology to achieve greater goals.

Consequently, although there are some limitations of and concerns about technology, I do not think the real problem is technology itself. Sandholtz, Ringstaff, and Dwyer (1997) state that "even more difficult to overcome are barriers that are in the minds of teachers—deeply held beliefs about teacher and student roles, about the nature of learning and instruction, and even about technology itself" (as cited in Dynneson, Gross, and Berson, 2003, p.151). I feel the problem is ourselves, our mindset, and our traditional values that challenged by technology. This is what Joel B. Stellwagen calls as "intellectual resistance." Besides, I do not think that new generations are concerned with technology as much as we do. For them, technology is everywhere and it is naturally part of their current lifestyle. Indeed, that is why the literature and/or research regarding the effectiveness of technology prove that children (or new generations) are effectively engaged and motivated by technology in their learning. However, I do not mean we have to use technology blindly; rather, we as facilitators and co-constructors of learning need to be selective, of course. In sum, recognizing the limitations of technology, we have to know what technology can do and cannot.

IN PRACTICE: SOCIAL STUDIES, EDUCATIONAL TECHNOLOGY, AND CONSTRUCTIVISM
The advancement in computer and information technologies over the past two decades has dramatically changed the way we teach and learn (Diem, 2000). Yet, due to the nature of subject matter with its historic dates and geographic names, social studies instruction traditionally has been "fact driven" (Rice & Wilson, 1999; Roblyer & Edwards, 2000; Sunal & Hass, 2002). Also, in this information age, the National Council for the Social Studies Education has embraced a "vision of powerful social studies teaching and leaning" that calls for meaningful, integrative, value-based, challenging, and active learning (NCSS, 1994, p.162). However, that cannot be accomplished by using traditional instructional models, but it can be accomplished through the integration of technology with a constructivist model of learning (Berson, 1996; Boyer & Semrau, 1995; Diem, 2000; Doolittle & Hicks, 2003; Martorella, 1997; Mason et al., 2000; Rice & Wilson, 1999; Roblyer & Edwards, 2000; Rose & Fernlund, 1997; Sunal & Hass, 2002; White, 1998; Whitworth & Berson, 2003). Indeed, technology seems ideally suited to constructivist, student-centered approaches to learning (Boyer & Semrau, 1995; Damarin, 2004; Doolittle & Hicks, 2003; Jonassen et al., 2003; Mason et al., 2000; Rice & Wilson, 1999; Roblyer & Edwards, 2000; Sunal & Hass, 2002; White, 1998). Therefore, the literature suggests that constructivism can be used as a foundation for application of technology in the social studies in order to achieve the goals of social studies education.

Recent developments have created new opportunities for powerful social studies teaching assisted by technology. For example, today computers are much more powerful and versatile than they were a decade ago. Therefore, through the integration of technology by using right combination of hardware and software, teachers can develop lessons that enhance student skills in information retrieval, the presentation of data, the comparison and evaluation of different perspectives, and critical reflection and decision making (Berson, 1996; Boyer & Semrau, 1995; Diem, 2000; Doolittle & Hicks, 2003; Martorella, 1997; Mason et al., 2000; Rice & Wilson, 1999; Roblyer & Edwards, 2000; Rose & Fernlund, 1997; Sunal & Hass, 2002; White, 1998; Whitworth & Berson, 2003). Thus, according to this literature, a key assumption of integrating technology, when used effectively within K-12 social studies classrooms, technology can improve social studies teaching and student performance. Friewald (1997), fortunately, notes that social studies teachers generally hold positive perceptions toward using interactive technologies in their classrooms. Also, teachers who use technology in their classrooms often find it easier to motivate their students, to persuade them to have a better attitude toward social studies, and to make social studies content relevant to their students (Berson, 1996; Doolittle & Hicks, 2003; Mason et al, 2000; Rice & Wilson, 1999; White, 1998).

