ABSTRACT

BULL, PRINCE HYCY. From the Computer Lab to the Classroom: A Case Study on the Nature of Technology Integration in a Social Studies Methods Course with Preservice Teachers. (Under the co-directions of Dr. Ellen Vasu and Dr. Marsha Alibrandi.)

The purpose of the study was a case study on the nature of technology integration in a social studies methods course and its impact on the practices of preservice teachers during the course and during their practica experiences. The study was conducted with seven preservice teachers and the methods instructor. The case study addressed the following areas: the constructivist integration of technology, the impact of instructor’s modeling behavior on preservice teachers’ attitudes and practices toward information technology, factors that influenced preservice teachers’ attitudes toward using information technology, factors that promoted preservice teachers’ integration of technology during their practica experiences, factors that hindered preservice teachers’ integration of technology during their practica experiences, and the impact of technology integration on the basic computer skill levels of preservice teachers.

Data were collected through observations, document analysis, formal and informal interviews and questionnaires. Data were coded and analyzed using the constant comparative method and descriptive statistics. The descriptive statistics design was used to enrich the case study data. The data on the constructivist integration show that the instructor integrated components of the proposed constructivist model developed by Ewing et al. (1998) for the WWW STARS Project.

Using the Teachers’ Attitude Toward Computer (TAC) scale, there was no noteworthy difference between the pre-course and post-course scores of preservice teachers’ attitudes toward computer. The case study data show that the main reason why
the descriptive statistics data were not noteworthy was that all the preservice teachers had positive attitudes toward computer at the beginning of the course and the course reinforced that positive attitude.

Using the Teachers’ Attitude Toward Information Technology, there was no noteworthy difference in the pre-course and post-course scores of preservice teachers’ attitudes toward information technology. The case study data show that the main reason why the descriptive statistics data were not noteworthy was that preservice teachers had a positive disposition to information technology prior to the integration of technology in this course. A breakdown of the components of TAT yielded similar results. Though, the case study data show that preservice teachers had a positive attitude toward computer and information technology prior to the beginning of this course, one major finding was that preservice teachers stated that the integration of technology in the methods course made them “comfortable”, “confident” and “more fluent” in using technology in teaching.

Preservice teachers felt that the instructor’s style of integrating technology was beneficial to them in varying degrees. The advanced users felt that the instructor’s modeling behavior did not meet their expectations for the course because of their experience level. The beginner and intermediate users felt that the integration was very beneficial to them. Preservice teachers identified five factors that influenced their attitude towards information technology and computer technology. Preservice teachers identified ten factors that influenced the integration of technology during their practica experiences. Preservice teachers identified thirteen factors that affected technology integration during their practica experiences.
Using the North Carolina Basic Technology Competencies (NCBTCE) modified by this researcher, there was a noteworthy difference in the pre-course and post-course mean percentile scores of preservice teachers. The post-course scores were higher than the pre-course scores. The advanced and intermediate users felt that technology integration did not make a significant difference on their computer skill levels, whereas the beginners felt that there was significant impact on their computer skill level.
FROM THE COMPUTER LAB TO THE CLASSROOM: A CASE STUDY ON
THE NATURE OF TECHNOLOGY INTEGRATION IN A SOCIAL STUDIES
METHODS COURSE WITH PRESERVICE TEACHERS

by

PRINCE HYCY BULL

A dissertation submitted to the Graduate Faculty of
North Carolina State University
in partial fulfillment of the
requirements for the Degree of
Doctor of Philosophy

DEPARTMENT OF CURRICULUM AND INSTRUCTION

Raleigh
2003

APPROVED BY:

[Signatures]
Co-chair of Advisory Committee
Co-chair of Advisory Committee
This work is dedicated

To

My Loving Wife, Gloria Olive Bull

My Wonderful children

Lisle Finna Bull,

Lynea Ibidun Bull,

Prince Hycy Bull, Jr.

And

To the victims (maimed, raped and killed) of 10 years of civil war in Sierra Leone.

“Your ultimate sacrifice for the nation of Sierra Leone will not be in vain.”

(1991-2001)
BIOGRAPHY

Prince Hycy Bull, was born in Bo Town, Bo District, Southern Province, Sierra Leone, West Africa on February 16, 1961. Prince Hycy Bull married Gloria Olive Bull in 1989. They have three children, Lisle Finna (1989), Lynea Ibidun (1992) and Prince Hycy Jr. (2000). He received his elementary education from Regent Square Municipal School, Freetown, Sierra Leone. He received his secondary education from Sierra Leone Grammar School, Freetown, Sierra Leone, graduating in 1977. He received his sixth form education from the Methodist Boys High School, Freetown, Sierra Leone, graduating in 1980.

In 1983, he received his Bachelor of Arts degree, division II with a major in History, Law and Philosophy from the University of Sierra Leone, Fourah Bay College in Freetown, Sierra Leone. In 1984, he received his Post-Graduate Diploma in Education with a major in Social Studies and History. Upon graduation, he taught social studies, history and government at the Government Secondary Technical School from 1984 to 1987. In 1987, Prince Hycy Bull was admitted to North Carolina Central University to pursue the Masters of Arts degree in Educational Leadership. Prince Hycy Bull was awarded a Graduate Assistantship from 1988-1989 while enrolled in the Masters program. Prince Hycy Bull received a Master of Arts (Honors) in Educational Leadership in 1990.

After completing the master’s program, he served as a teacher with the Department of Health and Human Services, North Carolina from 1991-1999. In 1991, Prince Hycy Bull was admitted to pursue the Masters of Education degree in Special Education at North Carolina Central University. Prince Hycy Bull received a Master of
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During his enrollment in the doctoral program, he was a finalist for the 2000 NCSU School of Education, Curriculum and Instruction Academic Excellence Award and a finalist for the 2000 Community Service Award hosted by the Association for the Concerns of African American Graduate Students, at North Carolina State University. In 2000, Prince Hycy Bull was inducted in NCSU Omicron Rho Chapter of Kappa Delta Pi, an international organization for excellence in education. While enrolled in the doctoral program, Prince Hycy Bull was Assistant Director of Educational Services, Murdoch Center, Department of Health and Human Services and taught instructional technology and research methods as an Adjunct Professor at North Carolina Central University.

Prince Hycy Bull holds the following educational licenses: Lifetime Social Studies and History teaching License, Freetown, Sierra Leone; Severely and Profoundly Disabled teaching license, North Carolina; Mentally Disabled, Advanced teaching license, North Carolina; Mentoring license, Advanced teaching license, North Carolina; School Principal, Advanced level, North Carolina; Curriculum Specialist, Doctoral level license, North Carolina; Instructional Technologist, Doctoral level license, North Carolina; Exceptional Children’s Program Administrator, Doctoral level license, North Carolina.
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Chapter One

Introduction

Preparing technology proficient educators to meet the needs of 21st-century learners has emerged as a critical challenge facing teacher preparation programs across the country. Federal, state and local agencies are investing billions of dollars to equip schools with computers and modern communications networks. Despite these investments only 20 percent of the 2.5 million teachers currently working in our public schools feel comfortable using these technologies in their classrooms. (http://www.ed.gov/pubs/promisinginitiatives/pt3.html, U.S. Department of Education, February 2000)

Background of the Problem

In 1997, upon review of a wide array of research on the integration of technology in instruction, President Clinton’s advisory panel on educational technology in schools concluded that, as schools continue to acquire more and better hardware and software, the benefit to students increasingly will depend on the skill with which some 3 million teachers are able to use these new tools. This view, shared by state governments, universities, educational organizations and local schools, spurred attempts to ensure that teachers are adequately trained to integrate technology in their instruction in a meaningful way. In February 2000, the United States Department of Education realizing that there was a critical need to integrate technology in teacher education programs and teaching, issued this challenge to all higher educational institutions:

In less than a decade over two million teachers must be recruited to replace retiring teachers, to meet increasing student enrollment demands, and to achieve smaller class sizes. If our information technology investments are to pay off in improved education, these future teachers must be technology proficient educators who know how to use modern learning tools to help students meet high standards. (http://www.ed.gov/pubs/promisinginitiatives/pt3.html)
This challenge raises several pertinent questions relating to the integration of technology with preservice teachers: For example, are teacher education programs effectively preparing teachers to integrate technology in instruction? Are the technological resources being used and integrated effectively in instruction at teacher education programs? Some of these overarching questions will help frame this research and provide some insight into the integration of technology in preservice secondary school social studies instruction. For the purpose of this research, preservice secondary school social studies teachers will be referred to as “preservice teachers.”

To better understand the role of technology in teacher education in the 21st century, this research focuses on one of the stakeholder groups in the technology integration process, preservice teachers. Research on technology integration supports the text of the U.S. Department of Education challenge that there is a need for preservice teachers to be trained to integrate technology in instruction, (National Council for Education Statistics [NCES], 2000; Web-Based Education Commission [WBEC], 2000). Other researchers in this area show that colleges of education and instructors do not provide technology-learning environments that stimulate collaboration and discussion amongst preservice teachers, (Dutt-Doner and Powers, 2000; ISTE, 1999; Jones and Meyers, 1993; NCES, 2000). Hence, there is a need to conduct research to study the nature of technology integration in teacher education program and its impact on preservice teachers. The need for this study is significant in light of the tremendous resources poured into schools, including laboratories, instructional technology staff, hardware, software and Internet capabilities (U.S. Department of Education, 2000).
To better understand the impact of information technology integration on preservice teachers and integration in general, one need not confuse knowledge about the computer and the availability of technology resources with integration. Research trends show that the future schooling of preservice teachers, the “Nintendo generation,” will be more technologically advanced than their predecessors because of their exposure to a variety of technology toys and computers (Flake, 2001). However, knowledge about computers and technology does not guarantee that teachers will integrate technology into a course of study, (Hoter, 2000). Since knowledge about technology does not translate into integration of technology as a teaching and learning tool, one needs to study other factors affecting technology integration, such as the integration model, the style of the instructor and the attitudes of teachers toward technology. According to Gunter, Gunter and Wiens (1998), instructors need to strive to light a fire and motivate preservice teachers to understand the influence educational technology can have in their lives and classrooms. As recipients of the technology training provided by teacher education programs and future teachers in the “real world,” preservice teachers are in a unique position to make meaningful contributions to the knowledge base on the effectiveness of information technology integration as a teaching and learning tool through this research.

In a 1998 survey of 416 Colleges of Education, the International Society for Technology in Education [ISTE], 1999) concluded that teacher education programs were not giving preservice teachers the needed training to integrate technology into their teaching. Green (1999) reiterated this view that there was enough evidence to suggest that one of the greatest challenges for college and university faculty was integrating technology into their instruction. If teacher education programs fail in this area, then the future of technology
integration in K-12 teaching is very bleak. To this effect, state governments, universities, school systems and professional organizations emphasize that technology should be integrated in the teacher education program and that minimum standards are set for technology integration for each content area.

The teaching of social studies is no exception to the limited use of technology as a teaching and learning tool. It was this limited use of technology in social studies that led Peter Martorella (1997) to assert that, “technology is a sleeping giant in the social studies curriculum” (p.511). If technology is a “sleeping giant,” then who will awaken the sleeping giant and how effective will the giant be upon waking? This researcher argues that part of the answer to the first question can be found in the curriculum of teacher education programs and the answer to the second half of the question depends on how effectively technology-trained preservice teachers integrate technology as a teaching and learning tool on becoming inservice teachers. According to White (1999), the integration of technology in teaching social studies provides opportunities to empower students and teachers, and facilitates a constructivist approach. The traditional approach to teaching social studies is teacher centered with lecturing, reading texts, and taking tests. The transformative constructivist approach, as defined by the National Council for the Social Studies [NCSS] (1994), stressed the importance of technology integration at all levels of social studies education by focusing on teacher education programs as a starting point.

**Purpose of the Study**

It is the view of this researcher that teacher education programs have the unenviable task of waking the giant, that is, using technology in their practice. The purpose of this research, in part, is to provide some answers to the second question: What would be the
impact of the giant upon waking? The overarching question guiding this case study research is: What is the nature of technology integration in the social studies methods course and its impact on the practices of preservice teachers during the course and their practica experiences?

**Theoretical Framework**

The theoretical framework of this case study is embedded in the social cognitive theory. The social cognitive theory is based upon the principles that behavior, cognition and environment co-exist in a reciprocal relationship and thereby influence each other. Self-efficacy is a central theme of social cognitive theory. Self-efficacy is based on the principle that a person’s belief in performing a behavior or a task can lead to the successful completion or mastery of the task (Bandura, 1986; Dupagne and Krendl, 1992). Social cognitive theory guided this research on preservice teachers’ self-efficacy towards integrating information technology as a teaching and learning tool within a social studies methods course.

The constructivist teaching approach used in this case study is an integral part of the environmental component of the Triadic Reciprocity Determinism theory, which is a sub-theory within the social cognitive theory used in this study. Constructivist teaching approach is based upon the philosophy that students should be given an opportunity to construct their learning and that technology should be embedded in the curriculum rather than taught in isolation (Vannatta & Beyerbach, 2000). Constructivist teaching approach is also based on the thesis that students who were instructed in technology-enabled learning environments are more likely to integrate technology in their own classrooms and instruction, (Flake, 2001). According to the NCES (2000) report on teachers’ use of technology, for each classroom instructional activity, teachers who reported feeling well prepared or very well prepared were
more likely than teachers who reported feeling unprepared to assign students to use various
technologies. The NCES report also states that 66 percent of teachers who reported feeling
well prepared or very well prepared to use technology indicated that they assigned students to
use computers or the Internet to solve problems or analyze data, compared with 47 percent of
teachers who reported feeling somewhat prepared and 14 percent of teachers who reported
feeling unprepared. The theoretical frameworks are dealt with in detail in the literature
review section of chapter two.

**National Trends in Technology Integration in Education**

The need to teach teachers how to integrate technology as a teaching and learning tool
is now a national, political and professional movement. At the national level, the federal
government seems to be the forerunner in this movement. On October 10, 1996, then
President Clinton and Vice President Gore announced their commitment to the Next
Generation Internet [NGI] Initiative, which was based upon strong research and development
programs across federal agencies. The NGI initiative envisioned a powerful and versatile
environment for business, education, culture, and entertainment provided through the
Internet. This commitment to the development of the Next Generation Internet was
highlighted in President Clinton’s State of the Union Address on February 4, 1997, in which
he stated that

> We must build the second generation of the Internet so that our leading universities
and national laboratories can communicate in speeds 1,000 times faster than today, to
develop new medical treatments, new sources of energy, new ways of working
together (p. 7).

**The three goals of the Next Generation of Internet**

The goals of the Next Generation of Internet are
1. To promote experimentation with the next generation of network technologies.

2. To develop a test bed connecting universities and federal research institutions at a sufficient rate to demonstrate new technologies and support future research.

3. To provide a platform to demonstrate a wide variety of innovative applications that cannot be achieved using current Internet systems.

A byproduct of the Next Generation of Internet initiative by the Clinton administration was the creation of “Preparing Tomorrow’s Teacher to use Technology” grants, commonly known as PT³ grants. PT³ grants are sponsored by the United States Department of Education to colleges and universities to integrate technology in teacher education programs. The goal of the PT³ grant program, as defined by the United States Department of Education, is to

Support high-quality reforms in teacher preparation programs for the purpose of increasing the knowledge, skills, and abilities of prospective teachers to use technology efficiently in their future teaching practices. This program provides grantees—consisting of consortia of two or more members of schools of education, schools of arts and sciences, state educational agencies, local educational agencies, nonprofits and/or other partners—with the resources to make fundamental reforms in the way prospective teachers are trained to use technology in the classroom.

The initiative to expand the technological horizon as a teaching and learning tool at the federal level continues to expand beyond the PT³ grants. According to the final report of the Web-Based Education Commission, which was published on December 19, 2000, Senator Bob Kerrey (D. Neb.), Chairman, and Representative Johnny Isakson (R. Ga.), Vice-Chairman of the Web-Based Education Commission, urged the new [Bush] Administration and 107th Congress to make E-learning a centerpiece of the nation's education policy. The
report states “the Internet is perhaps the most transformative technology in history, reshaping business, media, entertainment, and society in astonishing ways. But for all its power, it is just now being tapped to transform education.”

(http://www.ed.gov/offices/AC/WBEC/FinalReport/)

**North Carolina, Professional Organizations and Technology**

At the state and local levels, standards for technology integration are now commonplace, especially for subject areas, grade levels, and initial and renewal licensure of teachers. North Carolina, like most states in the union and professional organizations such as ISTE (1999), NCATE (2000), has established basic competency guidelines for teacher education programs to integrate technology in the instruction of preservice teachers (see Appendix # A). North Carolina is one of 42 states requiring teacher preparation programs to include a technology component as part of their programs and one of four states (the others being Connecticut, New Hampshire and South Carolina) to require technology training for teacher re-certification (Education Week, 1999). As a result of the School Technology Users Task Force Report (October 1995), the North Carolina Department of Public Instruction established both basic and advanced computer competencies for in-service and preservice teachers (see Appendix #A) and also technology competencies for high school students (see Appendix #G). North Carolina also requires that all preservice teachers develop a technology portfolio prior to graduation from the teacher education programs to demonstrate knowledge of the technology competencies for educators. This mandate by the State has greatly influenced preservice methods courses to provide instruction in technology instruction and technology portfolio development.
NCATE and Technology Integration

The National Council for Accreditation of Teacher Education [NCATE] (1997), recognized that teachers “hold the key to technology use in the classroom” (p.4) and, to this end, acknowledged the fact that each school of education has a vision and plan for the integration of technology that reinforces a conceptual knowledge of teacher education. NCATE, in its report titled Technology and the New Professional Teacher: Preparing for the 21st Century Classroom (1997), further stated that each school explore the use of modern communication technology in carrying out its various functions. The drive to expand the technological horizons of teacher education programs was added to NCATE’s (2000) unit standards adopted by the Unit Accreditation Board on March 31, 2000, and ratified by the NCATE Executive Board on May 11, 2000. It was titled “Call for a Commitment to Technology.” The commitment to technology by schools, colleges or departments of education, as defined by the NCATE 2000 unit standard is

The unit’s [teacher education program] commitment to preparing candidates who are able to use educational technology to help all students learn…provides a conceptual understanding of how knowledge, skills, and dispositions related to educational and information technology are integrated throughout the curriculum, instruction, field experiences, clinical practice, assessments, and evaluations. (http://www.ncate.org/2000/2000stds.pdf.p.17)

ISTE and Technology Integration

To meet the challenge of producing knowledgeable, competent and confident technology literate teachers, who would integrate technology into the curriculum, the International Society for Technology in Education (ISTE, 1999) set up foundational standards to guide teacher education programs in training preservice teachers to use technology as a teaching and learning tool. Preservice teachers are expected to demonstrate
competency in the ISTE standards upon completion of their teacher education programs (See Appendix # K). On November 18, 1999, ISTE introduced a new publication, National Educational Technology Standards for Students—Connecting Curriculum and Technology, that demonstrated how to integrate technology standards in classrooms in conjunction with national subject area standards. The ISTE publication is comprised of 36 learning activities and 8 multidisciplinary units to support classroom teachers preparing students to become technology-capable learners. The hands-on activities focus on subject matter and show how appropriate technology can be employed as part of the learning experience (http://www.ncate.org/standard/iste.pdf).

Importance of Technology Integration

To more fully understand the impact of technology integration on preservice teachers, one needs to define a technology-learning environment and discuss the importance of integrating technology as a teaching and learning tool. Dockstader (1999) defined a technology-learning environment as one in which instructors and students

- Use computers effectively and efficiently within the general content areas to allow students to learn how to apply computer skills in meaningful ways.
- Integrate technology in a manner that enhances students’ learning.
- Use software, hardware and Internet capabilities supported by the business world for real-world applications to increase students’ flexibility and creativity in the use of computers.
- Organize the goals of curriculum and technology into a coordinated and harmonious whole.
• Let the curriculum drive technology usage instead of technology usage driving the curriculum.

• Model the use of technology for the students and their peers to emulate.

The need to integrate information technology as a teaching and learning tool in teacher education programs and K-12 education is justified by the benefits to both students and instructors. According to the research, the benefits of using information technology as a teaching and learning tool are as follows:

1. It provides depth to the curriculum (Merryfield, 2000), by providing students with another aspect of the curriculum besides the content area curriculum;

2. There is a dire need for all preservice teachers to use technology to enhance their knowledge and learn how to integrate it in their teaching (ISTE, 1999); [http://www.ncate.org/standard/iste.pdf](http://www.ncate.org/standard/iste.pdf), (NCDPI, 2000) [http://www.ncpublicschools.org/tap/basic.htm](http://www.ncpublicschools.org/tap/basic.htm);

3. Integration and use of technology motivates students, which in turn leads to an increase in academic engagement time (Dockstader, 1999);

4. Fosters higher level thinking skills because students are actively involved in the construction of their learning (Dockstader, 1999; Milman & Heinecke, 2000) and enhances problem-solving abilities (White, 1999);

5. Teaches students how to use the Internet, communicate using web-based synchronous and asynchronous tools, design and use multimedia and hypermedia in instruction, and how to incorporate the use of software and hardware in instruction (Johnson, 1997, WBEC 2000);
6. Ensures that technology is not taught in isolation but integrated into the curriculum (Dockstader, 1999; Mason et al. 2000; White, 1999);

7. Increases the computer literacy skills of the students and instructors (Dockstader, 1999; WBEC, 2000);

8. Ensures that instructors use the constructivist approach to technology integration and model appropriate use in their instruction (NCSS, 1994; Papert 1980; Vannetta & Beyerbach, 2000; White, 1999).

Social Studies and Technology

According to the research on effective social studies teaching, White (1999) stated that effective teaching and learning takes place when preservice social studies methods courses use the transformative approach. The transformative approach is based upon the constructivist model of teaching and learning, which includes modeling, reflecting (White, 1999), collaborating (Vannatta and Beyerbach, 2000), and developing an interactive community of learners (NCSS, 1994; White, 1999). According to White, the integration of technology as a teaching and learning tool falls within the spectrum of the transformative approach in teaching social studies. In a study of 415 preservice social studies teachers, White stated that close to 100% of the participants felt that using a transformative approach to technology integration combined with student-centered instruction “definitely” facilitated social studies education. The NCSS (1998), in its standards on the principles of teaching and learning in promoting excellence in the teaching of social studies, identified the need for integrating technology in teaching social studies (http://www.socialstudies.org/standards/positions/aboutscience.html) (See Appendix L).
One of the goals of every teacher education program and every social studies methods course is to integrate technology within the curriculum rather than teach it in isolation (Mason et al., 2000). According to White (1999), a technology integration model in teacher education programs should have the following objectives:

- Provide experiences and expectations that help teachers develop professionally;
- Facilitate constructivism through modeling, applying, reflecting, involving students actively and developing a community of learners;
- Develop critical thinking and problem solving skills;
- Integrate transformative, non-traditional curriculum and instruction;
- Develop an awareness of available hardware and software for use in schools;
- Evaluate hardware and software available for use in schools;
- Apply packaged software during all preservice teacher education experiences;
- Apply emerging technologies, including multimedia and telecommunications, during all preservice teacher education experiences;
- Develop and apply lessons and units integrating technology.

A technology-learning environment enhances the potential of the preservice teacher to use and integrate technology (Milman & Heinecke, 2000). According to Halpin (1999), the integration of technology across the teacher education curriculum provides preservice teachers with an explanatory and discovery oriented environment enhancing their abilities to use different computer applications for instructional purpose. Halpin states that the use of technology facilitates a problem-solving environment, a tenet of constructivist theory, with the goal of motivating students to seek information and solve problems. Keiper, Harwood and Larson (2000) state that integration of technology-learning environment enhances social
studies instruction in K-12 classrooms and makes lessons exciting for the teacher and the students. According to Partee (1996), the integration of electronic communication in teacher education programs not only provided an alternate environment but also extended the boundaries of the traditional classroom. Electronic communication through email (Hall, 1993) and Newsgroups (Lempert, 1995) provided alternate communication for classroom participation and peer support during student teaching (Mason et al. 2001).

**Importance of the Research**

First, the growing interest in how technology is being used in schools and classrooms and the limited research on this contemporary topic, illustrate the importance of examining the impact of integrating information technology as teaching and learning tools on the attitudes and practices of preservice teachers.

Second, this study will add to the body of knowledge in preservice teacher education and information technology integration as a teaching and learning tool, especially in social studies methods courses. In addressing this area, it is this researcher’s goal to understand preservice teachers’ perception of the role of the instructor in integrating technology in teaching. It is also this researcher’s view that the findings will provide evidence as to whether preservice teachers, who are on the verge of becoming in-service teachers have a clear sense of what their future roles are in integrating technology in teaching. This researcher intends to use the findings in this area to support findings on the influences on preservice teachers’ self-efficacy toward technology integration as identified in the following categories: vicarious experience, enactive experience, verbal persuasion, and the affective state of the student towards information technology. These categories are addressed in detail in the literature review section of chapter two.
Third, the findings of this research may be prescriptive, in the context of developing a new constructivist model for integrating information technology as a teaching and learning tool in social studies teacher education methods courses. The findings of this study will enable the course professor to redefine, restructure, refine or maintain the model of technology integration in the methods course.

Fourth, this study could lay the foundation for longitudinal studies with research participants as they continue through their first year of teaching and initial licensure period as in-service social studies teachers.

**Research Sub-Questions**

Using the constant comparative method, the following sub-research questions were developed from the overarching question: What is the nature of technology integration in the social studies methods course and its impact on the practices of preservice teachers during the course and their practica experiences?

- Sub-research question #1: What is the nature of the constructivist integration of technology in the social studies methods course?
- Sub-research question #2: What is the impact of instructor’s modeling behavior on preservice teachers’ attitudes and practices toward information technology as teaching and learning tools?
- Sub-research question #3: What factors influenced preservice teachers’ attitude toward using information technology and computer as teaching and learning tools?
- Sub-research question #4: What factors promoted preservice teachers’ integration of technology during their practica experiences?
• Sub-research question #5: What factors hindered preservice teachers’ integration of technology during their practica experiences?

• Sub-research question #6: What is the impact of technology integration in the social studies methods course on the computer skill levels of preservice teachers?

**Technology as a Teaching and Learning Tool**

The information technologies used in this methods course as teaching and learning tools were the Internet, Electronic mail, Web Forum, WebCT, WebQuest and application tools such as word processing and PowerPoint presentations. A key component of technology integration focuses on the instructor’s ability to effectively model the use of technology in instruction, (Mason et. al., 2000). This research focused on the instructor’s use of web-based information tools and resources, such as course website, emails, electronic reflections, discussions and Internet searches to foster learning. According to Roblyer, Edwards and Havrluk (1997), there are three models to integrate web-based technology in as a teaching and learning tool:

- Interpersonal exchanges in which students’ communicate via technology with other students, teachers or experts.

- Information collection, which allows students to collect information, search and analyze information through the World Wide Web.

- Student-oriented cooperative problem-solving projects.

The most commonly used instructional tools for web-based teaching and learning are the Internet, emails and forums.
Internet

The Internet is the largest internet (with a small "i") in the world. It is a three level hierarchy composed of backbone networks (e.g. ARPAnet, NSFNet, MILNET), mid-level networks, and sub networks. These include commercial (.com or .co), university (.ac or .edu) and other research networks (.org, .net, .gov) and military (.mil) networks and span many different physical networks around the world with various protocols, chiefly the Internet Protocol (http://nightflights.com/foldoc-in/foldoc.cgi?query=Internet&action=Search). According to research, the Internet-- with its increasing capacity for multimedia, multimode communication and information presentation, easy access to an ever-growing body of information, new ways of data representation-- presents educators with exciting opportunities to enhance teaching and learning (WBEC, 2000; Zhao, 1998). According to Zhao, the creation of a technology-learning environment enables instructors to adopt, develop, manage, and share multimedia materials; initiate, conduct, and manage collaborative-learning projects; and observe, monitor, and report student performance. Zhao also states that, in a technology-learning environment students are encouraged to explore, experiment, experience independently as well as collaboratively with their peers, develop metacognitive skills and become goal-oriented, self-regulatory and independent learners. The use of the Internet and World Wide Web in teacher education and K-12 is discussed in depth in the literature review in chapter two.

Electronic Mail

According to Levin (1999), the use of email and other methods of telecommunication revolutionize the way teaching and learning are carried out in teacher education programs, enhance learning and foster collaboration between students and instructors and between
students. The use of email in teacher education programs and K-12 classrooms is discussed in depth in the literature review in chapter two.

**Forum**

According to Zhao (1998), a forum is learning environment designed to augment learning through collaboration, communication, and criticism. Zhao also states that the forum can be viewed as both a communication tool and a communal knowledge database. As a communication tool, it is used to share ideas and information, to formulate and incubate ideas, and to socialize with each other. As a communal knowledge database, all messages are considered entries that are categorized according to multiple criteria so that they can be retrieved and presented in a variety of ways. The designs of forums allow multilevel threaded communication; that is, one message can have many follow-up messages, which can have their own follow-up messages. The use of electronic reflection in teacher education program is discussed in depth in chapter two.

**WebCT as an Instructional Tool**

WebCT was the web-based system used to support information technology integration as a teaching and learning tool in this case study. WebCT is a web-based flexible, integrated teaching and learning tool designed to foster inquiry, encourage discourse and inspire collaboration between instructor and students, and students and students. In a WebCT case study of Sheridan College (2000), Sandra Hodder, Director of Advanced Learning Technologies, states that WebCT made an impact on the technology–rich delivery of courses at Sheridan College. She further states, “Students want to feel that they are getting an
enhanced educational experience, and WebCT is one of the ways we make that possible.”

WebCT Definitions

The following WebCT features were activated to guide the integration of technology instruction in the methods course. The features used were designed to foster inquiry, encourage discourse and inspire collaboration among preservice teachers:

- **Assignment tools** allowed instructor to create assignments and upload any word-processing files in a point and click web-based environment. The Instructor also had control over the assignment dates (date released to students, due date, etc.)

- **Assignments Tool (Students)** allowed preservice teachers to submit secure assignments in a point and click web-based environment.

- **Bulletin Board/Discussion Forum** allowed instructor to set up discussion forums. It also allowed students to participate in discussions asynchronously and post topics for discussion.

- **Chat Sessions** – WebCT had four course electronic-chat rooms and one general chat forum for the course (e.g. use for online office hours). There was also a general chat room for all courses, which is a room shared by everybody from all courses on the university WebCT server. Conversations in the four course rooms are recorded. The course instructor and researcher were the only persons in the course with access to the records.

- **Email** – There is an email structure built within the environment. Preservice teachers were registered to the email section of WebCT through the university’s registration process. Emails could only be sent from within the WebCT environment.
Communicating with Students within WebCT

WebCT has a built in email structure within the environment. Instructors can email the whole class or individual students in a point and click web-based environment. Instructor can select individual students that they wish to email. Instructors can email all of the students or just some of the students in a point and click environment. Instructors can also select the support staff (TAs, graders, etc.) that they wish to email within the email environment of WebCT.

http://lts.ncsu.edu/tools/webct_wolfware_webassign.html

WebQuest

According to Dodge (1997), a WebQuest is an inquiry-oriented activity in which some or all of the information that learners interact with comes from resources on the Internet, optionally supplemented with videoconferencing.

There are at least two levels of WebQuests:

Short Term WebQuest

Dodge (1997) states that the instructional goal of a short term WebQuest is knowledge acquisition and integration. A short-term WebQuest is designed to be completed in one to three class periods. The preservice teachers in this case study research designed a short term WebQuest as part of their class project for integration during their practica experiences.

Longer Term WebQuest

Dodge (1997) states that the instructional goal of a longer term WebQuest is to extend and refine knowledge. Dodge claims that after completing a longer term WebQuest, a learner would have analyzed a body of knowledge deeply, transformed it in some way, and
demonstrated an understanding of the material by creating something that others can respond to, on-line or off-line. A longer term WebQuest typically takes between one week and a month in a classroom setting.

**Critical Attributes of WebQuests**

Dodge states that WebQuests are deliberately designed to make the best use of a learner's time. To achieve that efficiency and clarity of purpose, Dodge states that WebQuests should contain at least the six distinct parts:

1. An introduction that sets the stage and provides some background information.
2. A task that is doable and interesting.
3. A set of information sources needed to complete the task. Many (though not necessarily all) of the resources are embedded in the WebQuest document itself as anchors pointing to information on the World Wide Web.
4. A description of the process the learners should go through in accomplishing the task. The process should be broken out into clearly described steps.
5. Some guidance on how to organize the information acquired. This can take the form of guiding questions, or directions to complete organizational frameworks such as timelines, concept maps, or cause-and-effect diagrams.
6. A conclusion that brings closure to the quest, reminds the learners about what they have learned, and perhaps encourages them to extend the experience into other domains.
**PowerPoint**

Microsoft PowerPoint is used to create interactive presentations containing text, art, animation, and audio and video elements. It is probably the best-known presentation graphics program available. PowerPoint's widespread availability is not the only reason for its popularity. In an interview with Education World (2000), LuAnn Kaiser, a teacher at Nebraska's Wausa Public School states,

I use it because I like technology and the choices it allows, with PowerPoint, you can animate words and graphics, add sound effects, include a QuickTime movie -- it's just awesome! PowerPoint captures the students' attention and helps keep them interested! The kids like it because it's so easy to use and because the ability to integrate graphics and text means there's always something new to learn and do. [http://www.education-world.com/a_tech/tech013.shtml#articles](http://www.education-world.com/a_tech/tech013.shtml#articles)

According to Linda Starr (2000) of “Education World”, PowerPoint works well in the classroom in a number of ways:

- Use to present information or instruction to an entire class.
- Create graphically enhanced information and instructions for the learning centers.
- Create tutorials, reviews, or quizzes for individual students.
- Display student work and curriculum materials or accompany teacher presentations at parent open houses or technology fairs. You can set PowerPoint presentations to run automatically during such events, providing a slide show of classroom activities and events as parents tour your classroom or school. [http://www.education-world.com/a_tech/tech013.shtml#articles](http://www.education-world.com/a_tech/tech013.shtml#articles)
Summary

One goal of every teacher education program in using technology as a teaching and learning tool is to provide preservice teachers with the technology skills and tools necessary to integrate in teaching. The constructivist approach to integrating technology when used effectively enhances preservice teachers technology skills, makes effective and efficient use of computer hardware, software and Internet capabilities and ensures that technology is integrated within the teacher education curriculum and not taught in isolation. The preservice teachers’ self-efficacy toward technology as a teaching and learning tool is crucial to the successful integration of technology during the preservice formative years and in their teaching in later years. Preservice teachers with negative attitudes toward technology-learning environments may resist or react slowly to the method of instruction, whereas those with positive attitudes may be receptive to new ideas and methods of instruction (NCES, 2000). The design and implementation of constructivist environments to integrate technology in teacher education programs may be a catalyst to influence the self-efficacy of preservice teachers towards information technology as a teaching and learning tool. The factors influencing an individual’s self-efficacy are discussed in depth in chapter two.

Chapter Two contains an in-depth discussion of the following topics:

- Technology in education;
- The theoretical framework of the research; Social Cognitive theory;
- Self-efficacy and technology integration;
- Constructivist theory of teaching;
- Social studies teacher education and constructivism;
- The constructivist model of technology integration used in this research;
• Social studies and technology integration;
• Factors that facilitate computer technology use;
• Barriers to teachers’ use of technology

Chapter Three contains a rationale for the research paradigm used in this study, the methodologies used, a description of the participants, procedures, data collection methods and methods of data analysis. Chapter Four contains a presentation of data analysis and results. The final chapter contains the summary of results, conclusions and recommendations for further study.
Chapter Two

Review of Literature

Introduction

The merging of technology and constructivism offers much hope for the future of social studies education. A constructivist orientation to teacher education is important if we are to encourage students in schools to develop problem solving skills and critical thinking skills, and to apply, analyze, synthesize, and evaluate knowledge, skills and attitudes. Preservice teachers should engage in these processes throughout the entire teacher education program if we have any hope for a constructivist approach in the schools.

(White, 1999, p.8)

Teachers who have had computer training are more likely to show positive attitudes toward computer use in the classroom.

(Dupagne and Krendl, 1992, p.423)

Technology in Education

Technology has invaded every facet of our lives: our homes, businesses, industries, science and education. The advancement of technology has redefined the role of the teacher (Brook and Brook, 1999), the role of the student in the learning process (Ledford, 2000), the use of textbooks, the use of databases (Martorella, 1997), how we address contemporary issues in education (Dawson et al., 2000), the use of chalkboards, the definition of a classroom (Harris, 2001), and the definition of schools and teaching styles (White, 1999). As software and hardware development continue to grow, the integration of technology as an instructional tool seems to be in a state of flux (WBEC, 2000). This disparity between technological development and integration of technology is a clear indication that educational systems are falling further and further behind in integrating technology as a teaching and learning tool (WBEC, 2000). According to Dupagne and Krendl (1992), “Teachers who have had computer training are more likely to show positive attitudes toward computer use in the classroom” (p.423). School systems are faced with the Herculean task of
training in-service teachers on integrating technology, with teacher education programs faced with the onus to ensure that preservice teachers are adequately prepared to integrate technology in their teaching (ISTE, 1999; White, 1999).

Theoretical Framework: Social Cognitive Theory

The social cognitive theory guided this case study research on the nature of technology integration in the social studies methods course and its impact on the practices of preservice teachers during the course and their practica experiences. Bandura’s (1986) social cognitive theory provides a useful framework for understanding the behavior of preservice teachers related to the acceptance or rejection of technology integration as a teaching and learning tool. The focus of the social cognitive theory in this research is on the Triadic Reciprocity Determinism (TRD) model with strong emphasis on the environmental influences. According to Bandura, human functioning is “neither driven by inner forces nor automatically shaped and controlled by external stimuli” (p. 18). But rather, based on a triadic reciprocity determinism in which behavior (B), cognitive and other personal factors (P) and environmental influences (E) all operate interactively as determinants of each other as espoused by the social cognitive theory outlined in Figure 2.1 (Triadic Reciprocal Determinism model). Bandura’s use of the word “determinism” denotes the fact that many factors in varying combinations create a given effect within the Triadic Reciprocity Determinism model. Bandura elaborates on this notion by making the claim that “because of the multiplicity of interacting influences, the same factor can be a part of different blends of conditions that have different effects” (p. 24). Therefore, reciprocity is not symmetric in the strength of the bi-directional influences in terms of behavior, personal and environmental influences, and the relative strength of the interacting factors vary for different activities.
The Integration of Technology as a Teaching and Learning Tool

Figure 2.1 - Triadic Reciprocal Determinism model

The Influence of Environmental Factors in TRD Model

The integration of technology as a teaching and learning tool is a powerful environmental factor that exerts powerful constraints on behavior and personal factors in the TRD model. According to Bandura (1986), “When environmental conditions exercise powerful constraints on behavior, they emerge as the overriding determinants” (p.24). The intertwine of social cognitive theory and constructivist teaching approach in the integration of information technology with preservice teachers, adds a dimension to the environmental influences (E), which creates conditions that exercise powerful constraints over behavior (B) (preservice teachers’ attitudes towards information technology), and cognitive and personal factors (P) as presented in figure 2.2.

Further breakdown of the TRD model with constructivist teaching approach of integrating technology as the environmental influence, suggests that when preservice teachers are placed in a non-self regulated environment, their attitudes and self-efficacy toward information technology are more likely to be positively influenced in a constructivist environment than in a traditional or direct teaching environment (Bandura, 1986).
Environmental influences are not limited to the physical structure of the learning environment (computer lab, access to the Internet, technical support etc.), but also defined as modes of teaching and the role of the instructor within the environment. The mode of teaching and the role of the instructor -- as defined within constructivist teaching approach -- are the focus of the environmental influences in this case study research.

When environmental constraints are weak, personal factors serve as the predominant influence in the Triadic Reciprocity Determinism model, (Bandura, 1982). This statement gives credence to the theoretical framework of this research, which focuses on the environmental factor in the TRD model exercising constraint on the personal and cognitive factors. The personal dominance in TRD model, if negative, is one factor associated with the lack of technology integration in teaching and learning. Bandura believes that the activation and maintenance of defensive behavior -- as is the case of techno-phobia-- is an example in which cognition exerts the foremost influence on the triadic reciprocity of determinants. In illuminating this view, Bandura states that false beliefs activate avoidance that keeps the individual out of touch with reality, which creates a strong reciprocal interaction between beliefs and actions protected from corrective environmental influence. The dominance of
environment in the Triadic Reciprocity Determinism model minimizes false beliefs, which prevents individuals from keeping in touch with reality.

Since the environment in this research is not self-regulated, false beliefs of preservice teachers toward information technology, if any, override the fact that the use of technology in teacher education programs is a state mandate and a national norm that preservice teachers are aware of, and have implicitly accepted it by enrolling in the program. In addition, by making the choice to teach, enroll and continue in the teacher education program, the preservice teachers have accepted the State’s mandate and the teacher education program’s “beliefs” over their beliefs, that technology is a significant teaching and learning tool. Finally, the research participants in this study are in the final stage of their teacher education program, getting ready for their teaching practica, during which they have to demonstrate competence in using technology in their instruction. Therefore, they should be receptive to technology integration in preparation for their teaching career.

Based on the preceding arguments, state mandates and the teacher education programs requirements overshadow the beliefs of preservice teachers toward information technology as a teaching and learning tool. Therefore, the constraints placed by the environment (constructivist teaching approach) on the personal and cognitive influences of preservice teachers within the triadic reciprocity determinism model are significant for integrating technology with preservice teachers in this case study. A by-product of such nullification is a shift in perception from the beliefs of preservice teachers toward information technology to the self-efficacy of preservice teachers toward information technology. This shift also defines the relevant categories within the triadic reciprocity determinants of the theoretical framework of this study. Constructivist teaching approach is
the focus within the environmental influence and self-efficacy is the focus within the personal and cognitive influence as shown in Figure 2.3. Therefore, in this theoretical framework, the most significant influence on preservice teachers’ self-efficacy toward information technology and technology is the constraint produced by environmental determinant, constructivist integration of technology, technology integration and instructor’s modeling behaviors. The term self-efficacy in this context assumes that preservice teachers in this research hold preconceived notions about their abilities (self-efficacy) towards information technology prior to this research.

![Figure 2.3. - TRD model with Self-Efficacy as Personal and Cognitive (P), Constructivist teaching approach of integrating technology as Environmental (E) and Preservice teachers’ attitude towards information technology as Behavior (B)](image)

The use of the social cognitive theory as the theoretical framework for this case study research leads to the following inevitable question, which this research seeks to provide some answers to – what is the impact of the constructivist teaching approach (environmental influence) of integrating technology on the self-efficacy of preservice teachers towards information technology and computer? It is this researcher’s view that a social cognitive theoretical framework with emphasis on the triadic reciprocity determinism model that
focused on the constructivist environmental influence as the primary determinant would significantly impact the self-efficacy of preservice teachers toward information technology.

**Self-Efficacy**

Self-efficacy is the personal and cognitive determinant in the Triadic Reciprocity Determinism model within the social cognitive theoretical framework of this case study research. According to Woodrow (1991), preservice teachers’ self-efficacy in computer usage is critical to implementing a computer course and computer-based curricula. Self-efficacy is a relatively new theory with a brief history that began with Bandura's (1977) publication of *Self-Efficacy: Toward a Unifying Theory of Behavioral Change*. The tenets of self-efficacy have since been tested in varied disciplines and settings and have received support from a growing body of findings from diverse fields. For example, self-efficacy has been the focus of studies on technology integration in teacher education programs (Albion, 1999) and clinical problems such as phobias (Bandura, 1983). Studies show that perceived self-efficacy with computer is a critical predictor for use of computer technology (George and Camarata, 1996; Hill, Smith, & Mann, 1987; Milbrath and Kinze, 2000).

Bandura (1977), defines self-efficacy as an

> Individual’s confidence in his/her ability to perform the behavior required to produce specific outcomes and is thought to directly impact the choice to engage in a task, as well as the effort that will be expended and the persistence that will be exhibited (p. 747).

Schunk (1984) defined perceived self-efficacy as “personal judgments of one’s capability to organize and implement actions in specific situations that may contain novel, unpredictable, and possible stressful features” (p.48). According to the theory of self-efficacy espoused by Bandura (1977), there is a tendency for individuals to avoid threatening
situations they believe exceed their coping skill and participate confidently in activities which they judge themselves capable of handling. Individuals’ perceived self-efficacy also impact their choice of activity setting and coping efforts once activities begin. Self-efficacy expectations also determine how long individuals persist in the face of obstacles and negative experiences and how much effort they expend to achieve the goal. The strength of an individual’s efficacy toward a concept also predicts behavior change. The stronger an individual’s perceived efficacy to an activity the more likely the individual will persists in their efforts to succeed (Bandura 1977; Zhang & Espinoza, 1998).

**Self-Efficacy and Technology Integration**

According to Albion (1999), positive attitudes and efficacy are important factors in helping teachers learn about computers and new technologies. Albion states that the ideal method for developing preservice teachers’ computer use is to provide them with training and support designed to align technology with their lesson plans. Positive self-efficacy encourages individuals to learn new skills, whereas negative self-efficacy creates resistance in learning new skills within systems. In a study of 296 undergraduate students’ self-efficacy in technology and computer use, Zhang & Espinoza (1998) concluded that students’ attitudes toward computers affected their confidence levels of computer technologies. Zhang and Espinoza also stated that students’ desirability for learning computing skills was predictable through their self-recognition of the usefulness of computers and their perceptions of advanced levels of computer technologies. According to Milbrath and Kinze (2000), increased performance with computer related tasks significantly relates to higher levels of computer self-efficacy. Teachers with high self-efficacy to computer technology are more likely to integrate it in teaching than teachers with low self-efficacy.
Influences on Perceived Self-Efficacy

Bandura (1986) identifies four major influences on an individual’s self-efficacy to any concept. These influences are enactive experience, vicarious experience, verbal persuasion and the affective state of the individual. Changes in preservice teachers’ self-efficacy toward technology can be a product of enactive experience, verbal persuasion from a methods course instructor or capable peers, vicarious experiences or a result of changes in the affective state of the preservice teacher or a combination of all the influences.

Enactive Experience and Technology Integration

Bandura (1986) defines enactive experience as prior experience with a concept or theme. Self-efficacy towards a behavior or activity increases significantly by successfully performing the behavior (Bandura, 1986). Studies show that the most significant predictor of self-efficacy for computer use among preservice teachers and in-service teachers was frequency of use (Albion, 1999; Atkins and Vasu, 2000; Beyerbach, Walsh and Vannatta, 2001). Albion states that enactive experiences and corresponding increases in self-efficacy was achieved through successful experience with computer integration in student teaching. In a study of 222 preservice teachers, Kellenberger (1996) determined that teachers’ computer self-efficacy towards computer was a product of past computer experiences and teachers’ perception of the importance of computer in the instructional presentation during the teacher training process. Hill, Smith & Mann (1987) state that previous experience with computers is related to the belief in efficacy with respect to computer use but is not the sole factor in making the decision to use computers in instruction. According to Bodzin (1999), change in perceived efficacy toward computer integration coupled with computer experience led to higher technology adoption for instruction by preservice science and mathematics education.
teachers. In a study of 155 in-service teachers on computer integration through staff development, Vasu and Atkins (2000), emphasize the importance of enactive experience that “if a technology program is to succeed…there must be ample opportunities for teachers to be trained in technology integration…. and adequate access for teachers both at school and at home” (p. 296). The enactive experience with information technology is significant in the integration of technology with preservice teachers because most students in colleges today have had some exposure to computer at some stages of their education development, at home or in school. What does enactive experience mean for technology integration for preservice teachers at teacher education programs? It means that

- Methods teachers do not have to consistently teach the fundamentals of computers. Some preservice teachers have knowledge of application tools, instructional tools and knowledge on how to use the Internet.
- It is time saving- Instructors save time by not having to teach computer fundamental, but use time wisely to teach preservice teachers how to integrate technology and transform their technology skills into instructional tools.

In discussing the concept of enactive experience, a pertinent question that one needs to answer is: What is the relationship between enactive experience and integration of technology as teaching and learning tool? Hoter (2000) succinctly answers this question that knowledge about computers and technology does not guarantee that teachers will integrate technology in a course of study. In addition, without the proper training teachers would not integrate technology appropriately. Dawson (2000) claims, “uncritical acceptance of inappropriate uses of technology in teaching can be just as detrimental as failure to employ appropriate uses”(p. 590). Therefore, teachers need training to integrate technology appropriately. According to Keiper, Harwood and Larson (2000),
If teachers are going to perceive that the benefits of using the computer outweigh the obstacles, they need to understand how to lead a classroom with it, assist students as they use it, and have evidence that it will work with students (p. 577).

**Vicarious Experience and Technology Integration**

Vicarious experience is the exposure to a concept or theme through incidental learning (Bandura, 1986). In a study of self-efficacy and technology integration with preservice teachers, Albion (1999) states that real experiences in using technology is more effective than vicarious experiences in making the determination to integrate technology in instruction. However, Bodzin (1999) states that vicarious experiences of preservice teachers to technology increased their desire to want to learn more about technology and decreased their fear of the unknown factor. Bodzin states that as the fear and anxiety decreased and positive experiences increased self-efficacy and willingness to cope with mastering the technology increased.

The use of vicarious experience as the sole influence may not positively influence self-efficacy towards technology. According to Albion (1999), vicarious experience limited preservice teachers’ ability to effectively perform perceived task when the task is not supported by enactive experience. Albion concludes that encouraging preservice teachers to design web pages, use asynchronous tools and use the Internet is more effective at increasing their self-efficacy belief in technology use and in turn increase the likelihood of use in their instruction. In Craig and Omorieg’s (2000) study of technology integration and practices of 146 college of education junior and senior students at Jackson State University, students identified VCRs, word processing, software demonstration, Internet searches outside the classroom, and a few PowerPoint presentations as the most commonly vicariously experienced technologies in the teacher education program.
Verbal Persuasion and Technology Integration

Verbal persuasions by instructors or capable peers encourage efforts from preservice teachers that are more likely to increase their self-efficacy (Albion, 1999). In teacher education programs, instructors are more likely to use verbal persuasion in combination with enactive experiences to increase preservice teachers self-efficacy toward technology (Albion, 1999). According to Albion (2000), despite the levels of opportunity and encouragement provided, there continues to be concern about both the frequency and success with which teachers employ information technology in their classrooms. Therefore, the use of verbal persuasion by itself is not a significant influence on preservice teachers’ self-efficacy to integrate technology in their instruction. Verbal persuasion has to be intertwined with the other influences for it to be effective in influencing preservice teachers’ self-efficacy toward technology integration in instruction.