Doolittle & Hicks (2003) believe that integrating technology for improvement of social studies learning should begin with "implementing an aligned constructivist philosophy, theory, and pedagogy in pursuit of the

development of critically minded global citizens" (p. 97). Hence, in response to this felt need for infusing constructivist pedagogies into social studies classrooms, Doolittle & Hicks (2003) propose six principles of constructivism that might guide teachers in the construction of knowledge. Therefore, the construction of knowledge:

1. (and the making of meaning) are individually and socially active process.
2. involves social mediation within cultural context.
3. is fostered by authentic and real-world environments.
4. takes place within the framework of the learner's prior knowledge and experience.
5. is integrated more deeply by engaging in multiple perspectives and representations of content, skills, and social realms.
6. is fostered by students becoming self-regulated, self-mediated, and self-aware.

In addition to these constructivist principles, Doolittle & Hicks (2003) also see another need to create an effective, viable, and robust framework for the integration of technology into a powerful teaching and learning of social studies. Yet they also believe that in order to achieve the goals of the social studies as defined by the NCSS (1994), technology is not the key *itself*, rather "how technology can be used as a developmental tool to encourage responsible citizenship" (p. 87). Therefore, implementing technology as a developmental *tool* within a constructivist framework in the social studies, Doolittle & Hicks (2003) suggest the following six pedagogical strategies; thus, teachers should:

1. (and students should be) prepared to implement technology as a tool for inquiry.
2. use technology to create authenticity, which facilitates the process of student inquiry and action.
3. use technology to foster local and global interaction such that students attain multiple perspectives on people, issues and events.
4. facilitate student knowledge construction by using technology to build on students' prior knowledge and interest.
5. enhance the viability of students knowledge by using technology to provide timely and meaningful feedback.
6. cultivate students' academic independence by using technology to foster autonomous, creative, and intellectual thinking.

Similarly, although many educators have taken for granted the assumption that technology can play a pivotal role in making content relevant to the objectives of instruction, Fairey, Lee, & Bennett (2000) also think that there is an absence of a clear rationale for why teachers should integrate instructional technology. For that reason, Fairey, Lee, & Bennett (2000) recommend a conceptual model for integration based on the five principles of powerful social studies teaching and learning in the social studies: technology and theme #1-meaningful teaching and learning; technology and theme #2-integrative teaching and learning; technology and theme #3-value-based teaching and learning; technology and theme #4-challenging teaching and learning; and technology and theme #5-active teaching and learning.

There is a wide range of tools that can be used to integrate technology into the social studies classroom. Also, tools commonly available in the field can be seen as powerful mediators of learning (Windschitl, 2002) as students participate in activities through the use of these tools. Similarly, good technology-based products provide opportunities for students to play active roles in authentic activities (Rose & Fernlund, 1997). Those technology tools that aid in constructivist learning in the social studies classroom include but limited to drill and practice, tutorials, educational games, webquests, simulations, virtual field trips, CD-ROMs, videodiscs, multimedia and/or hypermedia, telecommunications (e-mail and the Internet), database management, word processing and writing, and graphing (Berson, 1996; Rice & Wilson, 1999). Yet, I do not describe each possible tool or method that can be used in the integration of technology, as it is beyond this paper. However, I present some examples that integrate technology effectively and meaningfully into the social studies classroom.

Here is an example in which Teague & Teague (1995), in community planning project with seventh-grade students, used a computer simulation program—*SimCity*, which allows users to manipulate a variety of factors in the development of a community by assuming various roles to determine whether the city flourishes or is destroyed (Frye & Frager, 1996; Rice & Wilson, 1999). The idea that for the project was the creation of a master plan in their township, which tied directly into the citizenship and geography components of the social studies curriculum. Students worked actively in groups of four or five to build their own community in order to achieve

low crime rates and pollution levels with reasonable expenditures and public approval through the use of what-if scenarios that reinforce collaborative learning, decision making, and higher-order thinking skills. As a result of the *SimCity* project, Teague & Teague (1995) felt that students were learning effectively in this technology-rich classroom. They observed that "students became aware of their responsibility to become informed citizens and to participate in local decision making" (p. 87), which is one of the primary purposes of the social studies as addressed by the NCSS (1994). In addition, according to Teague & Teague (1995), students learned how to work cooperatively in teams and use the computer in the planning process. Thus, this project supports not only one of the principles of powerful social studies learning and of the skills promoted by the NCSS (1994), but also a key characteristic of constructivist classroom practices (Boyer & Semrau, 1995; Diem, 2000; Doolittle & Hicks, 2003; Jadallah, 2000; Mason et al., 2000; Rice & Wilson, 1999).