Affective States and Technology Integration

Teachers’ attitudes toward computers affect their willingness to use technology in their classroom instruction (Levine & Donista-Schmidt, 1998). Studies on teachers’ attitudes toward computer use and integration show both negative and positive findings (Cummings, 1998; NCES, 2000). In a survey of 33 K-5 teachers’ use of technology, Cummings reported that only 25% of teachers indicated that they would like to use computers in instruction; however, 66% stated that they used computer technology to some degree in instruction. According to Ropp (1999), teachers’ strong desire to use computer technology in instruction overshadowed their limited knowledge and low confidence in technological capabilities. In a study of 110 preservice teachers, Wang and Holthanus (1997) reported that preservice teachers with positive dispositions toward computer technology used it in instruction. The
study also reported that 43% of preservice teachers strongly agreed and 62% agreed that teaching effectiveness increased with computer integration.

Knowledge of preservice teachers’ perception of technology integration is key in developing an integration model. This is very significant since most preservice teachers have had enactive or vicarious experiences with technology at high school, other courses, at home or in the community. According to Bronack et al., (1999), an understanding of teachers’ perceptions of a web-based learning environment provided an insight into effective development and successful implementation of such an environment in teacher preparation process.

On the other hand, a technology-learning environment can adversely affect an individual’s self-efficacy. According to Ropp (1999), increased exposure to computer technology led to increased anxiety about using computers in the classroom and increased teacher’s phobia for technology. Keiper, Harwood and Larson (2000) state that, for preservice teachers to use computer technology in instruction, they must consider it logistically and manageably feasible.

**Theory of Constructivist Teaching Approach**

Educators today debate the most appropriate instructional role of technology in the classroom, particularly information technology. As the goals of education continue to evolve to reflect the new social, educational and technological needs, teaching strategies and strategies for integrating technology as a teaching and learning tool also change (Halpin, 1999). It is the view of this researcher that a constructivist teaching approach of technology integration would meet the educational challenges posed by technology.
In the social cognitive theory with emphasis on the TRD model used as the theoretical framework of this research, constructivism is the environmental determinant, (see figure 2.3). Constructivist teaching approach provides a useful framework for understanding the integration of technology as a teaching and learning tool with preservice teachers in a social studies methods course, (White, 1999). The constructivist teaching approach of instruction is based on principles of learning that were derived from branches of cognitive science. Constructivist teaching approach strategies in teaching and learning attempt to account for and remedy perceived deficiencies in behaviorist and information processing theories as presented in traditional teaching methods (Roblyer, Edwards and Harvluk, 1997). The goal of the constructivist teaching approach relating to technology integration is to inspire students to see the relevance of what they learn and be active participants in knowledge construction. The constructivist teaching approach is based on ideas developed by educational philosophers, such as John Dewey, and renowned educational psychologists, such as Lev Vygotsky, Jerome Bruner, and Jean Piaget, and educational technology visionaries, such as, Seymour Papert.

**John Dewey and Constructivist Teaching Approach**

Dewey’s educational philosophy supports the constructivist teaching approach. John Dewey (1910) espoused the constructivist view that children come to school with prior knowledge. Second, Dewey also believed that instruction should center on activities that are relevant and meaningful to the student’s own experiences and prior knowledge.

**Lev Vygotsky and Constructivist Teaching Approach**

Another major contributor to the constructivist teaching approach was Lev Vygotsky. Vygotsky (1978) developed the constructivist twin concepts of scaffolding and zone of
proximal development (ZPD). Vygotsky believed that instruction should help students
develop their level of understanding and bridge the gap between a teacher’s supervised work
and independent work through scaffolding. The main tenet of scaffolding is the assistance
provided by the expert problem solver (teacher) to students. Vygotsky defined the Zone of
Proximal Development (ZPD) as “The distance between the actual development level as
determined by independent problem solving and the level of potential development as
determined through problem solving under adult guidance or in collaboration with more
capable peers” (p. 86).

**Jean Piaget and Constructivist Teaching Approach**

Jean Piaget was also a major contributor to the development of the constructivist
teaching approach. Piaget’s contribution to the constructivist teaching approach is that he
espoused the view that, as children go through their stages of developments, much of what
children need to learn cannot and should not be consciously taught. Piaget believed that
knowledge should emerge as the natural by-product of their experiences.

**Jerome Bruner and Constructivist Teaching Approach**

Jerome Bruner (1973), like Piaget, believed children go through various stages of
intellectual development. Unlike Piaget, Bruner supported intervention during learning.
Bruner was primarily concerned with making education more relevant to students’ needs at
each stage of their intellectual development. Bruner believed that teachers would accomplish
this by encouraging active participation in the learning process. Active participation, he
believed, could best be achieved through providing discovery-learning environments that let
students explore alternatives and recognize relationships between ideas.
Seymour Papert and Constructivist Teaching Approach

Seymour Papert (1980) believed that education should provide a rich motivational environment to stimulate cognitive growth and felt that the use of computers provides such environments. Papert’s role in the constructivist model of instruction was directly related to the use of technology in education. Papert echoed Piaget’s view that the most important learning was learning without being taught. Papert, in reflecting on the use of technology as a teaching and learning tool, posited “The internal intelligibility of the computer world offers children the opportunity to carry out projects of greater complexity than is usually possible in the physical world” (p. 118).

Constructivist Teaching Approach Versus Traditional Model of Instruction

To more fully understand the relevance of utilizing the constructivist teaching approach for integrating technology in teaching and learning, one needs to compare and contrast constructivist teaching approach with the traditional model of instruction. According to Roblyer, Edwards and Havrluk (1997), there are four major differences between the constructivist teaching approach and the traditional model of instruction:

1. In the constructivist teaching approach, the focus is on learning through problem solving, developing products and presentations. In the traditional model of instruction, the focus is on teaching sequences of skills beginning with lower level skills and building to higher-level skills.

2. In the constructivist teaching approach, the goals are global with emphasis on generalizability related to problem solving and research skill. In the traditional model of instruction, the skill objectives with relevant test items to match are clearly stated.

3. In the constructivist teaching approach, the emphasis is on group work rather than individualized work. The traditional model emphasizes individual work rather than group work.
4. In the constructivist teaching approach, the emphasis is on alternative learning and assessment methods, such as exploration of open-ended questions and scenarios, research, product development, assessment by student portfolio, performance checklist, presentations and tests with open-ended questions. The traditional model of instruction emphasizes teaching and assessment methods: lectures, skill worksheets, activities and test with specific expected responses.

**Social Studies, Teacher Education and Constructivist Teaching Approach**

The constructivist teaching approach is widely used to integrate technology in teaching and learning. At all levels of education, especially in teacher education programs, there is a shift in the learning paradigm from the traditional style of instruction and learning to students constructing knowledge (Barr and Tagg, 1995; Milman & Heinecke, 2000). According to Ewing et al., (1998), the goal in using the constructivist teaching approach to integrating technology in teaching and learning is to let the learner determine how to integrate technology rather than technology determining the route the learner takes. In a study of eight higher education faculty members, eight K-12 teachers and 122 preservice teachers on facilitating a constructivist vision of technology integration among education faculty and preservice teachers, Vannatta and Beyerbach (2000) state that constructivist integration of technology led to the following findings:

1. Significant increase in technology integration reported by participating higher education faculty and K-12 teachers.
2. Significant increase in instructional methods, overall proficiency with different technologies (word processing, e-mail, and Internet) with the exception of LCD panel uses.
3. Overall increased technology proficiency among preservice teachers.
The constructivist teaching approach makes effective use of students’ prior knowledge and cognitive structures based on those experiences, (Asan, 2000; Vygotsky, 1978). According to Asan, these preconceived structures [prior knowledge] are valid, invalid or incomplete and students reformulate their existing structures only if new information or experiences are connected to knowledge already in memory. To integrate new ideas in learning, students must draw inferences, elaborations and relationships between old perceptions and new ideas (Asan, 2000; Dewey, 1910; Vygotsky, 1978).

Technology is a major component of the constructivist teaching approach in teaching and learning social studies (White, 1999). White states that instructors should practice constructivism by getting their students to construct knowledge. White succinctly presents the case for using the constructivist teaching approach to integrate technology in social studies teacher education programs in the following passage:

The merging of technology and constructivism offers much hope for the future of social studies education. A constructivist orientation to teacher education is important if we are to encourage students in schools to develop problem solving skills and critical thinking skills, and to apply, analyze, synthesize, and evaluate knowledge, skills and attitudes. Preservice teachers should engage in these processes throughout the entire teacher education program if we have any hope for a constructivist approach in the schools. It is important to note that teacher education doesn’t stop with the granting of a degree or license. Schools and universities must make a concerted effort to improve their relationships to facilitate lifelong teacher education. Technology integration could and should assist with this endeavor (p. 8).

The Constructivist Teaching Approach

In the constructivist teaching approach of integrating technology, the instructor plays a vital role in the integration process (Vannatta & Beyerbach, 2000). They state that the instructor must model technology and connect it to the course content, objectives and assignments. This aspect of the constructivist model provides preservice teachers with the
vicarious experiences preservice teachers need to influence their self-efficacy to technology integration. This vicarious experience provided by instructor supports Piaget and Bruner’s view that not all learning is consciously taught.

**The STARS Project Constructivist Model**

The STARS project constructivist model developed by Ewing et al., (1998) is the model used to code data in this case study research. Ewing et al., (1998) proposed six guidelines for applying the constructivist approach to learning in a technologically oriented atmosphere:

**Learning Should be Context Based**
- Learning involves making sense of the real life environment
- Learned experiences should be contextualized in authentic activities
- Learning is through making links with existing knowledge in the context of real life experience
- The content of a learning context should be meaningful and have already established links with the learner’s past experience.

**Conceptual Learning is Through Active Involvement**
- Learners derive understandings and interpretations of the task in hand by active participation in it
- Knowledge is constructed and reconstructed personally and internal to the learner
- Knowledge grows from reconceptualizing based on personal (and therefore unique) background experience
- Learning involves creating personal meaning and understanding
- The experience with an idea becomes part of its meaning

**Learning is Through Collaboration With Others**
- Learning involves sharing existing knowledge with others and a willingness to resolve misunderstandings
- Sharing means engaging in interaction with others regarding shared knowledge and new knowledge
- The learner’s ideas and notions are available to others for comment, suggestion and argument
- Enhanced understanding of reality is the outcome of shared construction
- Learning involves negotiation with peers and teachers in reaching learning outcomes

Learner should have Personal Autonomy and Control Over Learning
- Learning involves a significant proportion of personal decision making
- Learning requires learners to derive and develop their own learning strategies and sometimes their own goals
- Learning event should help learners to develop skills to construct their own plans for problem solving
- The mediation of the teacher depends on the needs and skills of the learners

Learning is Personal Growth
- Learning is thinking within the task to reach shared understandings
- Effective learning requires a personal assessment or reflection on progress
- Ideas and concepts should become more refined through argument if it leads to reflection

Learning Outcome is a Perspective and an Understanding
- Specific content and learning outcomes should not be prespecified
- Learning outcomes in terms of meaningful and personal construction of knowledge are unique to the learner
- There have to be opportunities for multiple perspectives and learned outcomes within a learning task
- A multiplicity of sources of information should allow differing approaches to knowledge acquisition and understanding
- Boundaries of relevance to resources for problem solving should not be imposed.
Social Studies and Constructivist Teaching Approach

In a study of the integration of technology using the constructivist teaching approach in the teaching of history, Milman and Heinecke (2000) state that “If more social science courses involved meaningful uses of technology, more preservice teacher education students would learn how to reconceptualize disciplinary content and utilize technology to effectively teach content” (p. 563). Using effective models of technology integration with preservice teachers in their teacher education courses better prepares them to integrate technology in their future classrooms (Milman & Heinecke, 2000). Constructivists argue that good instruction involves providing activities and an environment that supports students’ efforts to construct increasingly complex and sophisticated understandings (Niederhauser et al., 1999; Papert, 1980). According to Rice et al., (1999), the use of technology in the classroom supported by the constructivist theory provides the impetus for the needed change in contemporary social studies classrooms. Rice et al., state that the integration of technology supports many facets of constructivist teaching approach; using collaboration for problem solving, enabling the construction of knowledge by students, having the learning occur in meaningful contexts and relating learning to student’s experiences.

The use of the constructivist teaching approach in integrating technology in teaching and learning in teacher education programs shifts the attention from the instructor to the student, (Brooks and Brooks, 1999; Collins, 1991; Mason, Berson, Diem et al., 2000). The instructor then assumes the role of a guide and coach as students construct learning (Milman & Heinecke, 2000; Vygotsky, 1978). Milman and Heinecke also state that the use of technology in teacher education courses promotes collaboration. Instead of having students work individually to produce term papers, students’ work in groups to find, collect, and
analyze data. The constructivist teaching approach makes effective use of qualitative assessments rather than quantitative ones, such as student portfolios with examples of students’ works and products, narratives written by teachers assessing students’ strengths and weaknesses and performance-based assessment (Brooks & Brooks, 1999; Roblyer et al., 1997). Reflection is an essential component of the constructivist teaching approach to integration in teacher education programs. As students construct learning and work with technology, self-assessment is key to the process. According to White (1999), technology supports individual or group reflections favorably during in-class instruction or during student teaching.

**Social Studies and Technology**

The advent of the Internet, online classes, on-line journals, e-mails, virtual fieldtrips (Beal, 2001), electronic forums, electronic access to databases across the world (Alibrandi, 2003), smart boards, hypermedia, and multimedia authoring tools has given new meaning to teaching and learning social studies (Berson et al., 2001; Mason, Berson, Diem et al., 2000; Merryfield, 2000). Technology is everywhere in our society, and schools are expected to use technology in educating students. If teachers are to use technology in teaching and learning, not only should resources be available for them to use but they should also be trained to integrate technology in teaching (Mason, Alibrandi, Berson et al., 2000). The latter seems to be one of the main problems with technology integration in education today; teachers are not adequately prepared to use technology in teaching (WBEC, 2000). According to the NCES (2000), a statistical report on teachers’ use of technology shows that, approximately half of the public school teachers who had computers or the Internet available in their schools used them for classroom instruction. 61% of teachers surveyed assigned students to use these
technologies for word processing or creating spreadsheets most frequently. 51% of teachers surveyed used Internet research, 50% used practicing drills and solving problems, and 50% used technology to analyze data. The report also shows that many teachers used computers or the Internet to conduct a number of preparatory and administrative tasks (e.g., creating instructional materials, gathering information for planning lessons) and communicative (e.g., communication with colleagues) tasks.

Teachers’ preparation and training to integrate education technology in instruction is a key factor to consider when examining their use of computers and the Internet for instructional purposes (NCES, 2000). Diem (2000) states that the slow implementation of technology in teaching can be traced to teacher education programs. Reports and publications show that many universities and colleges do not effectively integrate technology in their teacher education programs or utilize their technological resources to its full capability (Education Week “Technology Counts,” 1998, 1999; NCATE, 1997; NCATE 2000; WBEC 2000). In a study of technology integration and practices of 146 college of education junior and senior students at Jackson State University, Craig and Omorogie (2000) state that, on a scale of 1-5, --one being the lowest and five the highest-- most students rate their ability to use technology in instruction and their professor’s ability to use technology in the lowest levels of the scale, mainly 1-2.

Integration of technology in teaching and learning social studies fosters a constructivist-learning environment. According to Halpin (1999), the integration of technology across the curriculum provides preservice teachers with an explanatory and discovery-oriented environment that enhanced their abilities to use different computer applications for instructional purposes. Halpin also stated that the use of technology created a
problem-solving environment, as those espoused by proponents of constructivism (Dewey, 1910; Papert, 1980; Vygotsky 1978).

In reviewing the state of technology integration with preservice social studies teachers, Lee (2000) states that

Since pre-service social studies students are expected to learn content by using information technologies, these technologies should be accounted for when researching the development of pedagogical content knowledge. While the role of the information technologies does not need to be the primary focus of an inquiry into development of pedagogical content knowledge, not considering or ignoring it would be unrealistic. The recognition of the place of information technology in the development of pre-service students' pedagogical content knowledge is practical and realistic (p. 1998).

Lee (2000) also states that social studies methods courses play an important role in developing pedagogical content knowledge about how to teach using digital historical documents. In a study of 19 preservice social studies teachers in a social studies methods course, Lee concludes that students struggled to transform subject matter knowledge into pedagogical content knowledge using digital historical resources. Lee states that this problem could be resolved by providing social studies preservice students with time and resources necessary to develop their pedagogical content knowledge using digital historical resources. Ledford (2000) suggests that preservice teachers plan and develop social studies units of instruction that include exploration of primary resources, comparison of cultures with international pen pals, and virtual field trips to locations far from their classrooms to enhance instruction through technology. In a study of 89 preservice elementary social studies teachers’ level of technology integration in the students’ development of a social studies unit of instruction, Ledford (2000) states that all students identified using the Internet for resources to enhance instruction. In addition, all students indicated using word processing, as
all assignments were required to be word-processed. E-mail also received high utilization as a means of communication with instructors.

Integrating computer technology into the curriculum just for the sake of using technology is counterproductive to instructional goals and may be detrimental to preservice teachers (Mason, Alibrandi, Berson et al., 2000). The research on the constructivist model of integrating technology claims that systematic integration of technology provides maximum benefits to the instruction and to the students receiving the instruction. According to Wang & Holthanus (1997), computer technology is effective when integrated within the curriculum courses rather than taught in isolation. Overbaugh and Reed (1992) report that introducing computer technology in an introductory course or a content-specific course results in preservice teachers’ increased computer competency, confidence in using the technology and decreased anxiety in using computer technology in teaching.

According to Mason, Berson, Diem et al., (2000),

When preservice teachers enter the classroom, they will rely heavily on teaching strategies and methods acquired while in their teacher preparation courses. Therefore, if teachers are to use technology in the classroom, it is important that they receive appropriate technological training in methods and other education courses. Appropriate training focuses on integrating various types of technology to make lessons better, rather than learning technology simply to acquire technological skills (p. 109-110).

In the light of the preceding statement, Mason, Berson, Diem et al., (2000) outline five guiding principles for using technology to prepare preservice social studies teachers:

1. Extend learning beyond what could be done without technology:

   The introduction of technology in the methods course should enhance learning. According to Mason, Berson, Diem et al., teacher education programs should introduce technology in an environment in which skills and content are taught more actively and
meaningfully. They suggest that one way to achieve this is to get students to use digital archives to enrich their lesson plans. Use of digital archives teaches preservice teachers how to access, manipulate and interpret electronic raw materials from the past. They also argue that use of digital archives by course instructors to engage students in historical inquiry allows preservice social studies teachers to experience learning beyond what could be done without technology.

2. Introduce technology in context

According to Mason, Berson, Diem *et al.*, (2000), the goal of introducing technology is not to make preservice teachers proficient at using technology but to make their instruction better than it would be without using it. Mason, Berson, Diem *et al.*, argue that social studies faculty should encourage preservice teachers to develop digital history archives to enhance teaching and learning. This concept of encouraging preservice teachers to use technology aligns with Bandura’s (1982) verbal persuasion theory as an influence on self-efficacy. Though the most significant influence of change on self-efficacy in using technology is enactive experience, verbal persuasion plays a significant role in a methods course in that not all technologies are experienced within the timeframe of the course.

3. Include opportunities for students to study relationships among science, technology, and society.

Mason, Berson, Diem *et al.*, (2000) state that preservice teachers should be given the opportunity to study the pros and cons of using technology with children. The study should include but not limited to accessing inappropriate sites, studying the effects of technology on learning, studying the global effects of technology, engaging students in online behaviors, studying the effects of the digital divide on children and development of pro-social behaviors to interact online.
4. Foster the development of the skills, knowledge, and participation as good citizens in democratic society:

Mason, Berson, Diem et al., (2000) argue that because of the interactive nature of the Internet, the social studies classroom has the potential to revitalize the traditional notions of citizenship education. The research shows that many social studies teachers rarely utilize tools such as the Internet as part of educating future citizens, (Berson, 1996; WBEC, 2000). According to Mason, Berson, Diem et al., (2000) use of the Internet allows teachers to

- Effectively examine the power of the Internet as an instructional tool. Through such examination, teachers are able to develop an understanding of the responsibilities and consequences for which they must prepare their students when navigating, participating and interacting with others on the web.
- Use the Internet as an avenue to opportunities for students to engage in social and public action discourse.
- Develop local, national and international perspectives to activities and events.
- Increase awareness of the past, present and future.

5. Contribute to the research and evaluation of social studies and technology:

As teacher education programs integrate technology in teaching of social studies, faculty should continue to evaluate the influence of technology on teaching and learning and seek to provide exemplary models for the infusion of technology within social studies methods courses. The integration of a variety of technological methods in the teaching of social studies has a greater potential and promise in enhancing social studies subject matter than in any other subject area (Dawson et al., 2000). Dawson et al., elaborate on the potential of technology integration in teaching and learning of social studies in the following passage:

Technology enables social studies teachers and students to access real-time data, manipulate and present statistics in various formats, critique primary sources, develop
global learning communities, participate in social and historic simulations, analyze situations (p. 590).

The use of technology to enhance social studies instruction in K-12 makes lessons exciting for both teacher and the students (Keiper, Harwood and Larson, 2000). In a study of 58 preservice teachers in elementary and secondary social studies method classes, Keiper, Harwood and Larson identify five benefits of using computer technology in the classroom:

1. Data collection: Preservice teachers use computer as an aid to collect information for instruction, such as lesson plans, databases and resources for teaching about particular content.
2. Student computer skills: In using computer technology, students learn technology related skills geared towards gainful employment, such as keyboarding skills, problem solving, awareness of software programs and increased confidence in using computers.
3. Dynamic sound and images: Computer technology adds excitement to the class through the use of dynamic sounds and images, such as, video clips, sound files, photographs, maps, graphics and graphs.
4. Instructional Variety: The use of computer technology provides teachers with the tool to instruct students through multiple modes of instruction that is sounds, text, animations and images.
5. Communication tool: The use of computer technology provides teachers with opportunities to use the Internet for e-mail, chat rooms, threaded electronic discussions and class Listserv in their instruction. It also allows students and teachers to participate in collaborative activities such as, “Key Pals” communication activities.

Another benefit of integrating the use of computer in education is that modeling the use of computer technology by course instructor in teacher education courses influences the adoption of computer technology use in instruction in later years by preservice teachers (Sunal et al., 1998).
Information Technology and Social Studies

Internet and Social Studies

Due to the vast amount of information available on the Internet, effective use of the Internet’s World Wide Web (WWW) is an effective avenue to integrate technology in teaching and learning social studies. According to Berson et al., (2001), for the constantly changing subject area of social studies, the World Wide Web offers a vast array of learning opportunities. Berson et al., identify the following as the more notable WWW learning opportunities in social studies:

- Using the WWW as a research tool;
- Promoting active learning;
- Developing critical-thinking and problem-solving skills;
- Enhancing cooperative and teamwork skills;
- Obtaining primary documents and facsimile artifacts;
- Establishing e-pal correspondence exchanges;
- Telecommunicating and Teleconferencing;
- Providing visuals for topics and places studied;
- and facilitating teacher preparation (through, e.g., background research, pedagogical strategies, and lesson plans) (pp.13 –14).

According to research in social studies education, the most significant new issue impacting the construction of knowledge among pre-service social studies students relates to the use of digital historical resources on the World Wide Web (Ayers; 1999; Lee, 2000; Martin, Smart, & Yoemans, 1997). Ayers states that the application of the World Wide Web led to dramatic changes in the way historical content is stored, retrieved, and used by teachers and students. Lee shares this view that the advent of the World Wide Web has revolutionized the way history is taught to pre-service social studies teachers. Lee also states that Web-based digital historical resources are now part of pre-service social studies teachers' experiences in learning history and learning how to teach history. Martorella (1997) believes that one way to the “sleeping giant” (technology) in social studies is using online databases. However, Martorella cautions that there are a number of issues surrounding database use,
including those relating to access, verification, and prerequisite search skills that need to be addressed, discussed and researched before this claim can be substantiated.

For preservice teachers to integrate Internet technology in their instruction, it is imperative that they experience it as part of their teacher education program (Hattler, 1999). In a study of 191 grades 7-12 social studies teachers’ use of the Internet/WWW in their teaching, VanFossen (1999) states that few teachers in the study used this medium for much more than information gathering. According to VanFossen, teachers who were more comfortable using the Internet in learning used it in their teaching. VanFossen also states that unless professional development in this area focuses more on development of meaningful social studies teaching and curriculum, the Internet/WWW will continue to be under-utilized in social studies classrooms. Research on technology integration in social studies informs us that Internet integration in social studies teaching and learning is like a two-way street (White, 1999). Students and teachers should be both consumers and producers of Internet resources (Mason, Berson, Diem et al., 2000). Long, Dennison and Reehm (1996) state that it is imperative that teachers not only know how to search for online information but also know how to contribute to the body of knowledge available on the Internet through accessing, analyzing and designing web materials.

As outlined in the research on self-efficacy, an individual’s perceived efficacy determines the level of participation and persistence to succeed in performing the task (Bandura, 1982). In a study of the correlation between teachers’ attitude and the acceptance of technology, Pelton and Pelton (1996) conclude that

Although many teachers believe computers are an important component of a student's education, their lack of knowledge and experience lead to a lack of confidence to attempt to introduce them into their instruction. This lack of confidence then leads to anxiety and reluctance to use technology (p. 167).
Sunal et al., (1998) suggest that in using Internet with preservice teachers modeling by instructor is important. Sunal et al., also state that preservice teachers who have opportunities to work through sample lessons or projects make effective use of the Internet.

**Multimedia and Social Studies**

The use of multimedia in instruction provides instructors with an environment in which the instructor becomes an influential mediator and facilitator by working with other mediators in the room, namely, students and technology (Toomey & Ketterer, 1995). According to Smithey & Hough (1999), teacher education programs have the responsibility to instruct preservice teachers on designing multimedia units in a supported environment to enhance learning. Bagui (1998) believes that the use of multimedia in instruction aids learning because it parallels the natural way people learn, based on the information processing theory, which is the ability to use multi-senses in processing information. According to Farmer (1995), a multimedia environment is motivating to students because it deviates from the mundane workbooks and texts with which students are familiar. In a study of 21 preservice teachers to investigate two primary types of Internet connectivity -- (Graphical-User-Interface (GUI) or the use of Microsoft Windows or Netscape type browser tools)-- and their level of use, Robin et al., (1998) reported that the group which received the GUI tools spent more time and had a more positive attitude toward technology.

**Web-based Learning Environment and Social Studies**

Web-based learning environments enhanced technology skills of preservice teachers. In a study of in-service and pre-service teachers’ perceptions of a web-based, case-based learning environment, Bronack et al., (1999) stated that teachers who participated indicated
that they plan to directly apply the technology in their instruction. Web-based reflection provides a variety of ways to support teaching and learning; from providing field support, collaboration and peer support, making supervisors accessible to preservice teachers to claims that it decreased preservice teacher isolation, (Johnson, 1997). Some of the problems encountered by pre-service teachers in the field are those associated with the roles of the supervisor, his or her responsibilities and the nature and forms of communication across the supervisory triad. According to Carter (1999), use of electronic communication minimized problems across the supervisory triad.

Another use of electronic communication during preservice teacher training is developing and promoting students’ reflective practice. Carter (1999) suggests that information captured electronically can be treated as evidence on which to reflect about professional practice and may be used to guide and inform further practices in raising student performance. Carter supports the viewpoint that when new technologies, such as, electronic reflections are appropriately integrated to support student teaching experiences, teaching and learning are enriched in the following ways:

1. It enriches the teaching and learning experiences of teacher and supervisors.
2. Students are able to evaluate and learn from their own mistakes and from the mistakes of other students.
3. New technologies substantially assisted both in improving the effectiveness of practicum supervision and in developing the quality of an emerging self-critical awareness on the part of preservice teachers and their supervisors.
4. There is increased collaboration amongst preservice teachers and supervisors.
Asynchronous Web-Based Activity - Email and Social Studies

E-mail is widely used in higher education to foster communication between instructors and students, inter-faculty exchange and inter-student exchange (Gilbert, 1996; Huff, 1994; Levin, 1999). According to Gilbert, use of email in courses was the single driving force for integrating information technology into teaching and learning. In a study of using email and listserv as a communication tool among a group of college students, Bruning (1995) stated that the peer to peer and student to faculty relationships strengthened. Bruning also stated that students felt comfortable discussing the negative aspects of the course electronically and that E-mail also facilitated their in-class discussions.

In a survey of first year teachers, Merseth’s (1991) states that teachers used email mainly to keep in touch with their peer group for peer support. Schlagal, Trathen and Blanton (1996) suggest that the structure and expectations of email requirements in a course, structured and unstructured, focused and unfocused, and whether adequate time was allocated, influenced the content level of reflection in email exchanges between faculty and students and among the students themselves. In a study of preservice teachers, Souviney et al., (1995) states that email was more effective for communicating over voice mail, print messages, and even face-to-face conversations. Casey (1997) states that the use of email during student teaching provided a feeling of rapport and support from the university supervisors, access to supervisor, team support and received positive support through email messages.

Advantages of E-mail in Instruction

The use of email in instruction has its advantages and disadvantages. Huff (1994) identifies the following advantages of using email in instruction:
• Because of its asynchronous nature, email allows recipients to access information at their own time and pace.
• It equalizes the group dynamics because every member of the group receives the same information.
• It allows the sender to transmit information to multiple recipients.
• It facilitates remote collaboration amongst students.

In a study of using email as part of a Psychology and Information Technology course, Smith et al., (1999) identify other advantages of using email in instruction:

• The delivery and opening (reading) of emailed course material is recorded electronically.
• The submission of coursework transmits directly to instructor with delivery and reading recorded.
• Coursework entailed the use of little or no paper.
• Once prepared, course materials is delivered in seconds, reused in subsequent years and amended as needed.

Benefits of Using Email in Instruction

Besides the advantages of using email in instruction, there are many benefits to the students. Smith et al., (1999) outline the following benefits students got from using email:

• Students were able to work within their own timeframe
• Students were able to work at their own pace
• Students received course materials well in advance of their scheduled use.
• All course materials were stored for future use.
• Students had access to the instructor throughout the day.
• Delivery, non-delivery, and opening course materials were recorded for later use.
• Email provides rapid and secured feedback from peers and instructors.
Disadvantages of using Email in Instruction

The use of email in instruction is not without disadvantages. Smith et al., (1999) identify the following disadvantages in using email in instruction:

- The participants should be willing and able to operate the software
- Most of the information is text based; therefore, it may not be appealing or motivating to some students.
- The use of email led to the loss of non-verbal communication between students and instructors.

Forums and Electronic Journals and Social Studies

The use of electronic journals promotes and encourages reflection during the process of learning to teach, (Ammon & Levin, 1993). According to Levin (1999), the level of reflection in the journal varies with the individual’s ability for reflection, time spent in the program and the focus of the teacher education program. Electronic forums and discussion tools are becoming popular and effective teaching and learning tools to extend classroom discussions and reflections beyond the traditional classroom. Merryfield (2000) believes that threaded discussion is one of the most promising electronic technologies for teacher education in social studies and global education. In a content analysis of 222 preservice teachers’ data on threaded discussions, Merryfield states that preservice teachers preferred threaded discussion over oral class discussion. Merryfield also states that during electronic discussions, preservice teachers are more inclined to discuss matters that they may considered sensitive than they would if they were face to face with the same group of people.

The development of emerging technologies in the arena of reflection, such as email, the Internet and blank data databases (forums), provides a medium for effective reflective practices (White, 1999). In discussing emerging reflective technologies, White states that
technology links between the university and the schools for sharing and reflection should be the goal of every teacher education program. White also states that effective reflection requires daily, or at least weekly, activity in teacher education programs. The use of electronic communication in teacher education programs not only provides an alternate environment but also extends the boundaries of the traditional classroom (Partee, 1996). In a study of preservice teachers, Johnson (1997) concluded that preservice teachers use electronic discussion mainly to develop collaboration and idea sharing skills. Web-based learning environments provide a valued opportunity to engage pre-service teachers in professional behaviors (Bodzin, 1999; Hsiang, 1999).

In a study of integrating Listserv in the instruction of students, Wu (1997) states that students’ writing process changed from private and isolated activities to collaborative and interactive ones. In a study of 47 undergraduate social studies preservice teachers’ participation in an asynchronous web-based activity, Mason and Berson (2000) state that:

1. Initially, students were apprehensive but highly motivated to use the web-based discussion group to engage in dialogue with peers at a remote location.
2. Students found asynchronous web-based discussion meaningful to interact with peers in remote locations.
3. Students used the web-based discussion to engage in reflective dialogue.
4. Students’ confidence in using technology for professional growth increased.
5. Participation in the web-based discussion enriched the students’ understanding of social studies teaching and learning.

**Advantages of using Asynchronous Discussion**

Merryfield (2000) outlines some of the positives and negatives of using asynchronous discussions with preservice social studies teachers. The positives of asynchronous discussions as outlined by Merryfield are as follows:
1. Students expressed convenience of responding to threaded discussions at their own
time and pace.
2. Students who were not active in the class participations were leaders in the online
discussions.
3. Students stated that they were more frank and bold in discussing issues they would
normally tone down if discussing them face to face with someone.
4. Students whose first language is not English stated that they had enough time to
compose and understand the discussions better than they would have in a seminar
discussion.

In a study of integrating Listserv in an 8-week staff and faculty development seminar
at Fairmont State College, Burke (1994) identified the following advantages of using Listserv
in instruction:

- The ability to teach large groups of people.
- The ability to reach all students simultaneously regardless of distance.
- Easier communication between instructor and students
- Increased flexibility resulting from the elimination of time constraints.

The use of electronic reflective practice holds great promises for effective teaching
practice, (Johnson, 1997). Johnson outlines some guidelines to integrate electronic
communication effectively in teaching and learning:

1. All students participate in the activity.
2. Instructors participate in the process to encourage students to participate.
3. Instructors play the role of participants rather than moderators and participate
without passing judgment.

Johnson (1997) concluded that integration and use of electronic tools not only
provided alternative opportunities for class discussion, development of peer collaboration
and idea sharing skills but also had positive effects on the attitudes of students toward
technology. Johnson identified the following positive effects on preservice teachers’ attitudes
after using electronic communication in a course:
1. Self-directed discussions by the students created an environment for active participation.
2. Preservice teachers began to rely on each other for support and guidance.
3. Preservice teachers shared ideas with classmates in order to help them develop their professional knowledge about teaching. The sense of relevancy of topic contributed significantly to active participation.
4. Preservice teachers felt comfortable in participating in ways that they would not in the classroom.
5. Preservice teachers developed trust and confidence in each other. Students felt that others were candid and frank on issues discussed.
6. Preservice teachers used high-level reflection skills to integrate new information to expand their knowledge.

Disadvantages of Using Asynchronous Discussions

The integration of electronic communication with preservice teachers is not without disadvantages. Johnson (1997) identifies some obstacles to effective integration of electronic communication during student teaching and provided some solutions to the problems:

1. The amount of time spent did not reflect the 5% of the grades assigned for it. For the integration and use of electronic communication to be meaningful to preservice teachers, the instructor should allocate appropriate credits for this section.
2. The use of electronic communication generates large amount of information. To require students to read all mail and respond was time consuming. Therefore, students need to select by subject heading which messages are most relevant to them.
3. Regular access to computers: During student teaching experience, preservice teachers had difficulty getting access regularly to computers to review and respond to mails. Students experienced some frustration with servers being down and were unable to read and respond to mails in a timely manner.
4. Some students stated that the online activities feel more like a game and that it prevented interpersonal relationships between students, and students and instructor.

**Factors that Facilitate Computer Technology Use**

Research on teachers and school systems that reported high use of technology shows that adequate hardware and software and well-trained teachers are vital ingredients for successful integration (Becker, 1999). In a nationwide study of teachers, Becker states that 90% of teachers who had access to the Internet rate the World Wide Web and e-mail as essential teaching tools. Trained, competent and confident teachers are also vital to successful integration of computer technology in instruction. According to Mason, Berson, Diem et al., (2000), the development of trained, competent and confident teachers in technology integration starts during preservice training and continues throughout a teacher’s instructional career. Overbaugh and Reed (1992) report that introducing computer technology in an introductory course or a content-specific course results in preservice teachers’ increased computer competency, confidence and decreased anxiety in using computer technology in teaching. According to Mason, Berson, Diem et al., instructors modeling the use of computer technology in teacher education courses influences the adoption of computer technology use in instruction in later years by preservice teachers.

For technology to have an impact on pedagogical competence and increase content knowledge in social studies teacher education programs, methods instructors must be the driving force for integration. Instructors can exert direct influence on preservice teachers’ self-efficacy by providing opportunities for enactive and vicarious experiences and through verbal persuasion (Mason, Berson, Diem et al., 2000). In defining the characteristics of an
exemplary computer-using teacher, Becker (1994) states that one defining trait is that exemplary computer using teachers had more formal training using and teaching with computer. This further strengthens the point that teacher education programs need to train teachers to integration computer technology as a teaching and learning tool.

The school’s technological climate is also vital to computer integration. A school climate that is conducive to technology includes administrative support, peer support and students who expect to see computers in use and use them (Marcinkiewicz, 1996). A climate conducive to computer technology integration includes providing professional staff development opportunities with release time for skill building and instructional preparation (Bradley & Russell, 1997). According to Bradley & Russell, teachers who work in a school, which is supportive in computer technology use, demonstrated lower anxiety and higher levels of competence than teachers in a non-supportive school did. Diem (2000) states that technical support plays a critical role as to whether teachers use technology in their instruction.

**Barriers to Teachers’ Use of Technology**

There are several reasons why teachers do not use computer technology in instruction. In the Fast Response Survey System (FRSS) of 2,019 full-time teachers in regular public, middle and high schools in the 50 states and the District of Columbia, conducted through the NCES (1999), teachers identified the following as significant barriers to use of computers and the Internet for instruction:

- 82% identified lack of release time for teachers to learn/practice /plan ways to use computer or the Internet.
- 80% identified lack of time in schedule for students to use computers in class.
- 78% identified not enough computers.
• 71% identified lack of good instructional software.
• 68% identified lack of support regarding ways to integrate telecommunications into the curriculum.
• 67% identified inadequate training opportunities.
• 66% identified outdated, incompatible, or unreliable computers.
• 64% identified lack of technical support or advice.
• 59% identified concerns about student access to inappropriate materials.
• 58% identified Internet access is not easily accessible.
• 43% identified lack of administrative support.

The NCES (1999) research supports the findings of other researches on the barriers to teachers’ use of technology in social studies. Wang & Holthanus (1997) identified lack of hardware and software resources as an automatic barrier to integration. Teachers also cited the lack of adequate training or support in computer use as additional barriers. Keiper, Harwood and Larson (2000), identified lack of time to find resources, prepare teaching material and participate in training programs as barriers to effective integration of technology in teaching. Generally, teachers who perceived lacking computers and time for students to use computers as great barriers were less likely than those who did not perceive these conditions as barriers to assign students to use computers or the Internet for some instructional activities. Hannafin & Savenye (1993) state that teachers who used traditional methods of teaching created a self-imposed barrier to integrating technology in teaching and learning.

Technology integration with preservice teachers requires trained, competent and confident faculty to model technology use, teach preservice teachers how to integrate technology in teaching and motivate preservice teachers to use it (Vannatta & Beyerbach, 2000). They state that lack of higher education faculty trained in the use of technology in
teaching is a challenge to technology infusion in teacher education. In a study of eight higher education faculty members, eight K-12 teachers and 122 preservice teachers on facilitating a constructivist vision of technology integration among education faculty and preservice teachers, Vannatta and Beyerbach state that higher faculty training was a crucial component to developing technology savvy using preservice teachers.

Preservice teachers’ lack of skill to implement a program, ability to monitor effectiveness of integration, ability to assess student’s computer capabilities and provide remedial computer instructions are major barriers to integration of computer technology as a pedagogical tool (Keiper, Harwood and Larson, 2000). In a study of 58 preservice teachers in elementary and secondary social studies method courses, Keiper, Harwood and Larson identify four obstacles to using computer technology in the classroom:

1. Accessibility: Preservice teachers reported that lack of access to computer technology limited their use of computer technology in instruction. Some of the issues raised by preservice teachers were number of computers, age of hardware and software, or Internet connection.

2. Differing Ability Levels: Preservice teachers reported that there was a wide range of student and teacher ability with regard to computer skill levels. There were situations in which preservice teachers felt intimidated by the students’ computer skills and did not want to feel inadequate or lacking, therefore did not use technology. In addition, the report indicates that preservice teachers had difficulty dealing with the logistics of managing a group of students with varying computer ability levels.

3. Dependability: Preservice teachers also reported that the fear of equipment failure was an obstacle to using computer technology, such as the Internet going down in the midst of teaching.

4. Supervision of students: The preservice students reported that part of their focus during a lesson using the Internet was diverted by constant monitoring of students from navigating inappropriate web sites.
Summary

Despite the perceived problems of using technology as a teaching and learning tool, technology continues to be an integral part of the educational system, and teachers are expected to use it in their instructions. If teachers are to use technology in teaching, then they should know how to use it. Therefore, teacher education programs have to adequately prepare teachers to use technology as a teaching and learning tool.

For the subject area of social studies, technology provides a variety of teaching styles and learning opportunities for both teachers and students Berson et al., (2001). According to Dawson et al., (2000), the potential benefits of using technology in social studies is greater than in any other subject area. White (1999) concluded that the merging of technology and constructivism holds a great potential for the future of social studies education. Mere integration and training of how to use technology in teacher education programs as a teaching and learning tool do not guarantee future use. One factor that ties in with future use is self-efficacy towards technology. The research states that teachers with positive attitudes towards technology use technology in teaching (Vannatta & Beyerbach, 2001). If preservice teachers do not have a positive attitude towards technology, the onus rests on the teacher education program to instill that positive attitude in preservice teachers through adequate training. It is this researcher’s view that the constructivist approach to integrating technology in the preservice social studies course not only teaches integration but also instills a positive attitude toward technology.

The research on integrating technology in the teaching of social studies does not present a contrary view to technology integration or to integrating technology using the constructivist teaching approach. The body of literature is in favor of using technology as a
supplementary teaching and learning tool to aid in the teaching of social studies. In addition, current researches are proposing using the constructivist teaching approach to integrate technology in social studies teaching and learning (Mason, Berson, Diem et al., 2000; Rice, 1999; White, 1999). However, the social studies field as it relates to integrating technology using the constructivist model seems to be in an embryonic stage, yet to test the proposed models presented as guidelines for a constructivist integration of technology (Mason, Berson, Diem et al., 2000). This research contributes to this area. In addition, the research on integrating technology in preservice social studies course does not clearly illuminate the relationship between preservice teachers’ prior technology knowledge and integrating technology as a teaching and learning tool in a methods course. This researcher supports Hoter’s (2000) claim that knowledge about technology and proficiency in use of technology application tools and how to use the Internet does not directly translate to effective integration. However, prior knowledge of applications saves time in the methods courses and allows instructor to focus on integration rather than teaching applications.

Finally, it is important to remember that the goal of integrating technology in instruction is not to make teachers and students proficient users and designers of different technology but to make teaching and learning better than it would have been without technology, (Mason, Berson, Diem et al., 2000). It is this researcher’s view that this goal is attainable through a defined constructivist integration model. This research contributes to the literature in this area.
Chapter Three

Methodology

This section describes the research design used in conducting this study. A rationale for the methodologies used, a description of the participants, procedures, and data collection methods are presented and expanded upon under the appropriate sections.

Research Design Overview

This research is case study of technology integration in a social studies methods course and its impact on the practices of preservice teachers during their practica experiences undertaken within the assumptions of the postpositivist paradigm. The ontological perspective in using the postpositivist paradigm in this study was to maximize the chances of apprehending the reality of technology integration in the social studies methods course and its impact on preservice teachers during their practica experiences as closely as possible, (Hatch, 2002). The epistemological perspective for using the postpositivist paradigm in this case study, subscribes to Hatch’s viewpoint that

Researchers in this paradigm see themselves as data collection instruments, and they use disciplined research techniques such as “constant comparison” (Glaser & Strauss, 1967) or “analytic induction” (Robinson, 1951) to ensure that empirical data, and not their impressions, drive their findings (p.14).

The epistemological perspective of this case study focused on participant observations, interviews, document analysis and the use of the constant comparative method.

The methodological perspective of using the postpositivist paradigm included the use of descriptive statistics to support the case study approach used in this study. In discussing this methodological perspective within the postpositivist paradigm, Hatch states, “frequency counts and low-level statistics are sometimes used” (p.15) to support the postpositivist
paradigm. In this case study research on the integration of technology in a social studies methods course and its impact on the practices of preservice teachers during their practica experiences, descriptive statistics was used to enrich the case study data.

**Rationale for Research Design**

The use of the case study approach with descriptive statistics to enrich this study of the nature of technology integration in the social studies methods course and its impact on preservice teachers’ practices during the course and their practica experiences, supports the postpositivist paradigm used in this study. In addition, the use of the case study approach and descriptive statistics component to enrich the case study in this study provided depth to the study of the nature of technology integration in the social studies methods course that would not have been attained by using just the case study approach. This research studied the integration of technology in the methods course, with focus on the constructivist approach used in the course. The constructivist model used to code the data on the constructivist integration in the social studies methods course was the proposed constructivist model developed by Ewing *et al.* (1998) for the STARS project.

The descriptive statistical aspect of this study identified whether there were noteworthy changes in preservice teachers’ technology behavior and perceptions of technology integration from pre-course to post-course as result of the method of technology integration. Since the number of participants was relatively small, seven students, the case study data provided the rich in-depth information to support the descriptive statistical findings of the study. The descriptive statistical component provided pre-course data prior to the integration of technology in the course and post-course data at the end of the course. This descriptive statistical data defined the boundaries for the qualitative case study, that is, the
beginning and the end of the study. The descriptive statistical data results analyzed in conjunction with the case study data using the constant comparative method yielded categories and themes that would not have been identified using the case study approach only.

**Case Study Research**

In this research, I employed the use of a case study approach with a descriptive statistical design component that enriched the case study of the nature of technology integration in the social studies methods course and its impact on the practices of preservice teachers during their practica experiences. The case study approach used in this research included participant observations, researcher’s field notes, document analysis and interviews as data sources. The descriptive statistics, utilizing the percentile mean, enriched the case study research by providing data on preservice teachers’ pre-course and post-course computer skill levels, attitudes toward information technology and attitudes toward computer. The aim of the case study was an understanding of the nature of technology integration as a teaching and learning tool in the social studies methods course and its impact on the technological practices of preservice teachers during their practica experiences. Internet searches, e-mail, electronic forum, online chat, Web Quest, PowerPoint, Course website and students projects were the types of information technologies integrated as teaching and learning tools, modeled by the course instructor, and practiced by preservice teachers in the social studies methods course and during their practica experiences.

Hatch (2002) in supporting the definition of a case study stated by Yin (1994) and Merriam (1998) reiterated “that case studies are a special kind of qualitative work that investigates a contextualized contemporary (as opposed to historical) phenomenon with
specified boundaries” (p.30). According to Hatch, both Yin and Merriam advocate postpositivist approaches to case study research. In this case study of technology integration in the social studies methods course, the specified boundaries of the case study were the beginning and end of the course and the “contextualized contemporary phenomenon” studied was the nature of technology integration in the social studies methods course and its impact on the practices of preservice teachers during their practica experiences.

Other definitions of case study support the case study approach used in this study. Bogdan and Biklen (1998) define case study “as a detailed examination of one setting, or a single subject, a single depository of documents, or particular event” (p. 54). Stake (1995) defines case study as “the study of the particularity and complexity of a single case, coming to understand its activity within important circumstances” (p. xi). Stake also identifies three types of case study designs; intrinsic, instrumental and collective case studies.

In an intrinsic case study, the goal is to learn about a particular case and not to use the study to learn about other cases. In an instrumental case study, the goal is to learn about a general theme, issue or question by learning it through a particular case. According to Stake (1995), in the instrumental case study, each case is instrumental to learning about the effects of research questions and each individual study provides an important coordination to the overall research topic in question. In a collective case study, several cases are studied to understand the coordination between the individual cases. This study was an intrinsic case study to understand the nature of technology integration in the social studies methods course and its impact on the practices of preservice teachers during their practica experiences.
Description of Study

Participants

The participants were seven preservice teachers, enrolled in Secondary School Social Studies Methods Course at a major Research I land grant university in the Southeastern region in the Fall semester of 2002 and the course instructor. Participants have successfully passed the Pre-Professional Skills Test (PPST) test and finished all course content requirements in English, Social Studies and History.

The course was purposefully selected because it met three criteria:

1. A class of preservice secondary school social studies teacher in a methods course, who will also be conducting their teaching practice during the same semester.
2. The university has the technology resources and support system in place to integrate technology as a teaching and learning tool.
3. Course instructor integrated technology in the methods course.

The use of purposeful selection of this class provided this researcher with the opportunity to study the nature of technology integration in a social studies methods course and its impact on preservice teachers during their teaching practice in a technology-rich environment from which rich descriptions were collected, coded and analyzed (Stake, 1995).

Course Participants’ Demographics

Due to confidentiality assurance made to the instructor and students, their real names were not used in this research, except for one student, who insisted that her real name be used because it sounds like a pseudonym. The participants are represented by the following pseudonyms they selected themselves, Lita, Zeus, Lewis, Scott, Zhora, Athena, and B.J. Some preservice teachers based their pseudonyms on the topics they taught as part of their
teaching practice during the semester and others selected names that they could easily remember if they have the opportunity to read the final research study. Two preservice teachers, who taught Greek and Roman cultures selected “Zeus” and “Athena” and a preservice teacher, who taught about the Lewis and Clark expedition, selected “Lewis.”

The research participants were seven white preservice teachers between the ages of 21-25 years, except for the graduate student, who was 31 years old. Six preservice teachers were seniors and one was a graduate pursuing certification in social studies. There were three females and four males in the class. The technology skills of the preservice teachers prior to this course varied, one preservice teacher had taken a technology related course and six had never taken a technology related course. However, all preservice teachers had been in at least one course in which technology was integrated. The preservice teachers’ self-rating of their computer skill levels prior to the course were as follows: three novices (beginners), two intermediate users and two advanced users. All preservice teachers have had experiences using the Internet, email and word processing application tools prior to this course in their everyday activities of life.