As can be seen in the case of Teague & Teague (1995), many social studies software/CD-ROM programs, such as SimCity, can reinforce the use of constructivist principles as they 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 (Boyer & Semrau, 1995; Frye & Frager, 1996; Rice & Wilson, 1999; Whitworth & Berson, 2003).

Another example, in which Wilson, Rice, Bagley, & Rice (2000) present a lesson—the virtual field trip guide to Mount Vernon, uses computers and the Internet as tools for learning social studies content in the high school. In this lesson students took a virtual trip to Mount Vernon at the conclusion of a unit of study on the American Revolution & George Washington. Students met in the computer lab and were divided into groups of three and assigned a computer. Each group had at least one student who had some familiarity with using the Web. Students then *traveled* to the Mount Vernon website (www.mountvernon.org) to begin their research after each student has been given a Virtual Field Trip Guide, which provided basic directions and key questions that they must answer in their own words by using information that they will find at the site. Also, the teacher monitored the student progress during the virtual trip. At the end of the day, the teacher collected the guides, which were now filled with students' notes and answers. On the next day, back in the classroom, students discussed what they had learned about George Washington, followed by such extension activities as creating a poster, a collage, or the other appropriate work relating to the life of George Washington.

Virtual or online field trips are only one of the numerous ways that the Internet can offer us to integrate technology into the social studies classroom. As in the example of Wilson, Rice, Bagley, & Rice (2000), an Internet field trip encourages students' interest in learning social studies while facilitating their critical and higher order thinking skills, and letting teachers as facilitators monitor students' performance and progress. Furthermore, as Rice and Wilson (1999) puts it, virtual field trips on the Internet "provide students with first-hand learning experiences and allow for the interactivity and student control delineated in a student-centered constructivist model" (p.31). Thus, virtual or online field trips for students can become an authentic experience, which is one principle of meaningful learning.

An additional example that integrates technology effectively comes from Lipscomb (2003): the use of WebQuests by eighth-grade students studying the Civil War at a middle school, demonstrating how social studies teachers can harness the power of Internet and integrate it into their instruction. After an orientation and initial discussion on the key elements of a webquest, resources available, and strategies for making effective use of time in the computer lab, students were given a meaningful task: to assume the role of a person living during the Civil War era, such as a Confederate Soldier, Union Soldier, Southern Woman, Northern Woman, or Female Abolitionist.

Students were divided into teams based upon these scenarios, which meant they worked with people who share their same scenario to collaborate information; however, each student was required to write an individual journal in the form of a booklet for potential publication. After students explored their on-line resources, they took the information and completed six journal entries: two written before the Civil War, two during, and two immediately following the conflict. According to Lipscomb (2003), students were extremely engaged in the material during the process, and the journals showed a tremendous amount of creativity, in both appearance and content. Overall, as Lipscomb (2003) states, the students enjoyed undertaking the project, and they came away with a stronger understanding of the people who lived during the Civil War. This is very meaningful especially when students often finds the social studies and/or American history boring and overwhelmed with a large amount of data (battles, generals, dates, speeches, etc).

Webquests have become an increasingly popular form of Internet use in classrooms (Whitworth & Berson, 2003). Bernie Dodge (1995) describes the WebQuest as "an inquiry-oriented activity in which some or all of the information that learners interact with comes from resources on the Internet" (as cited in Lipscomb, 2003). As

can be seen in the example above, in addition to being an Internet-supported and inquiry-driven instructional tool, webquests have a great potential for cooperative/collaborative learning (Whitworth & Berson, 2003), by supporting the principles of meaningful learning in the social studies classroom.