Instructor

Throughout this research, the course professor would be referred to as the instructor. The instructor has been teaching this course for six years at this university. Prior to technology integration with this class of preservice teachers, the instructor integrated technology in the previous two classes. In a pre-course meeting with the instructor, she indicated to this researcher that she subscribes to the constructivist approach of integrating technology in teaching and in particular in her social studies methods course. She was a co-author of “Waking the sleeping giant: social studies teacher educators collaborate to integrate
technology into methods courses”, a presentation at the 2001 international conference of the Society for Information Technology and Teacher Education (SITE). In this paper, the use of the constructivist approach to integrate technology in the social studies methods course was discussed. The instructor highlighted collaboration, relating technology to the context of social studies, having students take control of their learning, relating integration of technology to the prior experiences of the students, group activities, alternate assessments of students performance and effectively modeling the technologies presented to the students as some of her approaches to utilizing the constructivist approach in her teaching. Using the constant comparative method, the process of data collection started with this meeting because it set the tone for studying the nature of her constructivist integration of technology in this case study. Therefore, as part of my data collection process and an understanding of how the instructor integrated technology in the social studies course, this researcher collected data on the constructivist approach used by instructor in the course. The instructor’s constructivist approach to technology integration in the social studies methods course was coded using the Ewing et al. (1998) proposed constructivist model (see Appendix I).

**Design of the Methods Course (Syllabus)**

The details of the social studies course was outlined in the social studies methods course syllabus (see Appendix O). The methods course ran the length of the Fall 2002 semester, 16 weeks. During the first eight weeks, preservice teachers spent Mondays and Tuesdays observing, working and developing a rapport with their cooperating teacher and students on a full school day schedule to co-plan and implement curriculum, and identify classes and appropriate units that they prepared for their practica. Preservice teachers also assisted their cooperating teachers with preparation of teaching units, instruction, and grading
of student work. On Wednesdays and Thursdays, they attended the “Theory, Methods and Materials” component sessions from 3:40 P.M. to 5:40 PM with the instructor. On Fridays, they attended the social studies computer lab session from 3:40 PM to 5:40 PM, dedicated to technology integration in the teaching of social studies.

WebCT was used as the electronic instructional web tool for the course. Preservice teachers were automatically registered to the course WebCT folder through the university registration process. Access to the WebCT site required students’ school identification number and password, which are assigned to all students registered at the university. In addition to weekly access to the WebCT site through the scheduled computer lab sessions, preservice teachers had access to the WebCT course site from other location within the vicinity of the university. Preservice teachers had access to computers within the School of Education labs and library, and through the main university library. Also, the WebCT course site was accessed from any computer connected to the Internet from any location outside the university. In addition to the use of WebCT, the course instructor used traditional email to communicate with students. The university also provided students with traditional email addresses, which are different from the email system used within WebCT. The WebCT emails were only accessed through the WebCT course website, whereas the traditional emails were accessed using an email software.

During the second eight weeks of the semester from Monday to Friday, the preservice teachers did their student teaching practica on a full school day schedule. They met on Wednesdays at the university from 3:40 –5:40 PM for lectures and also to reflect on their teaching experiences and problem-solve with colleagues and the instructor. This researcher found the Wednesday sessions very beneficial to the data collection on technology
integration during their practica experiences. During this period, preservice teachers also had access to the WebCT forum, email and online chat tools to share ideas and reflect on their teaching. Instructor also scheduled experienced teachers and field supervisors, as guest speakers during the weekly reflection sessions to help preservice teachers better understand the rudiments of teaching.

Data Collection

Data Sources

According to Hatch (2002), postpositivist researchers are instruments of data collection in close relationships with informants in order to have access to data they require. In this case study, this researcher worked closely with the course instructor and attended all the scheduled technology lab sessions and several class sessions that were not related to technology integration in social studies. This was done to develop a close relationship with the preservice teachers. Data for the case study were collected from four major sources:

1. Class/Computer lab sessions observations
2. Course syllabus and course web page analysis
3. Student assignments, presentations and technology portfolio analysis
4. Informal conversations and Interviews.

Computer Lab / Classroom observations

This researcher observed 15 Wednesday sessions, four Thursday sessions and audio recorded eight computer lab sessions. During the first eight weeks, the first 30 minutes of the Wednesday sessions were used as debriefing sessions of their observations and experiences with their cooperating teachers on Monday and Tuesday of each week. During those discussions, preservice teachers discussed and reflected on a wide array of issues, including
the integration of technology. Therefore, this researcher felt the need to attend all the
Wednesday sessions to collect relevant data to support the case study. The Thursday sessions
were mainly geared toward the content area of social studies. However, there were some
Thursdays in which technology issues were discussed based on the agenda set at the end of
the Wednesday class and also as outlined in the course syllabus. Therefore, this researcher
attended four of those sessions. For the Thursday sessions that this researcher did not attend,
an agreement was reached with the instructor to save copies of all handouts distributed by
instructor or students. Those handouts were handed over to this researcher the next day
(Friday) and were coded and analyzed as part of the data for this case study.

During the second eight weeks, the preservice teachers did their teaching practice on
a full day schedule but met with the instructor every Wednesday for lectures, reflections and
problem-solving activities, which included issues with technology integration. The first part
of the class session was dedicated to discussion of their field experiences and the rest for
content discussions. This researcher also took field notes during all lab and class sessions
attended. In addition, this researcher observed all students’ class presentations in class, which
was comprised of a two-week unit plan for their first two weeks of teaching. The tapes from
the computer lab sessions were transcribed and coded to study the nature of technology
integration in the methods course. As part of the course observations, this researcher
observed, documented, coded and analyzed the instructor’s modeling behavior of technology.
A total of 31 class sessions were scheduled during this semester, including the eight
computer lab sessions. This researcher attended 27 of the 31 class sessions (See Appendix
O).
**Course syllabus and web page**

The course syllabus (see appendix O) and course web page were coded and analyzed to determine the nature of technology integration in the social studies methods course. The course website, which was designed within WebCT had the following folders developed for use with preservice teachers: The course syllabus, student assignment folder, students’ grade folder, Internet resource page, online chat room, forum discussion folder, students’ web page folder and email component. Data analyses of the course syllabus and course web site are addressed in Chapter Four. The WebCT website and the data saved on the WebCT site were also coded and analyzed using the constant comparative method. The categories and themes developed were used to answer the sub-questions developed for this case study.

**Student Assignments, Presentations and Technology Products**

This researcher coded and analyzed preservice teachers’ course assignments relating to technology, technology portfolio presentations, reflections on technology and final technology portfolio to understand the nature of technology integration in the social studies methods course and its impact on the practices of preservice teachers. At the end of the course, after the instructor reviewed and signed the portfolios, they were handed to this researcher for coding and analysis to determine the impact of technology integration on the practices of preservice teachers.

**Interviews**

The case study also utilized informal interviews and formal interviews as part of the data collection process. According to Hatch (2002), the postpositivist paradigm with which this case study is aligned with as a methodology “might be inclined to use informal interview opportunities to verify their hypothetical categories after some extensive observations or to
generate data for triangulation.” (p. 93). Preservice teachers were informed at the beginning of the course that their informal conversations with this researcher were part of the data collection process. Informal conversations mostly took place prior to the start of class or after class. Issues discussed mainly related to the technical aspects of using an application tool and problems they encountered in using technology or clarifying questions relating to technological concepts presented by the instructor. Using the constant comparative method, this researcher was able to develop a sub-question from the informal conversations with preservice teachers. The sub-question that was developed related to problems preservice teachers encountered in integrating technology during their practica experiences. The discussions from informal conversations also formed part of this researcher’s field notes.

During the last week of the semester, this researcher interviewed each participant about the nature of technology integration as learning and teaching tool in the social studies methods course and on their integration of technology during their practica experiences (see Appendix E). The interview questions were guided by categories developed through the use of the constant comparative method throughout the case study. In addition, the formal interview process was used to collect and triangulate data collected through the constant comparative method. The interviews were conducted outside the scheduled class times and on the preservice teachers’ own time. The preservice teachers were not compensated for their time. This researcher made it clear to preservice teachers before they volunteered their participation that there would be no compensation for their participation in the study. A week before the scheduled interview, the preservice teachers were given an interview guide in the form of the major questions (see appendix E). This was done to ensure that preservice teachers prepare and provide detailed accounts of their experiences with technology.
integration in the social studies methods course and during their practica experiences. However, clarifying questions were asked during the interview. The interviews were audio recorded, transcribed, coded and analyzed by this researcher to understand the nature of technology integration in the social studies methods course and its impact on the practices of preservice teachers during the course and their practica experiences. Categories and themes were identified using the constant comparative method. Also, the proposed constructivist model developed by Ewing et al. (1998) was used to code the interviews to determine what components of the model were present in the integration of technology in the social studies methods course (see Appendix F). The interviews ranged from 20 – 45 minutes.

Table 3.1

Sample of Coding and Analysis Using the STARS Project, (Ewing et al, 1998) Constructivist Model

<table>
<thead>
<tr>
<th>Categories of Constructivist Model – Ewing et al. (1998)</th>
<th>Technology Integration in the Methods course</th>
</tr>
</thead>
<tbody>
<tr>
<td>Learning should be context based</td>
<td>Note – Analysis of coded information relating to each component was addressed in this section in the analysis of data section of this research.</td>
</tr>
<tr>
<td>- Learning involves making sense of the real life environment</td>
<td></td>
</tr>
<tr>
<td>- Learned experiences should be contextualized in authentic activities</td>
<td></td>
</tr>
<tr>
<td>- Learning is through making links with existing knowledge in the context of real life experience</td>
<td></td>
</tr>
<tr>
<td>The content of a learning context should be meaningful and have already established links with the learner’s past experience.</td>
<td></td>
</tr>
</tbody>
</table>
Data Analysis

The qualitative data collected was analyzed using the constant comparative method. According to Hatch (2002), “Researchers in this paradigm…use disciplined research techniques such as “constant comparison” (Glaser & Strauss, 1967) or “analytic induction” (Robinson, 1951) to ensure that empirical data, and not their impressions, drive their findings (p.14). Bogdan and Biklen (1998) define constant comparative method as “a research design for multi-data source, which is like analytic induction in that the formal analysis begins early in the study and is nearly completed by the end of data collection” (p. 66). Glaser (1978) identified six steps in using constant comparative methods:

1. **Start with the collection of data.** The data collection process for this case study started with the pre-course meeting with the course instructor in which she alluded to the fact that she uses a constructivist approach to technology integration in the social studies methods course. Data collection was a continuous process through the duration of the methods course, which lasted for 16 weeks.

2. **Identify key activities to be categories of focus.** As this researcher collected data through the semester, categories were identified. The use of the constant comparative method yielded the following categories of data on the integration of technology in the social studies methods course:
   - Course materials data
   - Computer lab sessions data
   - Instructor’s modeling behavior data
   - Preservice teachers’ practices data
   - Influences on preservice teachers’ self efficacy towards technology data
• Constructivist integration of technology in the methods course data.

3. **Collect data to reflect categories of focus at all application levels within such categories.** To better understand the data collection categories, this researcher developed sub-questions extracted from the overarching question. The following are the sub-questions developed to guide the case study research:

**Sub-research question #1:** What was the nature of the constructivist integration of technology in the social studies methods course? Using the constant comparative method, data collected in the following areas: Technologies integrated in the course, instructor’s modeling behavior and informal and formal interviews, were coded and analyzed using the six dimensions identified by the Ewing et al. (1998) proposed constructivist model (see Appendix F) for the constructivist integration in the social studies methods course in this study. The six dimensions of the Ewing et al. model are:

• Learning should be context based
• Conceptual learning is through active involvement
• Learning is through collaboration with others
• Learner should have personal autonomy and control over learning
• Learning is person growth
• Learning outcome is a perspective and an understanding.

**Sub-research question #2:** What was the impact of instructor’s modeling behavior on preservice teachers’ attitudes and practices toward information technology as teaching and learning tools? The instructor integrated technology through computer lab sessions and in class discussions with preservice teachers. Using the constant comparative method, the data collected through observations, field notes, students’ presentation, informal and formal interviews, portfolio analysis and descriptive statistics were coded, analyzed and themes
were developed. The use of the constant comparative method to analyze the findings of the
descriptive statistics prompted this researcher to analyze the data from the perspectives of
advanced, intermediate and novice preservice computer users. This action reinforced the
depth that the descriptive statistics findings brought to the case study.

**Sub-research question #3:** What factors influenced preservice teachers’ attitudes toward
using information technology and computer as teaching and learning tools? Using the
constant comparative method, the data collected from class observations, informal and
formal interviews and descriptive statistical findings from the pre-course and post-course
mean analysis in the Teachers’ Attitudes toward Information Technology and Teachers’
Attitude toward Computer were coded, analyzed and the data yielded the following
dimensions of influences: Prior experience; Enactive experience; Vicarious experience;
Verbal persuasion; Affective state of the Preservice teacher toward technology and course
requirements. The findings of the descriptive statistics comparing the pre-course and post-
course mean scores provided the impetus that guided the use of the constant comparative
method in addressing the impact on the attitudes of preservice teachers to information
technology and computer as teaching and learning tools. Though the findings of the
descriptive statistic in isolation did not provide depth to this study, it raised questions of why
the findings came out the way they did. This triggered the use of the constant comparative
method to find the answers to the descriptive statistics findings through other data collections
methods used for the case study. Also, the findings from the descriptive statistics, using the
constant comparative method were analyzed from the perspectives of advanced, intermediate
and novice computer users using other data sources.
Sub-research question #4: What factors promoted preservice teachers’ integration of technology during their practica experiences as an instructional tool? Through field observations, formal and informal interviews with preservice teachers, this researcher, using the constant comparative method coded and analyzed the data, and factors that promoted integration of technology during the practica experiences of preservice teachers were identified.

Sub-research question #5: What factors hindered preservice teachers’ integration of technology during their practicum? Through field observations, formal and informal interviews with preservice teachers, using the constant comparative method this researcher coded and analyzed the data and factors that hindered integration of technology during the practica experiences of preservice teachers were identified.

Sub-research question #6: What was the impact of technology integration in the social studies methods course on the basic computer skill levels of preservice teachers? Using descriptive statistics to determine the effects of technology integration in the methods course pre-course and post-course, the findings were analyzed using the constant comparative method in conjunction with analysis from the case study data to provide depth to this sub-research question. Researcher observations, preservice students’ presentations, portfolio analysis, formal and informal interviews provided the data that were coded and analyzed to provide the rich information to guide this sub-research question.

4. Write about the categories of focus as you continue to search for new activities or themes. As data were collected, coded and analyzed this researcher started the writing process on the nature of technology integration in the social studies methods
course. The writing process started with the pre-course meeting with the instructor and carried through the last day of the course to the final write up of this study.

5. **Work with the data and basic model to discover social processes and relationships.** Social processes and relationships relating to the nature of technology integration in the social studies methods course and its impact on the practices of preservice teachers during the course and their practica experiences were developed through coding and analysis of all data collected.

6. **Sample, code and write as the analysis focuses on the main categories.** The data were analyzed for patterns of shared meaning across the integration of technology in the social studies methods course, instructor’s modeling behavior, attitudes of preservice teachers, influences on preservice teachers and the constructivist integration of technology in the methods course (see Figure 3.1). The findings were presented in the form of analytic generalizations that were supported with excerpts from this researcher’s course observation field notes, transcripts of the preservice teachers’ interviews, assignments and reflections of preservice teachers.

Although the constant comparative method is presented as a series of steps, the process when practically applied is non-linear, goes on all at once and the analysis keeps doubling back to more data collection and coding, (Bogdan and Biklen, 1998).
Figure 3.1

Graphical Representation of Research Design

Social Studies Methods Course

Instructor

Technology Integration
WebCT
Internet/WWW
Web page Design
WebQuest
PowerPoint
GIS
Video

Preservice Teachers

Categories of focus/ Data Collection and Coding
Computer Lab
Course Syllabus
Student Products
Interviews & Field Notes
Observations

Data Analysis
Constant Comparative Methods

Six Categories
1. Course Materials
2. Computer Lab Sessions
3. Instructor’s Modeling Behavior
4. Preservice Teachers’ Practices
5. Influences on Preservice Teachers’ attitude to technology
6. Constructivist Integration

Six sub-research questions of Case Study
1. Constructivist integration in course.
2. Impact on computer skill level of preservice teachers.
3. Impact on attitude toward information technology and computer.
4. Instructor’s Modeling Behavior
5. Factors that influenced technology integration during practicum and methods course.
6. Factors that hindered technology integration during practicum.

Reporting: Findings and Conclusions

Pre-course TAT, TAC & NCBCTE

Post-course TAT, TAC & NCBCTE

Mean = M
Descriptive Statistics Design

The use of descriptive statistical design enriched the postpositivist case study approach that was used to understand the nature of technology integration in the social studies methods course and its impact on the practices of preservice teacher during the course and their practica experiences. The descriptive statistics used to enrich the depth of the case study, compared the pre-course and post-course mean scores of preservice service teachers in the methods course in three instruments; TAC, TAT and NCBTCE. The purpose of selecting this design was to maximize the likelihood that measured differences between the pre-course and post-course skills and attitudes reflect the actual differences in preservice teachers’ attitudes towards technology, computer and basic computer skill levels after the integration of technology in the social studies course to provide depth to the case study.

Table 3.2

Descriptive Statistical Design

<table>
<thead>
<tr>
<th>Subjects</th>
<th>Pre- course</th>
<th>Social Studies Methods Course</th>
<th>Post- course</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preservice Teachers</td>
<td>TAC</td>
<td>Technology integration</td>
<td>TAC</td>
</tr>
<tr>
<td>Preservice Teachers</td>
<td>TAT</td>
<td>Technology integration</td>
<td>TAT</td>
</tr>
<tr>
<td>Preservice Teachers</td>
<td>NCBTCE</td>
<td>Technology integration</td>
<td>NCBTCE</td>
</tr>
</tbody>
</table>

Survey Instruments

Three instruments were used in the descriptive statistical component of this case study research:
- The North Carolina Basic Technology Competencies for Educators was used to assess the impact of technology integration on the basic computer skill level of the preservice teachers in the social studies methods course.

- Teacher’s Attitude Toward Computers (TAC) questionnaire and Teachers’ Attitude Toward Information Technology questionnaire were used to assess the impact of technology integration and learning on the attitudes of preservice teachers. According to Knezek and Christensen (2001), the two questionnaires compliment each other and should be administered together if possible.

North Carolina Basic Technology Competencies for Educators –Modified

NCBTCE modified by this researcher using the North Carolina Basic Technology Competencies for Educators is a Likert type self-assessment questionnaire that was administered to each participant during the first and last week of class during the Fall 2002 semester. Ten minutes of class time was allocated for administration of instrument each time. The purpose of administering this instrument was to address the effects of technology integration on the technology skill level of preservice teachers. The North Carolina Technology Competencies for Educators were established for all North Carolina educators to acquire as a minimum to ensure technology integration in teaching. The competencies were part of the School Technology Users Task Force Report (October 1995), a task force of K-12 educators, community college representatives, and university staff. At the December 5, 1996 State Board of Education meeting, approval was reached for a framework, entitled Strategy and Timelines for Developing and Implementing Assessments of Teachers' Essential and Advanced Skills in Technology Prior to Initial Licensure, for preservice teachers in NC schools of education (http://www.ncpublicschools.org/tap/techcomp.htm).
**Teachers’ Attitude Toward Computer (TAC)**

Teachers’ Attitude Toward Computer (TAC) questionnaire using a Likert measurement scale was administered to each participant during the first and last week of class during the Fall 2002 semester. Ten minutes of class time was allocated to administer this instrument each time it was administered. The purpose of administering this instrument was to address the effects of technology integration on the attitudes of preservice teachers toward computers. TAC was developed during 1995-97 at the University of Texas. The original version was constructed as a 10-part composite instrument that included 284 items spanning 32 Likert and Semantic Differential scales (Christensen and Knezek, 1997).

According to Christensen and Knezek (2001), TAC has several versions, namely:

- **TAC 2.22**, which is a 199 item, 16 factor structure plus Loyd & Gressard’s Computer Attitude Survey and CAQ Computer Importance and Enjoyment.
- **TAC 3.0** 198 item, 16-factor structure plus Loyd & Gressard’s CAS and CAQ Computer Importance and Enjoyment
- **TAC 3.2a**, which is a 105 item 7-factor structure (Form A)
- **TAC 3.2b**, which is a 109 item 7-factor structure (Form B)
- **TAC 5.11**, which is 95 item 9-factor structure

For this study, the TAC 5.11 was used. TAC (v 5.11) is comprised of several historically significant measurement indices in the field, such as, Loyd and Gressard’s Confidence (Gressard & Loyd, 1986), Pelgrum and Plomp’s Enjoyment (Pelgrum, Janssen Reinen, & Plomp, 1993), Pelgrum and Plomp’s Relevance (Pelgrum, Janssen Reinen & Plomp, 1993, Miyashita and Knezek’s Importance (Knezek & Miyashita, 1993), and Knezek and Miyashita’s Anxiety (Knezek & Christensen, 1996). These historical indices were merged with the seven TAC foundation scales to produce a nine-part instrument. Knezek
and Christensen (2001) included eight items from related U.S. nationwide studies (Soloway, Norris, Knezek, Becker, Riel, & Means, 1999) in TAC v5.11. The nine scales are interest, comfort, accommodation, interaction (Electronic mail), Concern, utility, perception, Absorption, and Significance. According to Knezek & Christensen, the internal consistency reliability estimates for the 9 parts of the TAC v5.11 ranged from .84 to .97 (see Appendix I). The TAC (v5.11) pre- course mean scores of the preservice teachers on the 9 parts was compared to post-course mean scores at the end of the semester to determine whether there was a noteworthy change in the preservice teachers’ attitudes toward computer as a result of technology integration in the methods course.

**Teachers' Attitudes Toward Information Technology**

According to Knezek and Christensen (2001), the Teachers' Attitudes Toward Information Technology (TAT v2.01) measurement instrument compliments the Teachers' Attitudes Toward Computers (TAC) to provide assessment in new information technologies. The purpose of administering this instrument was to address the effects of technology integration on the attitudes of preservice teachers toward information technology. TAT (v2.10) was constructed primarily from semantic differential items using Teachers' Attitudes Toward Information Technology (v2.0) statements such as "to me Electronic mail is important/unimportant”. Teachers' Attitudes Toward Information Technology addresses five areas: Electronic mail, multimedia, the World Wide Web, teacher productivity, and classroom productivity for students.

The Teachers' Attitudes Toward Information Technology (TAT v2.01) questionnaire gathers data on five separate indices from respondents. These five subscales were newly constructed using semantic differential items from Zaichkowsky's (1985) Modified Personal
Involvement Inventory, a context free 16-item semantic differential scale that focuses on a person's perceived relevance of the object based on inherent needs, values, and interests. According to Knezek and Christensen (1998), the internal consistency reliability estimates for the five scales on the TAT range from .93 to .96 (See Appendix I). TAT (v2.01) pre-course mean scores of the preservice school teachers on the 5 parts were compared to post-course mean score to determine whether there was a significant change in the preservice teachers’ attitudes toward information technology as a result of technology integration in the methods course. Ten minutes of class time was allocated to administer this instrument each time.

**Descriptive Statistics Assumptions**

The descriptive statistics used in this study addressed the following researcher’s assumptions:

**Assumption # 1**

This assumption addresses the researcher’s assumption on the effects of technology integration on the basic computer skill levels of preservice social studies teachers. It is the assumption of this researcher that there will be no noteworthy difference between the pre-course and post-course mean scores of preservice teachers on the NCBTCE. The post-course mean scores of preservice teachers on the NCBTCE will not be higher than their pre-course mean scores.

**Assumption # 2**

This assumption addresses the researcher’s assumption on the effects of technology integration on preservice teachers’ attitudes toward computer. It is the assumption of this researcher that there will be a noteworthy difference between the pre-course and post-course
mean scores of preservice teachers on the TAC instrument. The post-course mean scores of preservice teachers on the TAC will be higher than their pre-course mean scores.

Assumption # 3

This assumption addresses the researcher’s assumption on the effects of technology integration on preservice teachers’ attitudes toward information technology. It is this researcher’s assumption that there will be a noteworthy difference between the pre-course and post-course mean scores of preservice teachers on the TAT instrument. The post-course mean scores of preservice teachers on the TAT will be higher than their pre-course mean scores.

Assumption # 3.1

This assumption addresses the researcher’s assumption on the effects of technology integration on preservice teachers’ attitudes toward information technology, electronic mail component. It is the assumption of this researcher that there will be a noteworthy difference between the pre-course and post-course mean scores of preservice teachers on the electronic mail (Teacher) component of the TAT. The post-course mean scores of preservice teachers on the electronic mail (Teacher) component will be higher than their pre-course mean scores.

Assumption # 3.2

This assumption addresses the researcher’s assumption on the effects of technology integration on preservice teachers’ attitudes toward information technology, World Wide Web (WWW) component. It is this researcher’s assumption that there will be a noteworthy difference between the pre-course and post-course mean scores of preservice teachers on the WWW (teacher) component of the TAT. The post-course mean scores of preservice teachers on the WWW (Teacher) component will be higher than their pre-course mean scores.
Assumption # 3.3

This assumption addresses the researcher’s assumption on the effects of technology integration on preservice teachers’ attitudes toward information technology, multimedia component. It is this researcher’s assumption that there will be a noteworthy difference between the pre-course and post-course mean scores of preservice teachers on the multimedia component of the TAT. The post-course mean scores of preservice teachers on the Multimedia (Teacher) component will be higher than their pre-course mean scores.