Overall, when we look at those examples that integrate technology effectively into the social studies classroom, they seem to fit into both the principles of constructivism and pedagogical strategies for technology integration in the social studies classroom as proposed by Doolittle & Hicks (2003). These examples, as constructivist theories stress, reinforce active learning through exploration rather than by simply giving a correct answer. Student learning in these examples occur in meaningful contexts as they relate the new information they have learned to their own experiences (Rice & Wilson, 1999) which means that constructed knowledge is embedded in one's own authentic personal experience (Boyer & Semrau, 1995). Besides, in a constructivist learning environment, the teacher's role changes from the traditional giver of knowledge to a facilitator or coach who provides authentic activities (Boyer & Semrau, 1995; Jonassen, et al., 2003). Thus, in a constructivist classroom, learning becomes a social and collaborative activity, promotes such attributes as student empowerment, the teacher as facilitator, social inquiry, active learning, and an authentic learning (Boyer & Semrau, 1995; Damarin, 2004; Doolittle & Hicks, 2003; Fosnot, 1996; Jadallah, 2000; Jonassen et al., 2003; Rice & Wilson, 1999; Roblyer & Edwards, 2000; Sunal & Hass, 2002; Windschitl, 2002). On the other hand, as emphasized by many educators, technology can offer constructivist values with authentic learning experiences by engaging students in critical thinking, decision making, and problem solving (Berson, 1996; Boyer & Semrau, 1995; Diem, 2000; Jonassen et al., 2003; Rice & Wilson, 1999; Rose & Ferlund, 1997; White, 1998; Whitworth & Berson, 2003). As a result, the point is that technology is a tool to think and learn *with* not *from* it (Jonassen et al., 2003). Therefore, technology can foster meaningful learning, which is active, constructive, intentional, authentic, and cooperative (Jonassen, et al., 2003). Above all, Boyer & Semrau (1995) posit that constructivism and technology are ideal partners; and that through the marriage of the two, social studies students can construct knowledge that is derived from personal context and embedded in authentic experience.

CONCLUSION
Throughout this paper, it was not the purpose to show every possible use of technology in the social studies education and *not* to propose that the integration of technology becomes panacea to all the educational problems we have. Yet, it was intended to point out that there are indeed some exemplary works showing that technology can be successfully integrated into social studies classrooms in the construction of meaningful learning, which supports the constructivist principles of teaching and learning.

As a result of the call for the use of technology in education for the last few decades, the National Council for the Social Studies (NCSS) has explicitly advocated technology integration into the social studies classroom to transform the teaching and learning. The use of technology within the social studies thus becomes a key element for the NCSS's "vision of powerful social studies teaching and learning" (1994, p. 162). This vision assumes that "when used effectively within the K-12 social studies classroom technology can improve social studies teaching and student performance" (Doolittle & Hicks, 2003, p. 72). However, successful integration requires an effective connection between how students learn and how teachers employ technology to help and enhance student learning, which also calls for application of constructivist pedagogies in the social studies classroom (Roblyer & Edwards, 2000). Unlike those who are afraid of integrating technology into their classroom, technology cannot replace teachers rather teachers become more important than ever but as a *facilitator* of learning not a *transmitter* of knowledge.

Moreover, the literature evidently supports that integration of technology into the social studies classroom has the potential to facilitate development of students' critical thinking, decision-making and problem solving skills (Berson, 1996; Boyer & Semrau, 1995; Diem, 2000; Doolittle & Hicks, 2003; Martorella, 1997; Mason et al., 2000; Rice & Wilson, 1999; Roblyer & Edwards, 2000; Rose & Fernlund, 1997; Sunal & Hass, 2002; White, 1998; Whitworth & Berson, 2003). This literature also indicates that the use of technology significantly supports the constructivist values in the social studies classroom, providing students with a great opportunity to meaningfully construct their own knowledge through collaboration, motivation, engagement, and a "sense of ownership" (Jonassen et al., 2003). Thus, recognizing the importance of educational technology as a tool for achieving authentic learning, social studies educators must "harness the power of technology" (Lipscomb, 2003) for the sake of meaningful learning in the social studies classroom. Yet, it still remains a fact that for the benefit of meaningful knowledge construction, integration of technology into social studies specifically needs to be grounded into a constructivist theory of learning.

On the other hand, the literature evidently points out that research is also lacking on the effects of technology in social studies classrooms. To date, there is no empirical research enough to judge the effectiveness of technology either on the part of student or instructional performance in the social studies (Whitworth & Berson, 2003). Therefore, further research is needed in the area of how the use of technology impacts the social studies instruction and thus student achievement. Although research indicates that integration of technology has a positive influence on knowledge construction in social studies classrooms (Diem, 2000; Whitworth & Berson, 2003), there also is an immediate need for both quantitative and qualitative research to assess the integration of particular types of technology into social studies classrooms (Berson, 1996; Diem, 2000; Mason et al., 2000; Whitworth & Berson, 2003).