Assumption # 3.4

This assumption addresses the researcher’s assumption on the effects of technology integration on preservice teachers’ attitudes toward information technology, teacher productivity component. It is this researcher’s assumption that there will be a noteworthy difference between the pre-course and post-course mean scores of preservice teachers on the teacher productivity component of the TAT. The post-course mean scores of preservice teachers on the teacher productivity component will be higher than their pre-course mean scores.

Assumption # 3.5

This assumption addresses the researcher’s assumption on the effects of technology integration on preservice teachers’ attitudes toward information technology. It is this researcher’s assumption that there will be a significant difference between the pre-course and post-course mean scores of preservice teachers on the student productivity component of the TAT. The post-course mean scores of preservice teachers on the student productivity component will be higher than their pre-course mean scores.
Internal Validity

The main threat to the internal validity of this descriptive statistical design of this study was that differences between participants mean scores may be attributed to the characteristics of the participants as well as to the technology integration in the social studies methods course. To improve the validity of the descriptive statistical design of this study the preservice teachers were administered all questionnaires pre and post methods course. The use of the single group pre-course and post-course research design comparing the mean scores significantly reduced threats to the internal validity of using the descriptive statistics to enrich this case study.

Role of the Researcher

Prior to the start of the course, this researcher met with the course instructor and obtained permission to study the nature of technology integration in the course. This researcher encouraged the instructor to use WebCT as the web-based tool to develop the course information. The parameters of the research and the role of this researcher in the social studies methods course were defined at that meeting. It was agreed upon that the role of the researcher in the social studies methods course would be one of a limited participant observer. This should not be confused with the methodology, participant observation. According to Hatch (2002), “the kind of observation used in most qualitative work is called “participant observation” because the researcher acts as a participant at some level in the settings he or she is studying” (p. 72). As a limited participant observer, this researcher agreed not to conduct scheduled training with the participants but could provide guidance and insight when requested by the instructor or preservice teachers. However, since it was
this researcher’s idea to integrate WebCT in the methods course, this researcher at the request of the instructor co-presented with the instructor on the features of WebCT.

Prior to the collection of data, this researcher met with all participants on the first day of the methods course, which was Wednesday August 21, 2002. This researcher provided an overview of the nature of the study to preservice teachers registered for the course. At the end of the presentation, each preservice teacher was given a signed letter by this researcher addressing “Participation and Confidentiality of Records.” Since the first computer lab session was scheduled for Friday, August 23, 2002, the participants were informed to carefully consider their participation in the study and respond on Friday, August 23, 2002 by signing the authorization form to use their products, assignments, presentations, discussions, and informal and formal interviews for my study and for research publications stemming from the study. On Friday, all preservice teachers registered for the course volunteered eagerly to participate in the study, and signed over their participation authorization form (see Appendix M for a copy of letter and Appendix N for authorization form).

As stated earlier, this researcher’s role in the study was one of a limited participant observer. According to Glesne and Peskin (1992) the observer as participant “remains primarily as observer but has some interaction with study participants” (p.40).

As a limited participant observer in this study, this researcher

- Carefully, systematically experienced and consciously recorded in detail the activities of preservice teachers and instructor as technology was integrated in the methods course;
- Constantly analyzed observations for meaning and personal bias by keeping field notes and a research journal.
- Provided technical and instructional support to participants. Periodically, as instructor and preservice teachers discussed technology integration of a particular
application tool or device in class, instructor or preservice teachers directed specific
technical questions to the researcher for clarification, demonstration or elaboration.
The preservice teachers sometimes sought the technical assistance of this researcher
as they designed instructional materials or methods for their teaching units. This
researcher assisted the instructor as technology consultant, both prior to and during
the course with managing some of the activities of WebCT such as, uploading
information to the site. This researcher at the request of instructor designed the
WebCT layout for the course and provided some assistance with its update for
students. For example, during the initial lab session, this researcher demonstrated to
students how to upload their assignment to the WebCT assignment folder.

The observational data in this case study on the nature of technology integration in
the social studies methods course and in the teacher practice experiences of preservice
teachers, provided this researcher with the following insight into the study:

- My direct observations of technology integration in the social studies methods course,
instructor’s modeling behavior, attitudes of preservice teachers toward technology
and technology integration in the practices of preservice teachers provided a better
understanding of the context of technology integration in the social studies methods
course.
- The firsthand experience allowed this researcher to be open to discovering
inductively how technology was integrated in the social studies methods course and
in the practices of preservice teachers.
- The observation provided this researcher with the opportunity to experience things
that are taken for granted by the instructor and the preservice teachers in the
integration of technology, that would be less likely to come to the surface using
interviewing and other data collection techniques such as, document analysis.
- By being a participant observer, this researcher was able to gain information from
being in the computer lab sessions and in the classroom with preservice teachers that
may have surfaced during an interview.
• Being a participant observer allowed me to add my own experiences in the setting, documented those activities in the field notes, and related it through the analysis of what happened as technology was integrated in the social studies methods course and in the practices of preservice teachers.

One shortfall to this researcher’s role as a limited participant observer was the fact that my very presence in the social studies methods course made the natural setting unnatural (Hatch, 2002).

**Researcher Ethical Considerations**

Since this researcher has a very strong background in social studies and instructional technology, and a strong interest in integration of instructional technology in all content areas and grade levels, there were no attempts to influence the course of technology integration in the social studies methods course during the study. This researcher’s background include a teaching license in social studies and two years experience teaching secondary school social studies in Freetown, Sierra Leone, West Africa. My experience with instructional technology include pursuing a doctoral program in curriculum and instruction with a specialty area in instructional technology and teaching experiences with preservice and graduate students at North Carolina Central University in Durham, North Carolina.

During the course of the computer lab sessions and other class activities, this researcher did not introduce, teach any new topics or technology applications beyond what was not presented by course instructor, nor did not elaborate on topics beyond what was not presented by instructor and preservice teachers or requested by instructor or preservice teachers. This researcher consciously limited participation to answering questions or clarifying procedures. This researcher kept a journal of participation to ensure that biases are
kept in check and also to ensure that the course of technology integration in the course was not altered by this researcher’s interventions.

**Summary**

In this study, I used mixed methodology, case study and descriptive statistical design that enriched the case study to study the nature of technology integration in the social studies methods course and its impact on the practices of preservice teachers during the course and during their practica experiences. The focus of the study was a case study aligned with the postpositivist paradigm, but the descriptive statistics was used to enrich the case study research. The qualitative case study method utilizing the constant comparative method and enriched by descriptive statistics provided rich in-depth description of the following categories:

- Technology integration in the methods course
- The nature of the technology integration by the instructor;
- How the instructor modeled technology;
- Factors that influenced preservice teachers’ attitudes toward technology
- The technological practices and products of preservice teachers
- Factors that promoted technology integration during their practicum
- Factors that hindered technology integration during their practicum

The descriptive statistics used a pre-course and post-course single group design, using the percentile mean to address the assumptions developed by this researcher. The use of the descriptive statistical design provided entry-level data of preservice teachers prior to the start of the social studies methods course and exit level data at the end of the course on their computer skill levels, and attitudes toward information technology and computer. Also, the use of the descriptive statistical designed enriched the case study research in the following
areas: If there was a noteworthy finding of an assumption, using the constant comparative method, the case study data provided insight as to why there was a noteworthy change in mean scores. Vice versa, if there was no noteworthy change in the mean scores, using the constant comparative method, the case study data provided some insights as to why a noteworthy change did not occur between the pre-course and post-course mean scores on any of the instruments. The use of this technique prompted the analysis of data from the perspectives of preservice teachers as advanced, intermediate and novice computer users.
Chapter Four

Data Analysis and Results

This chapter addresses the data analysis and results of the case study on the nature of technology integration in a social studies methods course and its impact on the practices of preservice teachers during the course and their practica experiences, undertaken within the assumption of the postpositivist paradigm. This chapter also addresses the findings of the descriptive statistics used to enrich the case study and how those findings were intertwined with the qualitative data to better understand the nature of technology integration in the social studies methods course and its impact on the practices of preservice teachers during the course and during their practica experiences. The descriptive statistics used in this study compared the pre-course and post-course mean scores on assumptions developed by this researcher to enrich the case study research. The analyses of assumptions are addressed under relevant sub-research questions. The following six sub-research questions developed from the overarching question provided the body of the analysis of this case study:

1. What was the nature of the constructivist integration of technology in the social studies methods course?

2. What was the impact of instructor’s modeling behavior on preservice teachers’ attitudes and practices toward information technology as teaching and learning tools?

3. What factors influenced preservice teachers’ attitudes toward using information technology and computer as teaching and learning tools?

4. What factors promoted preservice teachers’ integration of technology during their practica experiences as an instructional tool?
5. What factors hindered preservice teachers’ integration of technology during their practica experiences?

6. What was the impact of technology integration in the social studies methods course on the basic computer skill levels of preservice teachers?

**Sub-Research Question# 1: What was the nature of the constructivist integration of technology in the social studies methods course?**

**The Nature of Technology Integration**

**The Course Syllabus**

The course syllabus outlined how technology was integrated in the course. In the course syllabus, the following types of technologies were outlined for instruction in the computer lab sessions: Web searches for instructional materials, North Carolina Department of Public Instruction’s Advanced Technology Competencies, WebQuests, PowerPoint, constructing WebPages and GIS. The syllabus also outlined the email addresses of the instructor, and web addresses for some of the topics that were discussed in the course. Table 3 outlines the websites listed on the course syllabus.

Table 4.1
**Websites on the Course Syllabus**

<table>
<thead>
<tr>
<th>Website</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><a href="http://www.ncpublicschools.org/curriculum/socialstudies/">www.ncpublicschools.org/curriculum/socialstudies/</a></td>
<td>NCSCOS – Social Studies</td>
</tr>
<tr>
<td><a href="http://www.ncsu.edu/ced/clt/workshops">www.ncsu.edu/ced/clt/workshops</a></td>
<td>Constructing Class Websites</td>
</tr>
</tbody>
</table>

**Instructor’s Modeling Behavior**

The instructor integrated a variety of technology as instructional and teaching tools in the social studies methods course. The instructor’s modeling behavior is addressed throughout this chapter. However, this section provides an analysis of the instructor’s modeling of technologies and the approaches used to integrate technology in the social
studies methods course. In her opening remarks at the initial lab session, the instructor prefaced the importance of integrating technology in social studies in the following statement, “one way to get students engaged [in social studies] is to conduct social studies. One way to conduct social studies is through technology.” During the course of lectures in the traditional classroom, the instructor did not use computers but used Internet resources as references in her presentations and discussions. The instructor consistently used handouts that were printed directly from the Internet. Table 4.2 outlines the handouts printed from the Internet (see Appendix Q for course website collection).

Table 4.2
Course Handouts Printed from Internet

<table>
<thead>
<tr>
<th>Course Handouts Printed from Internet</th>
</tr>
</thead>
<tbody>
<tr>
<td><a href="http://www.paideia.org/philo/three.htm">http://www.paideia.org/philo/three.htm</a></td>
</tr>
<tr>
<td><a href="http://www.psywww.com/selfquiz/aboutq.htm">http://www.psywww.com/selfquiz/aboutq.htm</a></td>
</tr>
<tr>
<td><a href="http://www.edu.uleth.ca/courses/ed3604/cones/whnes/whnes.html">http://www.edu.uleth.ca/courses/ed3604/cones/whnes/whnes.html</a></td>
</tr>
<tr>
<td><a href="http://www.utc.edu/Teaching-Resource-Center/test-questions.html">http://www.utc.edu/Teaching-Resource-Center/test-questions.html</a></td>
</tr>
<tr>
<td><a href="http://www.ascd.org/readingroom/books/roberts98book.html">http://www.ascd.org/readingroom/books/roberts98book.html</a></td>
</tr>
<tr>
<td><a href="http://www.unc.edu/paideia">http://www.unc.edu/paideia</a></td>
</tr>
<tr>
<td><a href="http://www.coe.wayne.edu/TSC/paideia.html">http://www.coe.wayne.edu/TSC/paideia.html</a></td>
</tr>
<tr>
<td><a href="http://cnets.iste.org/teachstand.html">http://cnets.iste.org/teachstand.html</a></td>
</tr>
<tr>
<td><a href="http://21stcenturyschools.northcarolina.edu/special/standards.html">http://21stcenturyschools.northcarolina.edu/special/standards.html</a></td>
</tr>
<tr>
<td><a href="http://ncsu.edu/ced/techcomps">http://ncsu.edu/ced/techcomps</a></td>
</tr>
<tr>
<td>The Art and Science of Classroom Assessment</td>
</tr>
<tr>
<td>Philosophy &amp; Methodology</td>
</tr>
<tr>
<td>Writing multiple choice items which require comprehension</td>
</tr>
<tr>
<td>When to use essay tests</td>
</tr>
<tr>
<td>Designing Test Questions</td>
</tr>
<tr>
<td>The Power of Paideia Schools</td>
</tr>
<tr>
<td>National Paideia Center</td>
</tr>
<tr>
<td>The Paideia Program</td>
</tr>
<tr>
<td>National Educational Technology Standards for Teachers</td>
</tr>
<tr>
<td>Alignment document for INTASC-NETS-old NC Technology Standards</td>
</tr>
<tr>
<td>Technology Competency Tutorials</td>
</tr>
</tbody>
</table>
The instructor used video and overhead projector during her traditional classroom sessions. The instructor used video once in her presentation to illustrate a heated teachers’ staff meeting from the movie titled “The Lone Star.” The instructor consistently used the overhead projector for display of overheads and for writing notes. The instructor’s main avenue for vicarious and enactive integration of technology was through computer lab sessions. The lab sessions were designed to provide an environment for the instructor to demonstrate the use of different technologies, and teach preservice teachers how to design and use electronic teaching materials. In the computer lab sessions, the instructor modeled teaching with computer and Internet using an LCD projector and screen from an instructor’s unit in front of the class. Each student had access to a desktop computer connected to the network for Internet access. The focus of the computer lab sessions were as follows:

1. Use of WebCT and Web Searches: Lesson plans (Teaching Resources)
2. Understanding the DPI Advanced Technology Competencies.
3. Introducing and using WebQuests in teaching
4. Using PowerPoint presentations in teaching
5. Constructing WebPages and using GIS in Social Studies

The computers in the lab had all the software that were integrated in the social studies methods course and students had unrestricted access to the lab throughout the semester, except when the lab was used for a scheduled lab session by another course.

**Computer Lab Session #1**

**Using WebCT as an Instructional Tool**

The theme of the first lab session was “let’s use technology as an instructional tool.” This theme was developed by this researcher from the emphasis placed on using technology in teaching by the instructor throughout the session. The objectives of the first computer lab
session were how to navigate and use WebCT and how to conduct a search of the Internet for instructional materials. Since this researcher was the co-designer of the WebCT course platform with the instructor, this researcher co-presented with the instructor on the functions of the WebCT links to the preservice teachers. This researcher demonstrated how to upload assignments to the assignment locker space. The following links were also reviewed:

1. The course syllabus – This link on WebCT outlined the course syllabus for the social studies methods course.
2. My Grades – This link provided preservice teachers with a secured environment for preservice teachers to check their course grades. During this course, preservice teachers used this function to check their grades on graded assignments.
3. Course calendar - this link outlined daily, weekly and monthly activities of the course. Preservice teachers also had the option to set up a secured personal calendar within the WebCT environment.
4. Discussion- this link provided an environment in which preservice teachers responded to discussions posted electronically when logged on. Preservice teachers were given the opportunity to experience on line forum discussion by logging on to their desktop computers and creating discussion threads. Preservice teachers were provided with vicarious and enactive experiences in using the discussion tool. This was the only time this forum was used during this course.
5. E-mail – This link provided a built in e-mail environment within WebCT in which only registered students in this course could send e-mails to the whole class including the course Instructor or to selected members of the class. The e-mails were only accessed through WebCT environment. The instructor used this e-mail regularly but
considered it a limitation because to send an email through WebCT, one has to log on before they can send an e-mail. Therefore, the instructor used two different types of email systems in this course, the WebCT e-mail system and the traditional e-mail system of sending e-mail to preservice teachers’ personal email addresses. Within the e-mail section of WebCT, 31 e-mails were sent through the duration of this course. All preservice teachers and the instructor used the e-mail system to send course related information. The main themes of the e-mails were sharing web searches and issues addressing uploading information into the WebCT assignment locker space.

6. Assignment locker – The assignment locker is an environment within WebCT in which course assignments were placed. The assignments were set to be accessible on a time-limited basis. Preservice teachers also had to upload their assignments into the assignment locker space before the assignment expired. Once the assignment date passes, preservice teachers cannot upload assignment until the instructor resets it. To upload information into the assignment locker space required preservice teachers to demonstrate the following technology competencies:

- The ability to word-process and save their assignment.
- The ability to convert their word document into a web page.
- The ability to upload their web pages into their individual assignment locker spaces.

The assignment locker space was used for eight written assignments in this course as presented in Table 4.3. This researcher maintained the assignment locker space for the instructor.
Table 4.3  
WebCT Assignment Locker

<table>
<thead>
<tr>
<th>Title</th>
<th>Availability</th>
<th>Grade</th>
</tr>
</thead>
</table>
| What is or ARE Social Studies? What is your current view of why it is important to teach Social Studies? The epistemological questions: How did you come to this Understanding? & Why do you feel this way? What are your CONCERNS about teaching social studies? What would be most helpful to YOU right now, in this course, for us to address? | From: Immediately  
To: Sep 10, 2002 23:55 | / 100 Unavailable |
| Assess your knowledge of Social Studies Instructional Technology prior to this class | From: Immediately  
To: Oct 16, 2002 23:55 | / 100 Unavailable |
| What are your perceptions of integrating technology in high school social studies? | From: Immediately  
To: Oct 15, 2002 22:55 | / 100 Unavailable |
| What have your learned as of 2 computer lab sessions? | From: Immediately  
To: Oct 15, 2002 23:55 | / 100 Unavailable |
| How have you seen Instructional Technology used in your social studies practicum setting? | From: Immediately  
To: Oct 15, 2002 23:55 | / 100 Unavailable |
| How do you intend to use Instructional Technology in Social Studies? | From Aug 21, 2002 23:00  
To: Oct 16, 2002 23:55 | / 100 Unavailable |
| Observing for learning and teaching | From Aug 30, 2002 17:00  
To: Oct 06, 2002 23:00 | / 70 Unavailable |
| Weekly Visits (Mondays and Tuesdays, all day) in practicum site, observing, assisting and designing instructions | From Sep 18, 2002 17:00  
To: Oct 05, 2002 17:00 | / 10 Unavailable |
7. Student presentation – This is a locker within WebCT in which preservice teachers’ presentation would be displayed. This function was activated but was not used during the course but preservice teachers were exposed to the concept.

8. Let’s chat Online – The instructor demonstrated the online live chat feature of WebCT as an instructional tool. Preservice teachers were given the opportunity to experience this feature. Each preservice teacher logged on and carried an online discussion. This feature was used once in the course to provide preservice teachers with an experience of using an online chat system.

9. Student Web page locker space – This feature was activated and demonstrated to students but was not used in the course.

10. Web Resource Page- the websites introduced by the instructor and those presented by preservice teachers were included in this Web Resource Page. This page was used consistently throughout the course. This researcher at the request of the instructor updated this page. A total of 26 web links were added to this page during the course of the semester as presented in Table 4.4. Preservice teachers and instructor directly accessed the Websites in this locker by clicking on the respective hyperlinks on the Web Resource Page.

Table 4.4
Web Resources linked to the WebCT resource page

<table>
<thead>
<tr>
<th>Websites</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><a href="http://www.socialstudies.org/">http://www.socialstudies.org/</a></td>
<td>National Council for the Social Studies</td>
</tr>
<tr>
<td><a href="http://www.ncpublicschools.org/curriculum/socialstudies/">http://www.ncpublicschools.org/curriculum/socialstudies/</a></td>
<td>North Carolina DPI</td>
</tr>
</tbody>
</table>
Internet Search - Let’s not Re-create the Wheel

The second objective of the first computer lab session was to conduct Internet searches to find instructional materials. The instructor opened the Internet search lesson by

<table>
<thead>
<tr>
<th>URL</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><a href="http://www.ncsu.edu/ced/clt/workshops/">http://www.ncsu.edu/ced/clt/workshops/</a></td>
<td>Center for Learning Technologies</td>
</tr>
<tr>
<td><a href="http://www.ncpublicschools.org/tap/techcomp.htm">http://www.ncpublicschools.org/tap/techcomp.htm</a></td>
<td>North Carolina Technology competencies for Educator</td>
</tr>
<tr>
<td><a href="http://www.lib.ncsu.edu/">http://www.lib.ncsu.edu/</a></td>
<td>North Carolina State University Library</td>
</tr>
<tr>
<td><a href="http://askeric.org">http://askeric.org</a></td>
<td>Ask Eric Lesson Plans</td>
</tr>
<tr>
<td><a href="http://cloudnet.com/">http://cloudnet.com/</a></td>
<td>Social Studies Resource page</td>
</tr>
<tr>
<td><a href="http://constitutioncenter.org">http://constitutioncenter.org</a></td>
<td>Voting Lesson Plans</td>
</tr>
<tr>
<td><a href="http://pilgrim-monument.org/group/lesson.html">http://pilgrim-monument.org/group/lesson.html</a></td>
<td>Pilgrims Lesson Plans</td>
</tr>
<tr>
<td><a href="http://www.nps.gov/cato/educ/les1.htm">http://www.nps.gov/cato/educ/les1.htm</a></td>
<td>Jamestown Colony</td>
</tr>
<tr>
<td><a href="http://school.discovery.com/lessonplans/programs">http://school.discovery.com/lessonplans/programs</a></td>
<td>School Discovery</td>
</tr>
<tr>
<td><a href="http://www.icpsr.umich.edu/GSS/">http://www.icpsr.umich.edu/GSS/</a></td>
<td>General Social Survey</td>
</tr>
<tr>
<td><a href="http://babelfish.altavista.com/tr">http://babelfish.altavista.com/tr</a></td>
<td>Language Translations</td>
</tr>
<tr>
<td><a href="http://www.crayon.net">http://www.crayon.net</a></td>
<td>Create your own Newspaper</td>
</tr>
<tr>
<td><a href="http://webquest.sdsu.edu/matrix/9-12-Soc.htm">http://webquest.sdsu.edu/matrix/9-12-Soc.htm</a></td>
<td>SS WebQuest 9-12 grades</td>
</tr>
<tr>
<td><a href="http://www.kn.pacbell.com/wired/fil/">http://www.kn.pacbell.com/wired/fil/</a></td>
<td>How to design a WebQuest?</td>
</tr>
<tr>
<td><a href="http://www2.ncsu.edu/ncsu/cep/ligon/about/history/intro.htm">http://www2.ncsu.edu/ncsu/cep/ligon/about/history/intro.htm</a></td>
<td>Ligon Project</td>
</tr>
<tr>
<td><a href="http://www.pbs.org/neighborhoods/history/">http://www.pbs.org/neighborhoods/history/</a></td>
<td>PBS</td>
</tr>
<tr>
<td><a href="http://www.davidrumsey.com/GIS/lewisclark.htm">http://www.davidrumsey.com/GIS/lewisclark.htm</a></td>
<td>Lewis and Clark Expedition</td>
</tr>
<tr>
<td><a href="http://www.itpi.dpi.state.nc.us/nchistorical/default.html">http://www.itpi.dpi.state.nc.us/nchistorical/default.html</a></td>
<td>NC Historical Sites</td>
</tr>
<tr>
<td><a href="http://www.esri.com">http://www.esri.com</a></td>
<td>GIS Mapping Information</td>
</tr>
<tr>
<td><a href="http://www.ncsu.edu/gisined/">http://www.ncsu.edu/gisined/</a></td>
<td>GIS at NCSU</td>
</tr>
<tr>
<td><a href="http://www.ncsu.edu/ced/clt/workshops/netscape_tutorial/index.html">http://www.ncsu.edu/ced/clt/workshops/netscape_tutorial/index.html</a></td>
<td>Designing Webpage in Netscape</td>
</tr>
<tr>
<td><a href="http://www.raremaps.com">http://www.raremaps.com</a></td>
<td>Rare maps for background</td>
</tr>
</tbody>
</table>
stating “The thing that is wonderful about the web…there are literally millions of lesson plans out there. So, you do not have to re-create the wheel.” The instructor opened the lesson by inquiring about the preservice teachers’ prior experiences with Internet searches. All preservice teachers indicated that they have had prior experiences with Internet searches. The instructor provided preservice teachers with vicarious and enactive experiences and strongly encouraged them to search the web for instructional materials in social studies. The instructor introduced the concept of metacrawler and Internet search by demonstrating a Boolean search. The instructor used www.google.com as the search engine to search for instructional materials on the Internet using key words such as, lesson plans, simulations, tutorials, and graphics in conjunction with a chosen topic. The focus of the initial search was to find social studies lesson plans on the Internet using the Boolean search techniques.

The instructor presented students with an Internet search tutorial that demonstrated how to conduct a Boolean search using www.google.com. She demonstrated the Boolean search using the LCD projector to find lesson plans on the topic, “How a bill becomes a law”. After the demonstration of the Boolean search, the instructor demonstrated how to copy, paste a web address into a word processor application tool, write an annotated note about the site and save the file. Opening and minimizing the browser and the word application tool simultaneously demonstrated this concept, so that the address can be copied from the opened browser and pasted into the opened Word document. The focus of this exercise was to ensure that preservice teachers not only use the Internet as resource but also build a database of resources as they search the web. The instructor encouraged students to share and exchange searches (collaboration) with classmates, so other students could benefit from their searches. The relevant web sites found by the preservice teachers were submitted
via the email environment in WebCT to be uploaded by the instructor to the Web Resources Page.

Influences on Preservice Teachers’ Future Use of Internet Resources

As stated earlier, the instructor incorporated different techniques in this lesson that may have impacted preservice teachers’ use of Internet search resources for future instructional. First, instructor demonstrated how to conduct a search on the Internet, followed by hands on experiences by the preservice teachers. The depth of resources that they found using the Boolean search techniques amazed the preservice teachers, even the advanced users. Second, the instructor provided students with enactive experiences during the lab sessions to search the Internet, copy and paste the web addresses in a word processor application tool, write annotated notes about the sites and save the information to their student locker spaces on the university’s server.

Zone of Proximal Development (ZPD) Moment

The instructor consistently provided guidance and support to preservice teachers after failure to complete task after exhaustive independent practices. The instructor’s use of the constructivist theory of ZPD theory was put to the test during the first computer lab session. During the exercise to search the Internet, copy and paste, write notes in Microsoft Word document and save to the student locker space, all but one student, Lewis, who is a novice user, had difficulty completing the task. Using Vygotsky’s theory of ZPD, the instructor allowed Lewis to reach his maximum potential in trying to perform the activity before providing him the needed assistance to complete the task. The instructor worked one and one with Lewis and demonstrated to him how to save the file to his student “K” drive folder and
then to back up to a floppy diskette. Lewis, who was a beginner computer user, was amazed with the new skills he learned. Lewis’ response on completing the task was “That’s cool”.

**Preservice Teachers’ Perceptions of WebCT**

Most of the preservice teachers felt that WebCT was a good instructional medium that could be used in the high school setting with some variations. Athena felt that WebCT is a good tool because if used appropriately it connects students outside the physical confines of the traditional classroom. Athena asserted that the use of WebCT fostered a close-knit collaborative group. Scott (2002, December) in his reflection on WebCT as an instructional tool highlighted a positive and negative of using WebCT. He stated,

> My problem was I would forget to go to the web site. I wouldn’t necessarily think about it when I go home, but if I can get into the habit of actually going to WebCT and checking for updates and checking for new things, I think it is a great idea. I think anytime you can have students more connected and have the whole source of education, where they can go at their own pace, look at links setup by the instructor on their own time, to be able to send e-mails to classmates or to the instructor, I think its just all a great idea… I think that even if it is used as a supplemental tool in addition to face-to-face instruction, I think it could really help students grasp the material better.

Lita (2002, December) on the other hand sees the problem of accessibility as a major problem with using WebCT in the public schools. She stated,

> Well, I think it would be good if everyone had access to a computer. They may have access to a computer during the school day, but WebCT is more for after the class is over. Communication with the discussion group and not every student has access to the computers after school hours… Maybe in the future, when everybody has a computer, which we are probably going towards. It would be a lot easier.

Lewis (2002, December) thinks that the integration of WebCT should be a gradual process in high schools starting with teachers. He stated, “It’s something maybe the departments could
all have, where teachers could interact with each other, maybe even from home instead of using simple e-mails.”

**Computer Lab Session #2**

**Let’s Discuss the Advanced Technology Competencies**

The second computer lab session was dedicated to discussing the “Advanced Technology Competencies” and identifying artifacts to support each competency. The instructor discussed the Advanced Technology competencies with preservice teachers using a handout designed by Vasu and Atkins (Fall 1997) (see Appendix P). The handout was used to guide preservice teachers to identify activities to meet the minimum requirements of the NCDPI Advanced Technology Competencies. The handout displayed the competencies that had to be demonstrated with evidence. The handout outlined each competency with a column addressing “Possible Activities” and a column with “Alternative Activities” to demonstrate evidence of the competencies in preservice teachers’ portfolios. The instructor and preservice teachers brainstormed on the “Possible Activities” to address the advanced technology competencies. The results are displayed in Tables 4.5 – 4.9.

**Table 4.5**

**Suggested Ideas on Advanced Technology Competencies – Curriculum Skills Curriculum**

<table>
<thead>
<tr>
<th>Computer Skills Curriculum</th>
<th>Possible Activities</th>
<th>Alternative Activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>10.1 – Use the computer skills curriculum to identify what students should know and be able to do</td>
<td>Course Website, Syllabus</td>
<td></td>
</tr>
<tr>
<td>10.2 – Use school television resources that support the curriculum</td>
<td>Videos, DVD</td>
<td></td>
</tr>
<tr>
<td>10.3 – Access resources for planning instruction available via telecommunications</td>
<td>Internet Searches</td>
<td>WebQuest</td>
</tr>
<tr>
<td>10.4 – Goals of the NC Computer Skills Curriculum</td>
<td>DPI Website, Student &amp; Teacher’s Product</td>
<td></td>
</tr>
</tbody>
</table>
Table 4.5 (Continued)

<table>
<thead>
<tr>
<th>10.5 – The NC Computer Skills Assessment DPI Website, Student &amp; Teacher’s Product,</th>
</tr>
</thead>
</table>

Table 4.6

Suggested Ideas on Advanced Technology Competencies – Subject-Specific Knowledge

<table>
<thead>
<tr>
<th>Computer Skills Curriculum</th>
<th>Possible Activities</th>
<th>Alternative Activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>11.1- Use technology in the discipline/subject for learning and as a medium for communications</td>
<td>Email, WebCT</td>
<td></td>
</tr>
<tr>
<td>11.2 – Use of media and technology to present the subject so that it is comprehensible to others</td>
<td>Internet searches, WebQuest, PowerPoint</td>
<td></td>
</tr>
<tr>
<td>11.3 – Use of technology-based tools that are specific to the discipline</td>
<td>WebQuest</td>
<td></td>
</tr>
<tr>
<td>11.4 – Use of technology to facilitate teaching strategies specific to the discipline</td>
<td>GIS, Internet searches</td>
<td></td>
</tr>
</tbody>
</table>

Table 4.7

Suggested Ideas on Advanced Technology Competencies – Design and Management of learning - Environment/Resources

<table>
<thead>
<tr>
<th>Computer Skills Curriculum</th>
<th>Possible Activities</th>
<th>Alternative Activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>12.1- Develop performance tasks that require students to locate and (a) analyze information as well as draw conclusions and (b) use a variety of media to communicate results clearly.</td>
<td>WebQuest and PowerPoint</td>
<td></td>
</tr>
<tr>
<td>12.2 – Use computers and other technologies effectively and appropriately to collect information on student learning using a variety of methods.</td>
<td>A page from InterGrade/or the use of Grade book designed in Microsoft Excel</td>
<td>Create a table to show grading system</td>
</tr>
</tbody>
</table>
### Table 4.7 (Continued)

| 12.3 – Use computers and other technologies effectively and appropriately to communicate information in a variety of formats on student learning to colleagues, parents, and others. | Document communication with colleagues/ forum discussions | Print out information that you sent home |
| 12.4 – Physical settings that support active student involvement, inquiry, and collaboration | Group work, group presentation/ WebQuest | Picture of students in group activities |
| 12.5 – Organizational and management strategies that support active student involvement, inquiry, and collaboration | WebQuest- Group activities in the WebQuest | |
| 12.6 – Resources available including satellite, cable, wireless, and ITFS (Instructional television Fixed Service) | Give a class presentation using: remote controls for T.V.; LCD projector in computer lab; VCR; Videodisc; or computer Network | Photo of teacher in action |

### Table 4.8

**Suggested Ideas on Advanced Technology Competencies – Child Development, Learning and Diversity**

<table>
<thead>
<tr>
<th>Computer Skills Curriculum</th>
<th>Possible Activities</th>
<th>Alternative Activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>13.1 – Use media and technology to address differences in children’s learning and performance</td>
<td>Student’s work and show diversity of ability</td>
<td></td>
</tr>
<tr>
<td>13.2 – Use media and technology to support learning for children with special needs</td>
<td>Student’s work or specific assignment for students with special needs child</td>
<td></td>
</tr>
<tr>
<td>13.3 – Use media and technology to support learning and children whose primary language is not English</td>
<td>Web sites to aid in translation – e.g. <a href="http://www.babelfish.altavista.com/tr">www.babelfish.altavista.com/tr</a></td>
<td></td>
</tr>
<tr>
<td>13.4 – Use appropriate local, state, and national services or resources to meet diverse learning needs through technology</td>
<td>NC Learn, DPI Resource and Wake County site</td>
<td><a href="http://www.wcpss.net">www.wcpss.net</a></td>
</tr>
</tbody>
</table>
Table 4.9

Suggested Ideas on Advanced Technology Competencies – Social, Legal, and Ethical Issues

<table>
<thead>
<tr>
<th>Computer Skills Curriculum</th>
<th>Possible Activities</th>
<th>Alternative Activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>14.1 – Establish classroom policies and procedures that ensure compliance with copyright law, fair use guidelines, security and child protection</td>
<td>- NC DPI website</td>
<td>- Acceptable Use Policy within your school as class activity.</td>
</tr>
</tbody>
</table>

**Computer Lab Session #3**

**WebQuest Authoring**

The objectives of the third computer lab session were two-fold. First, was to search and find existing social studies WebQuests on the Internet. Second, was to create a Webquest using the Pacbell Bell WebQuest tutorial “Filamentality” on the Pacbell Bell website. A quick survey by the instructor of preservice teachers’ prior experiences with WebQuests revealed that none of the preservice teachers in the class have designed or used a Webquest prior to this course.

The instructor used the following procedure to integrate WebQuest in the methods course:

- Presented an overview of WebQuest and its importance in teaching social studies;
- Presented students with a handout on how to design a WebQuest;
- Presented a WebQuest done by a former student and reviewed the lesson presented in the WebQuest;
- Preservice teachers were given the opportunity to search the Internet to find WebQuests relating to social studies and then to narrow their searches to specific topics of interest relating to the topics that they were scheduled to teach during their practica experiences.
• Several relevant websites relating to WebQuests were found by preservice teachers and those websites were added as links to the WebCT Web Resource Page.

• The instructor then demonstrated how to design a WebQuest using one of the preservice teachers’ topic on “Elections” as an example for the class.

• The instructor again modeled how to conduct a Boolean search using www.google.com website.

• The instructor then instructed preservice teachers to search for web addresses related to their topics before starting the design of their WebQuest. The rest of the lab session was dedicated to Internet searches and construction of WebQuest.

• Preservice teachers started designing their WebQuest with the instructor’s guidance based on preservice teachers’ needs.

During this computer lab session, the instructor demonstrated other technology competencies. The instructor demonstrated the following technology competencies for preservice teachers:

• How to save word documents as web pages to upload into the assignment folder in WebCT

• Upload saved assignments into WebCT assignment folder.

• How to conduct Boolean Internet searches

• How to copy and save web addresses to add as links to WebQuest programs.

In addition to the enactive and vicarious experiences preservice teachers were exposed to during the WebQuest session, the instructor strongly encouraged (verbal persuasion) preservice teachers to include computer lab activities for students in the design of their WebQuests. The instructor also stated that WebQuests should be designed to foster group and collaborative activities, which are tenets of the constructivist approach to integrating technology. As result of this WebQuest experience, six of the seven preservice teachers (B.J., Scott, Lita, Athena, Zeus and Zhora) designed WebQuests that were used during their practica. The seventh preservice teacher, Lewis, integrated existing WebQuests during his teaching practice. In addition, all the WebQuests used during the practica
experiences included lab activities and students’ group work. For example, in Lita’s “American Industrialization in the Late 1800s and early 1900s” WebQuest, the group work and Internet activities were outlined in the following statement, “I will split the class into four groups: Industrialists, Labor, Child Labor, and Social Reformers. In your group, I want you to search books, magazine, and the Internet to find information about your topic.”

**How Do I Ensure You Use it in the Future?**

The following were the influences on preservice teachers’ self-efficacy toward using WebQuests as instructional and teaching tool: verbal persuasion, enactive experiences, vicarious experiences, and affective state of the students. As stated earlier, none of the students had prior experience with WebQuest as instructional tool or have designed one prior to this class. The instructor also made effective use of verbal persuasion throughout the lab session to influence students’ use of WebQuest as a teaching tool. The instructor urged preservice teachers to design a WebQuest that they would use in their practica. The instructor during her presentation of WebQuest also reiterated the fact that WebQuests are great for group activities and should be designed to foster group and collaborative activities.

The instructor provided students with vicarious experiences through her presentation on how to design a WebQuest. Her presentation was done through the use of an LCD projector and a computer. The instructor provided students with hands on experience to design a WebQuest using a tutorial “Filamentality” from the Pacbell Bell website. During their enactive experiences on designing WebQuests, students had the opportunity to visit the Pacbell bell WebQuest site, search the Internet and search for WebQuests relating to their topics. The affective state of the students played a significant role on preservice teachers’ perceptions of WebQuests as instructional tool in social studies. This was the preservice
teachers’ first exposure to WebQuest. During the lab sessions, all preservice teachers were actively engaged in reviewing WebQuests on the Internet and designing a WebQuest for their portfolio. All students produced an outline of a WebQuest by the end of the lesson to use in their practica. During their general Internet searches on WebQuests, preservice discussed the fact that they found more WebQuests designed for social studies than for any other content area. The WebQuest lab session engaged preservice teachers in a positive way. Scott (2002, December), who is an advanced computer user, had this to say about the WebQuest lab session in discussing the lab session that was most beneficial to him,

It would be the lab session we talked about the WebQuests because that was one thing I was not familiar with…particularly the setup of the WebQuest and how they worked. So, figuring out the process of how to setup a WebQuest was definitely useful. That would have been the most useful lab session for me.

**Computer Lab Session #4**

**Integrating PowerPoint Presentation in teaching**

The objective of the fourth lab session was to create a PowerPoint presentation to teach a topic. In creating the PowerPoint presentation, the following functions were demonstrated: add a background, add sounds, add slide animations and transitions, add images, add hyperlinks, add screen shot images to slides, add text, change font size and copy and paste pictures to slides.

**A Constructivist Moment**

Throughout her instruction of this class of preservice teachers, the instructor consistently stated that she uses a constructivist approach to teaching. Also, the instructor throughout the semester urged students to use group work and collaborative sessions to enhance their lesson and not to hesitate to make effective use of students’ knowledge in the
classroom. The instructor was put to the test during her presentation of the PowerPoint lesson. The computer lab that the instructor used for her lab sessions was recently furnished with the Microsoft XP package unknown to her. The instructor apparently had prepared her lesson based on the previous version that was in the lab, Microsoft 2000. When the instructor opened PowerPoint XP software, she was visibly shocked to realize that the layout and menus were completely different from the earlier versions. However, she was able to navigate her way through creating a PowerPoint sample for the students until she got to add a hyperlink and sound. She made several attempts to add hyperlinks and sounds to a slide but could not because as she stated, she was not familiar with PowerPoint XP version. She apologized to preservice teachers for her limited knowledge of the PowerPoint XP version. Eventually, she gave up and called upon students to problem-solve with her to add hyperlinks and sounds to the slide. The class was very interactive and preservice teachers worked together as a team. The preservice teachers worked together, shared ideas with the instructor to solve the layout differences. It was a constructivist experience for both the preservice teachers and the instructor.

Though, the instructor was apologetic to the preservice teachers for not being aware of the upgrade, she used this moment to reiterate the fact that preservice teachers should be prepared for moments like this during teaching. She urged preservice teachers to use group problem-solving activities when moments like this occur during their teaching. The lesson went on well. As a result of the interactive and enactive experiences the preservice teachers had during the lesson, two preservice teachers, Lita and Zhora, were able to design the skeletal frame for their PowerPoint presentation and presented it to their fellow preservice teachers at the end of the class. Lita’s presentation was on “Westward Expansion” and
Zhora’s presentation was on “Political Parties”. Both presentations were later developed into final products and used during their teaching practica experiences.

The preservice teachers were exposed to different influences during the PowerPoint lesson. The main influence was enactive experience, which was reflected in the products that were presented at the end of the lesson. Fellow preservice teachers and the instructor exposed preservice teachers to vicarious experiences through presentations. Six of seven preservice teachers used PowerPoint presentation during their practica experiences (see Table 4.33).

The hyperlink incident though uncomfortable for the instructor prepared the least prepared preservice teacher to face technological savvy students during his practicum. Lewis (2002, December), who is a beginner teacher, reflected on his practicum experiences with his limited technological knowledge and how he was able to learn with his students. He stated,

Many of my students are already very computer literate. Many of them couldn’t believe I didn’t know how to do a PowerPoint, save files, and have multiple windows opened. I was a little nervous around the computer. I did not really know how to save to a disk from certain files. So, they thought that was odd, interesting, and funny, but I learned that with them.

**Computer Lab Session #5**

**Integrating GIS and Web page**

The final instructional computer lab session integrated Geographic Information System (GIS) and Web page design in instruction. The instructor introduced GIS through www.Esri.com website. The focus of the GIS lesson was how to create maps using an existing GIS databases. The instructor also demonstrated how to use the www.Esri.com website as an instructional resource. The instructor further expanded on the use of GIS in instruction by introducing students to the Arc Voyager software. The instructor demonstrated (vicarious experience) how to use the software and provided preservice teachers with hands
on experience (enactive experience) with guidance as needed to navigate the software and create maps.

The second half of the computer lab was dedicated to creating a web page using Netscape Composer. The instructor informed the preservice teachers that the web page tutorial on the university’s website that they were about to use for this course was designed by a former student. She explained that since she was not knowledgeable in web design at that time, she had a student write up a tutorial that is now featured as a resource for all students at the university. She used this fact to support her constructivist approach to integrating technology in the social studies methods course. On inquiring about preservice teachers’ prior experiences with web design, only two students, Lita and B.J. have designed a web page prior to this course. The instructor provided guidance during the tutorial session. The instructor encouraged students to design a web page as part of their technology portfolio. This lab session was the last session in which a technology concept was presented. The other three lab sessions were dedicated to independent work and preservice teachers’ presentation of their two-week lesson plan.

Preservice Teachers’ Perceptions of GIS in the Methods Course

The perceptions of preservice teachers to the integration of GIS in the methods course varied. As a group, the preservice teachers did not feel comfortable using GIS as a teaching tool mainly because of their limited knowledge of the software. However, they identified some positive uses of GIS they used during their teaching practice and ways they could integrate GIS in their future teaching. Scott (2002, December), an advanced user discussed how he would use GIS in teaching. He stated,
For special projects it would be great. On a regular basis, I would like to use it to be able to come up with my own maps and … be able to integrate it into other presentations.

B.J. (2002, December), also an advanced user used GIS during his practicum experience and had this to say about GIS as an instructional tool,

There are many good maps on the GIS software. I really like the map activity that [the instructor] introduced…I don’t think geography is taught enough in the schools and she’s obviously a geography professor and is into geography… The CD she gave us where you can make maps, I used that twice to make maps out for activities in school. For map-making, I really liked it. The rest of the program I don’t know.

Lita (2002, December) on the other hand thought that GIS is an “interesting and great social studies tool.” Zhora (2002, December) elaborated upon the importance of GIS in social studies in the following statement. “I am a history teacher and you have to have your geography. I think GIS is good.”

Though the comfort level to use GIS was cited as the major factor that affected use in teaching during their practica experiences, preservice teachers cited the following problems using the GIS CD-ROM the instructor gave them:

1. The ability to find and make more accessible print out maps.
2. The data on the GIS disk was not current data.
3. Preservice teachers experienced problems printing the blank maps

Preservice Teachers’ Perceptions of Web Page Design in the Methods Course

The Preservice teachers felt that Web Page design was an important piece of technology that should be integrated in the methods course. However, the advanced students felt that the web design component (using Netscape Composer) that was integrated in the course did not meet their expectations. As B.J. put it, “I would love to be able to learn how to use Dream Weaver, rather than just the basics of putting information on website.” The advanced users wanted to use an in depth web design authoring tool such as, Dream Weaver.
Only two of the seven preservice teachers incorporated some aspects of web design during their practica. Athena designed and made limited use of a class web page and B.J. started constructing of a class web page for his cooperating teacher but did not finish the project.

Preservice teachers cited one major problem that hindered the integration of a class web page in their instruction during their practica experience, that of assuming full control of the course mid way through the semester. As stated earlier, the preservice teachers observed during the first eight weeks and assumed control of the class during the last eight weeks. This made it difficult to integrate a class web page. Lita (2002, December) illuminated this point in the following statement,

When I started with student teaching, I didn’t really see how I could do a web page for just such a brief amount of time. If it was something that was for the class for the entire year, entire semester, I could see the importance of the course website, especially if it’s going to have the syllabus and class activities.

Athena (2002, December) on the other hand integrated a course website but cited issues relating to unavailability to Internet access outside the classroom as a mitigating factor and she gave up on the idea of using it as an instructional tool. She elaborated on this in the following statement,

Yes! I did a class website. I used it very briefly. I found that I had listed assignments, due dates and other activities. I guess being a student teacher, I felt that I did not have the authority to say “you have to check this and if you don’t check this, you might not find out something” and then hold them accountable for that because I was hearing excuses like, I don’t have the Internet at home. So, after a while, the effort I was putting into using that technology was not worth what I was getting out of it.

Preservice teachers stated that the course website is a good instructional tool and they hope to use it when they get into teaching full time. B.J. (2002, December) in discussing how he would use the class website as an instructional tool stated,
It is something I am going to use extensively … because the biggest problem I had during my student teaching was keeping track of make-up work and kids missing school and then coming in to ask “what did we miss.” Keeping track of all of class activity on a website would be wonderful because I could just say ‘go to the website’.