Consequently, with the help of technology and employment of constructivist pedagogy in the classroom, social studies teachers have already started to make a difference. It seems that the "sleeping giant" (Martorella, 1997) is awakening for the benefit of students and for the sake of meaningful learning. It thus appears that powerful teaching and learning that integrates technology alinged with constructivist pedagogy has the potential to move social studies education beyond meaningless facts, inadequate connections, superficial coverage of content, and passive knowledge construction (Fairey, Lee, & Bennett, 2000).

REFERENCES
AECT, Association for Educational Communications and Technology. (1977). *The definition of educational technology*. Washington, DC: AECT.
AECT, Association for Educational Communications and Technology. (2004). *The meanings of educational technology*. Definition and Terminology Committee, Bloomington, IN: AECT.
Becker, H. J. (1998). Running to catch a moving train: Schools and information technologies. *Theory into Practice, 37*(1), 20-30.
Becker, H. J., & Ravitz, J. L. (2001). *Computer use by teachers: Are Cuban's predictions correct?* Paper presented at the 2001 Annual Meeting of the American Educational Research Association: Seattle, Washington.
Berson, M. J. (1996). Effectiveness of computer technology in the social studies: A review of the literature. *Journal of Research on Computing in Education, 28*(4), 486-499.
Boyer, B. A., & Semrau, P. (1995). A constructivist approach to social studies: Integrating technology. *Social Studies and the Young Learner, 7*(3), 14-16.
Cuban, L. (2001). *Oversold and underused: Computers in the classroom.* Cambridge, MA: Harvard University Press.
Damarin, S. K. (2004). *Constructivism and search for equitable education.* Manuscript submitted for publication. (An earlier version of this paper was presented at the Annual conference of the Society for the Social Study of Science. Halifax, Nova Scotia, October 28 - November 1, 1998)
Diem, R. A. (2000). Can it make a difference? Technology and the social studies. *Theory & Research in Social Education, 28*(4), 493-501.
Doolittle, P. E., & Hicks, D. (2003). Constructivism as a theoretical framework for the use of technology in social studies. *Theory and Research in Social Education, 31*(1), 71-103.
Dynneson, T. L., Gross, R. E., & Berson, M. J. (2003). *Designing effective instruction for secondary social studies* (3rd Ed.). Upper Saddle River, NJ: Merrill/Prentice Hall.
Fairey, C., Lee, J. K. & Bennett, C. T. (2000). Technology and social studies: A conceptual model for integration. *Journal of Social Studies Research*, 24(2), 3-9.
Fosnot, C.T. (1996). Constructivism: A psychological theory of learning. In C.T. Fosnot (Ed.), *Constructivism: Theory, perspectives, and practice* (pp.8-33). New York: Teachers College.
Frye, B., & Frager, A. M. (1996). Civilization, colonization, SimCity: Simulations for the social studies classroom. *Learning and Leading with Technology, 24*(2), 21-32.
Fulton, K. (1998). *A framework for considering technology's effectiveness*. Center for Learning and Educational Technology, University of Maryland, College Park, MD: The Maryland Business Roundtable for Education Committee on Technology in Education. Retrieved February 12, 2005, from http://doe.state.in.us/olr/pdf/appresearchkful.pdf
Herschbach, D. R. (1995). Technology as knowledge: Implications for Instruction. *Journal of Technology Education*, *7*(1) 31-42 Retrieved February 14, 2005, from http://scholar.lib.vt.edu/ejournals/JTE/jte-v7n1/herschbach.jte-v7n1.html
Jadallah, E. (2000). Constructivist learning experiences for social studies education. *The Social Studies*, September-October, 221-225.
Jonassen, D. H. (2000). *Computers as mindtools for schools: Engaging critical thinking* (2nd Ed.). Columbus, OH: Merrill/Prentice-Hall.

Jonassen, D. H. (2000a). Transforming learning with technology: Beyond modernism and post-modernism or whoever controls the technology creates the reality. *Educational Technology*, March-April, 21-25.

Jonassen, D. H., Howland, J., Moore, J., & Marra, M. (2003). *Learning to solve problems with technology: A constructivist perspective.* Columbus, OH: Merrill/Prentice-Hall.

Johnsen, J. B., & Taylor, W. T. (2002). The reduction of teacher and student autonomy: An essay on technology and classrooms. *Encounter: Education for Meaning and Social Justice*, *15*(1), 11-24.

Kearsley, G. (1998). Educational technology: A critique. *Educational Technology*, March-April, 47-51.

Kirkpatrick, H., & Cuban, L. (1998). Computers make kids smarter—right? *Technos*, *7*(2), 26-31.

Lipscomb, G. (2003). "I guess it was pretty fun": Using WebQuests in the middle school classroom. *The Clearing House, 76*(3) 152-155.

Martorella, P. H. (1997). Technology and social studies or which way to the sleeping giant. *Theory and Research in Social Education*, *24*(4), 511-514.

Mason, C., Berson, M., Diem, R., Hicks, D., Lee, J., & Dralle, T. (2000). Guidelines for using technology to prepare social studies teachers. *Contemporary issues in technology and teacher education, 1*(1), 107-116.

Merryfield, M. (2003). Like a veil: Cross-cultural experiential learning online. *Contemporary Issues in Technology and Teacher Education* [Online serial], *3*(2). Retrieved February 10, 2005, from http://www.citejournal.org/vol3/iss2/socialstudies/article1.cfm

NCSS, National Council of the Social Studies. (1993). A vision of powerful teaching and learning in the social studies: Building social understanding and civic efficacy. *Social Education*, *57*(5), 213-223.

NCSS, National Council for the Social Studies. (1994). *Expectations of excellence: Curriculum standards for the social studies*. Washington, DC: NCSS.

Postman, N. (1993). *Technopoly: The surrender of culture to technology*, New York: Vintage Books.

Reiser, R. A. (2001). A history of instructional design and technology: Part I-A history of instructional media. *Educational Technology Research and Development, 49*(1), 53-64.

Rice, M. L., & Wilson, E. K. (1999). How technology aids constructivism in the social studies classroom. *Social Studies, 90*(1), 28-33.

Roblyer, M. D., & Edwards, J. (2000). *Integrating educational technology into teaching* (2nd Ed.). Upper Saddle River, New Jersey: Prentice-Hall, Inc.

Salomon, G. (1998). Technology's promises and dangers in a psychological and educational context. Theory into Practice, *37*(1), 4-10.

Salomon, G., & Almog, T. (1998). Educational psychology and technology: A matter of reciprocal relations. *Teachers College Record*, *100*(1), 222-241.

Sunal, C. S., & Hass, M. E. (2002). *Social studies for the elementary and middle grades: A constructivist approach*. Boston, MA: Allyn & Bacon.

Teague, M., & Teague, G. (1995). Planning with computers: A social studies simulation. In J.A Braun, R. Fernlund, & C.S. White (Eds.), *Technology tools in the social studies curriculum* (pp. 87-89). Wilsonville, OR: Franklin, Beedle & Associates.

Thornburg, D. (1999). *Technology in K-12 education: Envisioning a new future* [Online]. Retrieved February 14, 2005, from http://www.air-dc.org/forum/Thornburg.pdf

White, C. (1997). Technology and social studies: An Introduction. *Social Education 61*(3), 147-148.

White, C. (1998). Technology, CD-ROM atlases, and social studies. *Southern Social Studies Journal*, *23*(2), 11-22.

Whitworth, S., & Berson, M. J. (2003). Computer technology in the social studies: An examination of the effectiveness literature (1996- 2001). *Contemporary Issues in Technology and Teacher Education, 2*(4), 472-509.

Wiley, D. (2002). A definition of the filed. *TechTrends*, *46*(1), 59-60.

Wilson, B. G. (1997). Thoughts in theory in educational technology. *Educational Technology*, January-February, 22-27. (special issue on theory)

Wilson, E. K., Rice, M. L., Bagley, W., & Rice, M. K. (2000). Virtual field trips and newsrooms: Integrating technology into the classroom. *Social Education*, *64*(3), 152-155.

Windschitl, M. (2002). Framing constructivism in practice as the negotiation of dilemmas: An analysis of the conceptual, pedagogical, cultural, and political challenges facing teachers. *Review of Educational Research 72*(2), 131-175.