**Constructivist Integration In the Social Studies Methods Course**

In discussing the computer lab sessions, issues relating to the use of the constructivist approach to integrating technology were discussed. However, the focus of this section is to align the constructivist integration of technology integration in this course with the Ewing et al. (1998) proposed model. The following categories from the Ewing et al. STARS WWW Task project proposed constructivist model were used to code and analyze the constructivist’s integration of technology in the methods course:

- Learning should be context based
- Conceptual learning is through active involvement
- Learning is through collaboration with others
- Learner should have personal autonomy and control over learning
- Learning is personal growth
- Learning outcome is a perspective and an understanding

**Table 4.10**

**How Learning was Context Based in the Social Studies Methods Course**

| Make sense of real life environment | The instructor ensured that all the lab sessions were related to the content area of social studies. The Internet search activity, WebQuest, PowerPoint, Web design, GIS, use of WebCT, and email activities were all related to the content area of social studies. As Athena stated, “It was practical things that we are going to use in our classroom. It was real world applications that we can use in our classrooms.” |
Table 4.10 (Continued)

| Contextualized in authentic activities | The context of the content area was familiar to students, which made it easier for them to transfer information to learned technology. The use of the WebCT email focused on authentic activities e.g. two main themes of WebCT were sharing information on Internet searches and uploading assignments into WebCT. Preservice teachers were able to transfer knowledge from their content area into WebQuests and PowerPoint. |
| Links with existing knowledge | Preservice teachers with prior experiences with the technologies activities were able to build quality products. In some instances, preservice teachers produced almost completed products during the lab sessions e.g. Lita and Zhora produced PowerPoint products during the lab session in which PowerPoint was introduced. The instructor started all lab sessions by checking preservice teachers’ prior experiences with the technology activity. |
| Content has established links with past experiences | In the course, no new social studies content topics were taught. The instructor used the content knowledge gained by preservice teachers in other courses to integrate technology in the methods course. The instructor consistently checked on preservice teachers’ prior experiences in using the technologies introduced in the course. |

Table 4.11
How Conceptual Learning was through Active Involvement in the Social Studies Methods Course

| Conceptual Learning is through active involvement |
| Understanding through participation | The computer lab sessions provided conceptual learning though active involvement. For example, all preservice teachers used WebQuest in their teaching practice. Six of the seven preservice teachers designed a WebQuest and through the Internet search, the seventh teacher found WebQuests that he used during his teaching practicum. The computer lab sessions built upon each other. |
| Knowledge construction is internal | In the design of their products, preservice teachers had to design products relating to topics they had to teach. The products were individualized. No two products were the same. Zhora elaborated on this theme in the following statement, “I think she did a good job taking us into it, introducing it to us and letting us basically explore the rest of it on our own.” |
| Knowledge grows from personal reconceptualizing | Preservice teachers were able to organize the materials collected from their Internet searches and use them to design instructional materials for their practicum based on their interests, abilities and topics they had to teach. Instructor left the decision to use a particular technology with a topic to the preservice teachers. |
| Learning involves personal meaning | Preservice teacher were able to determine what technology was relevant to their topics and determined what type of technology to use in their teaching. For example, all preservice teachers used WebQuests in their teaching and six of the seven used PowerPoint. Preservice teachers were able to give personal meaning to the different types of technologies presented by the instructor. |
| Experience becomes part of the meaning | The instructor provided students with vicarious experiences through her demonstrations of the different types of technologies and enactive experiences in every lab session. Lewis discussed this aspect of constructivism in the following statement, “I’m a hands on learner and I am a visual and auditory learner at the same time. So, that’s how I found it beneficial. I got the best of two worlds for something I did not know much about, which is technology, mainly computers.” |
Table 4.12
Learning through Collaboration with Others in the Social Studies Methods Course

<table>
<thead>
<tr>
<th>Learning is through collaboration with others</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Sharing knowledge and resolve misunderstandings</td>
<td>Preservice teachers shared information on their Internet searches with each other by submitting them for upload on to the WebCT Resource Page. Preservice teachers supplied a significant number of Internet resources on the course Website resource page. At the end of the course, 26 links were posted on the WebCT. Preservice teachers also shared their products with each other throughout the design phase during the lab sessions. For example, Lita and Zhora presented their initial design of their PowerPoint to their peers during the PowerPoint lab session. In addition, the instructor built into the course student presentations to promote sharing. Preservice teachers had the opportunity to present their selected technology teaching resources and received feedback from their peers. It was through sharing of ideas that most preservice teachers adopted Lita’s RAFT (Role of writer, Audience, Format and Topic) method of presenting information and activities to students.</td>
</tr>
<tr>
<td>Interaction for new knowledge</td>
<td>Instructor made effective use of problem solving activities during the lab sessions. For example, during the instructor’s problems using PowerPoint XP, preservice teachers worked as a group to put together a sequence that addressed the concepts that the instructor was trying to demonstrate. Lewis in one of his reflections wrote, “Let me first talk about teamwork…with the help of two teachers and the easy computer functions, I now understand that all you need is a little passion to help put technology in the classroom.”</td>
</tr>
<tr>
<td>Idea available for comment</td>
<td>The computer lab sessions were very interactive. Preservice teachers shared ideas and their discoveries. The presentation format embedded in the course by the instructor promoted this aspect of constructivism.</td>
</tr>
<tr>
<td>Understanding from shared construction</td>
<td>The computer lab sessions were very interactive. Preservice teachers shared Internet searches and their technology products through presentations, which the instructor strongly encouraged as a means of providing vicarious experiences for other preservice teachers.</td>
</tr>
<tr>
<td>Negotiation of outcomes</td>
<td>Though products were designed following a set design presented by the instructor, preservice teachers had the options to create designs that reflected their abilities, interests and topics. The second lab session was a brainstorming session to align technology artifacts with the advanced technology competencies.</td>
</tr>
</tbody>
</table>
Table 4.13
Preservice Teachers Personal Autonomy and Control over Learning

<table>
<thead>
<tr>
<th>Learner should have personal autonomy and control over learning</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Involves personal decision making</strong></td>
</tr>
<tr>
<td>The instructor presented different types of technology and strongly urged students to use them in their instruction but gave the preservice teachers the option to use what they felt was relevant to their lessons. Six of seven preservice teachers used PowerPoint, all preservice teachers used WebQuest and all students used video during their practicum (see Table 4.33).</td>
</tr>
<tr>
<td><strong>Derive own learning strategies and own goals.</strong></td>
</tr>
<tr>
<td>The nature of the computer lab sessions was to teach preservice teachers how to integrate technology in their instruction. The instructor left it to the decisions of preservice teachers when and how to integrate technology in their instruction.</td>
</tr>
<tr>
<td><strong>Learning event helps skills for planning</strong></td>
</tr>
<tr>
<td>The instructor provided many opportunities for preservice teachers to have experiences in designing their technology products. Zhora explained this aspect of constructivism in the following statement, “Also, giving us the time to actually explore on our own was a great help, because I also learn well on…learning and doing by myself. So, I think that the way she handled it worked very well for me just for those reasons.”</td>
</tr>
<tr>
<td><strong>Teacher mediation depends on needs and skills of learner</strong></td>
</tr>
<tr>
<td>The instructor was available to work one on one with preservice teachers and provided assistance, as needed e.g. working with Lewis to save his web addresses to a word processing environment. Also, when the instructor observed problems that most preservice teachers encountered, she demonstrated the concept for all students to see using the LCD projector. Zhora reflected on this aspect of the constructivist approach used by the instructor “…to see somebody doing it and she did a lot of hands-on, showing demonstrations… helped a lot.”</td>
</tr>
</tbody>
</table>
Table 4.14
How Learning was Personal Growth in the Social Studies Methods Course

<table>
<thead>
<tr>
<th>Learning is Personal Growth</th>
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</thead>
<tbody>
<tr>
<td>Thinking on task to reach shared understanding</td>
<td>The instructor embedded time for reflection during the semester. The first 30 minutes of the Wednesday sessions throughout the course was dedicated to reflection on their observations of their cooperating teacher and their teaching experiences, which included the use of technology. After the first two computer lab sessions, the instructor gave students an assignment to reflect on their use of technology. On his reflection, Lewis wrote, “I’ve learned how to do some PowerPoint work. I’ve never even used this type of technology before in my life.”</td>
</tr>
<tr>
<td>Personal reflection on progress</td>
<td>The instructor encouraged preservice teachers to reflect on their progress in using technology. This was done through written assignment and through class discussions. B.J. in his reflection of his progress stated, “The best thing I got out of the computer lab sessions was the website searches. The different websites to find good information on lesson plans, WebQuests and other instructional materials.” Lita on reflecting on her use of technology stated, “I know that when I start teaching, I have got this really neat idea of the Roman time, where I can get students to do mock interviews, like a news cast and video tape the sessions.”</td>
</tr>
<tr>
<td>Argument leading to reflection helps refine concepts</td>
<td>There were discussions on the use of technology within instruction. However, issues relating to ethics, copyrights and acceptable use policies were not discussed in depth in this course. The class discussions on the use of technology helped refined how preservice teachers used technology.</td>
</tr>
</tbody>
</table>
### Table 4.15
How Learning was a Perspective and an Understanding in the Social Studies Methods Course

<table>
<thead>
<tr>
<th>Learning Outcome</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Learning outcomes not specified</td>
<td>The instructor in presenting the different technologies presented the positives and negatives of using the technologies and left it to the devices of preservice teachers to experience the outcome when they use them in teaching. For example, the instructor informed preservice teachers to include Internet and group activities in designing their WebQuests to present students with different perspectives.</td>
</tr>
<tr>
<td>Outcomes are unique to the learner</td>
<td>The nature of the social studies method course reflected this constructivist perspective. There were no written examinations. Assessment was based on student’s portfolio, products, presentations and assignments. The assignments were open-ended. Therefore, the findings are unique only to individual preservice teachers. For example, the WebQuests were designed to present information from different group perspectives. The understanding of topics from using the WebQuests was based on the perspective of an assigned group within the WebQuest.</td>
</tr>
<tr>
<td>Tasks to have multiple perspectives</td>
<td>The use of WebQuests also gave students the opportunity to understand different perspectives through group presentations.</td>
</tr>
<tr>
<td>Different approaches to understanding</td>
<td>The instructor encouraged preservice teachers to use any technology they feel could better present the information to the student. For example, using different group perspectives with the WebQuests designed in this course reflected the use of different approaches to understanding. Also, the preservice teachers were given the option to develop a technology portfolio that reflected their interests, abilities and the relevance to the topics that they taught. For example, preservice teachers used PowerPoint for different stages of instruction. It was used for introducing lessons, presenting the body of the lesson, for artifact slide presentations and for reviewing unit in preparation for unit tests.</td>
</tr>
<tr>
<td>No limits to relevance of resources</td>
<td>The instructor left it to the preservice teachers to find the resources they would like to use in their technology products. The use of the World Wide Web provided preservice teachers with an unlimited resource link to find teaching resources – lesson plans, WebQuests, websites that addressed their topics of instruction.</td>
</tr>
</tbody>
</table>
Preservice Teachers Perceptions of the Computer Lab Sessions

Preservice teachers had mixed perceptions on the effectiveness of the computer lab sessions. Perceptions ranged from not beneficial at all to very beneficial. The variations were pretty much in line with the computer skill level of the preservice teachers. The advanced technology users felt that the sessions were not beneficial to them and the beginner users felt that the computer lab sessions were beneficial to them. For example, Scott, who is an advanced user, in this discussing the computer lab sessions stated, “The lab sessions were not usually very beneficial, only because I had the experience.” On the other hand, Zeus (2002, December), who is a beginner user, had this to say about the computer lab sessions,

Well, I can just sum it up by saying without the computer labs sessions, I would have been lost as far as integrating technology to the extent that I did in the classroom. I would not have been able to go beyond overheads and videos.

Though the collective lab sessions were not beneficial to all the preservice teachers, they were able to identify computer lab sessions that were most and least beneficial to them. Table 4.16 presents an overview of the most and least beneficial lab sessions to preservice teachers.

Table 4.16

<table>
<thead>
<tr>
<th>Preservice Teacher</th>
<th>Computer Skill Levels</th>
<th>Most Beneficial Session</th>
<th>Least Beneficial Session</th>
</tr>
</thead>
<tbody>
<tr>
<td>Athena</td>
<td>Intermediate</td>
<td>PowerPoint</td>
<td>GIS (missed session)</td>
</tr>
<tr>
<td>Scott</td>
<td>Advanced</td>
<td>WebQuest</td>
<td>PowerPoint</td>
</tr>
<tr>
<td>B.J.</td>
<td>Advanced</td>
<td>Websites for Lesson Plans</td>
<td>PowerPoint</td>
</tr>
<tr>
<td>Zhora</td>
<td>Intermediate</td>
<td>PowerPoint</td>
<td>None</td>
</tr>
<tr>
<td>Zeus</td>
<td>Beginner</td>
<td>PowerPoint</td>
<td>None</td>
</tr>
<tr>
<td>Lewis</td>
<td>Beginner</td>
<td>PowerPoint</td>
<td>WebQuest</td>
</tr>
<tr>
<td>Lita</td>
<td>Beginner</td>
<td>WebQuest</td>
<td>Internet Searches</td>
</tr>
</tbody>
</table>
Preservice Teachers’ Perceptions of Future Technology Integration in the Methods Course

Though the computer lab sessions were beneficial to preservice teachers in varying degrees, they had a vision of what additions should be made to computer integration in the social studies methods course to make it more technologically resourceful for preservice teachers. The vision for how technology should be integrated in the social studies methods course in the future depended on the computer skill level of the preservice teacher. The views of the advanced users were different from that of the intermediate and beginner users. Therefore, this section addresses the perceptions of the advanced, intermediate and beginner users on the future technology integration in the social studies methods course.

Advanced Users’ Perceptions of Future Technology Integration

Scott, who is an advanced user, wanted a more in-depth review of programs, more sophisticated programs like Dream Weaver (web authoring tool), instructional software relating to social studies education, and more structure to the lab sessions in terms of “what is expected with the specific skills that we were expected to get out of the lab sessions.”

B.J. (2002, December), who is also an advanced user, further, defined what the structure of the lab sessions should look like from a constructivist perspective,

I would just like to have it be more up to the individuals to decide how they want to use that time … the instructor should outline what students need to know and then if you already know a lot of that technology, have an opportunity to be able to go beyond that and learn how to do more. By that I mean, detailed activities on Internet or on website design.

B.J. further elaborated on the importance of adding more programs that would help preservice teachers integrate technology in teaching,

I wanted to get more in depth rather than the basics. If you’ve gone through college nowadays, there is no way you can get through college without knowing a lot about
computers anymore. So I would like to see more in depth activities, like more specific education programs that are out there or find software that helps you design tests and lesson plan activities.

Intermediate Users’ Perceptions of Future Technology Integration

Athena (2002, December), who is an intermediate user, was more concerned about aligning technologies learned in the methods course to the units that they taught during their teaching practice. The design phase of the technology did not coincide with the teaching phase. Therefore, the designs were based on projected areas of teaching, rather than on the actual topics that they taught. To ensure that there is a relationship between the design phase and the teaching phase, she stated,

When the student teachers come in, they should go to their cooperating teacher and map out for the whole semester what units they are going to do, when they start it, when they finish, and when they test. Map everything out, so that when it comes to using the technology, you can use it in your two-week plan and in your classroom and you would not be past that content.

Zhora (2002, December) wanted a more constructivist approach to technology integration to the methods course. She stated,

I would basically start with the basics like we did; basic email, basic PowerPoint. I would probably not limit the web creation activities to a certain WebQuest format, but to maybe present different formats that other students have done and let them be more creative that way.

Beginner Users’ Perceptions of Future Technology Integration

Lita (2002, December), a beginner user felt that preservice teachers should come to the course with the basic computer skills. So, time should not be spent teaching basics. She stated, “I would assume that they knew more and then I would start right away with PowerPoint, WebQuest and the Web Page.” Lita also emphasized the need for more in depth
review of web design in future classes. Lita also would like to have more computer lab time to increase collaboration between preservice teachers. Lewis, also a beginner user reiterated the need for more computer lab sessions. He stated that one way to do it is to have more regular class times in the computer lab. Zeus (2002, December) the other beginner had a more defined outline of how to increase class times in the lab. He stated,

You could have two days a week or maybe two and two. For example, you go two days in the classroom and one in the computer lab and the next week you go one in the class and two in the computer lab. Maybe, we could learn more technologies like making web pages.

Zeus like all the other preservice teachers felt that the integration of a grading program or a program that teaches students how to design a grade book and use databases in social studies was very relevant to the course. He stated,

You could use a day in the computer lab to show students how to use Intergrade because we never really did that, which is not really hard at all. My [cooperating] teacher showed me how to use it. Without him showing me how to use it, I probably would not have known how. But I am not really sure how you would use a database in social studies.

Zhora (2002, December) also echoed this view in the following statement,

If you could get a copy of Intergrade, to go over something like that, because it’s used in all of [North] County ... I think an introduction to how to do that in a classroom situation would be phenomenal, instead of having to learn it all by yourself when you get out there. That’s what I would strongly recommend.
Sub-Research Question#2 – What was the impact of instructor’s modeling behavior on preservice teachers’ attitudes and practices toward information technology as teaching and learning tools?

This sub-research question was initially addressed using the descriptive statistic design of comparing the mean pre-course and post-course scores of the TAT and the TAC for a noteworthy finding. A noteworthy finding is determined at .50 and above on the difference between the pre-course and post-course mean scores. The findings from the descriptive statistics were then analyzed using the case study data to align the descriptive statistics findings with the qualitative data. Several assumptions relating to the impact of instructor’s modeling behavior on the attitudes of preservice teachers toward computer and information technology were developed by this researcher and analyzed using descriptive statistics.

**Attitudes Toward Computer**

**Assumption #2**

This assumption addressed the effects of technology integration on preservice teachers’ attitudes toward computer. It was the assumption of this researcher that there will be a noteworthy difference between the pre-course and post-course mean scores of preservice teachers on the TAC instrument. The TAC was used to measure the attitudes of preservice teachers toward computer pre and post the social studies methods course. Minimal difference was observed between the pre-course (3.33) and post-course (3.48) means scores of preservice teachers as listed in Table 4.17. However, the difference was not noteworthy.

The post-course mean percentile score was higher than the pre-course score. There was a mean percentile difference of .15 between the pre-course and post-course means of preservice teachers’ attitudes towards computer in this study.
Table 4.17
Comparison of Mean Pre and Post Course Scores on TAC

<table>
<thead>
<tr>
<th>Social Studies Methods course</th>
<th>n</th>
<th>M</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre- Course Technology Integration</td>
<td>07</td>
<td>3.33</td>
</tr>
<tr>
<td>Post- Course Technology Integration</td>
<td>07</td>
<td>3.48</td>
</tr>
</tbody>
</table>

**Attitudes Toward Information Technology**

**Assumption #3**

This assumption addressed the effects of technology integration on preservice teachers’ attitudes toward information technology. It was the assumption of this researcher that there will be a noteworthy difference between the pre-course and post-course mean scores of preservice teachers on the TAT instrument. The TAT was used to measure the attitudes of preservice teachers towards information technology pre and post the social studies methods course. No noteworthy differences were observed between the pre-course (3.94) and post-course (3.82) mean scores of preservice teachers as listed in Table 4.18. The pre-course mean percentile score was higher than the post-course score. There was a mean percentile decrease of .12 between the pre-course and post-course means of preservice teachers’ attitude toward information technology in this study.

Table 4.18
Comparison of Mean Pre and Post Course Scores on TAT

<table>
<thead>
<tr>
<th>Social Studies Methods course</th>
<th>n</th>
<th>M</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre- Course Technology Integration</td>
<td>07</td>
<td>3.94</td>
</tr>
<tr>
<td>Post- Course Technology Integration</td>
<td>07</td>
<td>3.82</td>
</tr>
</tbody>
</table>
To more fully understand the findings of TAT, descriptive statistical analysis comparing the pre-course and post-course mean scores were conducted on the components of TAT to see if there were noteworthy findings. This was done because the components of TAT related directly to the types of technologies integrated in the social studies methods course and the types of activities conducted by preservice teachers in their practica experiences. The following are the components of TAT: Electronic mail, WWW, Multimedia, Teacher Productivity and Student Productivity. The components of TAT were addressed as by sub-assumptions of this researcher’s assumption #3.

**Sub-Assumption # 3.1**

This assumption addressed the effects of technology integration on preservice teachers’ attitudes toward information technology – E-mail. It was the assumption of this researcher that there will be a noteworthy difference between the pre-course and post-course mean scores of preservice teachers on the TAT – E-mail component. The TAT-E-mail component was used to measure the attitudes of preservice teachers towards E-mail pre and post the social studies methods course. No noteworthy differences were observed between the pre-course (4.13) and post-course (4.11) mean scores of preservice teachers as listed in Table 4.19. The pre-course mean percentile score was higher than the post-course score. There was a mean percentile decrease of .2 between the pre-course and post-course means of preservice teachers’ attitude toward information technology – E-mail component of TAT in this study.
Table 4.19
Comparison of Mean Pre and Post Course Scores on TAT – E-Mail

<table>
<thead>
<tr>
<th>Social Studies Methods Course</th>
<th>n</th>
<th>M</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre- Test Technology Integration 07</td>
<td>4.13</td>
<td></td>
</tr>
<tr>
<td>Post- Test Technology Integration 07</td>
<td>4.11</td>
<td></td>
</tr>
</tbody>
</table>

Sub-Assumption # 3.2

This assumption addressed the effects of technology integration on preservice teachers’ attitudes toward information technology – WWW. It was the assumption of this researcher that there will be a noteworthy difference between the pre-course and post-course mean scores of preservice teachers on the TAT –WWW component. The TAT-WWW component was used to measure the attitudes of preservice teachers toward the World Wide Web pre and post the social studies methods course. No noteworthy differences were observed between the pre-course (3.84) and post-course (3.71) mean scores of preservice teachers as listed in Table 4.20. The pre-course mean percentile score was higher than the post-course score. There was a mean percentile decrease of .13 between the pre-course and post-course means of preservice teachers’ attitude toward information technology –WWW component of TAT in this study.

Table 4.20
Comparison of Mean Pre and Post Course Scores on TAT- WWW

<table>
<thead>
<tr>
<th>Social Studies Methods Course</th>
<th>n</th>
<th>M</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre- course Technology Integration 07</td>
<td>3.84</td>
<td></td>
</tr>
<tr>
<td>Post- course Technology Integration 07</td>
<td>3.71</td>
<td></td>
</tr>
</tbody>
</table>
**Sub-Assumption # 3.3**

This assumption addressed the effects of technology integration on preservice teachers’ attitudes toward information technology – Multimedia. It was the assumption of this researcher that there will be a noteworthy difference between the pre-course and post-course mean scores of preservice teachers on the TAT –Multimedia component. The TAT-Multimedia component was used to measure the attitudes of preservice teachers towards multimedia pre and post the social studies methods course. No noteworthy differences were observed between the pre-course (4.03) and post-course (3.88) mean scores of preservice teachers as listed in Table 4.21. The pre-course mean percentile score was higher than the post-course score. There was a mean percentile decrease of .15 between the pre-course and post-course means of preservice teachers’ attitude toward information technology – Multimedia component of TAT in this study.

Table 4.21
Comparison of Mean Pre and Post Course Scores on TAT- Multimedia

<table>
<thead>
<tr>
<th></th>
<th>Social Studies Methods Course</th>
<th>n</th>
<th>M</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre- course</td>
<td>Technology Integration</td>
<td>07</td>
<td>4.03</td>
</tr>
<tr>
<td>Post- course</td>
<td>Technology Integration</td>
<td>07</td>
<td>3.88</td>
</tr>
</tbody>
</table>

**Assumption # 3.4**

This assumption addressed the effects of technology integration on preservice teachers’ attitudes toward information technology – Teacher Productivity. It was the assumption of this researcher that there will be a noteworthy difference between the pre-course and post-course mean scores of preservice teachers on the TAT –Teacher Productivity component. The TAT-Teacher Productivity component was used to measure the attitudes of
preservice teachers towards teacher productivity pre and post the social studies methods course. No noteworthy differences were observed between the pre-course (3.87) and post-course (3.73) mean scores of preservice teachers as listed in Table 4.22. The pre-course mean percentile score was higher than the post-course score. There was a mean percentile decrease of .14 between the pre-course and post-course means of preservice teachers’ attitude toward information technology –Teacher Productivity component of TAT in this study.

Table 4.22
Comparison of Mean Pre and Post Course Scores on TAT – Teacher Productivity

| Comparison of Mean Pre and Post Course Scores on TAT – Teacher Productivity |
|-------------------------------------------------|----------|-------|
| Social Studies Methods Course                   | n        | M     |
| Pre- course Technology Integration              | 07       | 3.87  |
| Post- course Technology Integration             | 07       | 3.73  |

**Assumption # 3.5**

This assumption addressed the effects of technology integration on preservice teachers’ attitudes toward information technology – Student Productivity. It was the assumption of this researcher that there will be a noteworthy difference between the pre-course and post-course mean scores of preservice teachers on the TAT –Student Productivity component. The TAT-Student Productivity component was used to measure the attitudes of preservice teachers towards student productivity pre and post the social studies methods course. No noteworthy differences were observed between the pre-course (3.81) and post-course (3.66) mean scores of preservice teachers as listed in Table 4.23. The pre-course mean percentile score was higher than the post-course score. There was a mean percentile decrease
of .15 between the pre-course and post-course means of preservice teachers’ attitude toward information technology –Student Productivity component of TAT in this study.

Table 4.23
Comparison of Mean Pre and Post Course Scores on TAT- Student Productivity

<table>
<thead>
<tr>
<th>Social Studies Methods Course</th>
<th>n</th>
<th>M</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre- Course Technology Integration</td>
<td>07</td>
<td>3.81</td>
</tr>
<tr>
<td>Post- Course Technology Integration</td>
<td>07</td>
<td>3.66</td>
</tr>
</tbody>
</table>

Analysis of Preservice Teachers’ Technology Integration

To more fully understand the impact of instructor’s modeling behavior on preservice teachers, their products, class presentations and portfolios were analyzed. This section reviews a snapshot of technology integration by each preservice teacher.

Zeus

At the beginning of this course, Zeus classified his technology skill in the beginner category. His two-week lesson plan presentation was on the “Roman Culture and Heritage (500 BC – 476 AD).” Zeus presented the following types of technologies in his instruction: WebQuest, PowerPoint, Internet Searches, e-mail, use of Video and word processing assignments. He integrated all the technologies that were introduced in the course except for the webpage and GIS.

To design his lessons, Zeus used Internet searches to find his resources and web addresses. He used a template on the Pacbell bell website to design his WebQuest. Zeus used nine websites in his WebQuest as displayed in Table 4.24 (see Appendix Q for course website collection). Zeus created a PowerPoint instructional presentation on “Roman Culture
& Heritage (500 BC –476 AD).” The PowerPoint presentation was used to introduce the topic, Roman Culture & Heritage (500 BC – 476 AD). Zeus designed the WebQuest titled “Do As the Romans Do” for his practicum and his technology portfolio, which can be accessed via the Internet at http://www.kn.pacbell.com/wired/fil/pages/webromanemda.html.

Table 4.24

Internet Resources in Zeus’ WebQuest

<table>
<thead>
<tr>
<th>Internet Resources in Zeus’ WebQuest</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><a href="http://myron.sjsu.edu/romeweb/GOVT/senat2.htm">http://myron.sjsu.edu/romeweb/GOVT/senat2.htm</a></td>
<td>The Roman Senate</td>
</tr>
<tr>
<td><a href="http://myron.sjsu.edu/romeweb/GOVT/early_govt.htm">http://myron.sjsu.edu/romeweb/GOVT/early_govt.htm</a></td>
<td>Evolution of the Roman Government</td>
</tr>
<tr>
<td><a href="http://www.sas.upenn.edu/~ekondrat/Rome_Govt.html">http://www.sas.upenn.edu/~ekondrat/Rome_Govt.html</a></td>
<td>The Government of Rome in the Republic</td>
</tr>
<tr>
<td><a href="http://dominae.fws1.com/republican_women/Index.html">http://dominae.fws1.com/republican_women/Index.html</a></td>
<td>The women of Ancient Rome</td>
</tr>
<tr>
<td><a href="http://dominae.fws1.com/imperial_women/Index.html">http://dominae.fws1.com/imperial_women/Index.html</a></td>
<td>Imperial Women of Ancient Rome</td>
</tr>
<tr>
<td><a href="http://www3.sv.vccs.edu/his101a6/newpage6.htm">http://www3.sv.vccs.edu/his101a6/newpage6.htm</a></td>
<td>Ancient Rome</td>
</tr>
<tr>
<td><a href="http://www.bible-history.com/rome/index.html">http://www.bible-history.com/rome/index.html</a></td>
<td>The History of Rome</td>
</tr>
</tbody>
</table>

The WebQuest was designed as presentational and instructional tool. As a presentation tool, Zeus presented the WebQuest as part of his instruction to the students. As an instructional tool, the students were required to follow the directions of the Webquest to complete the required assignments. Apart from the fact that the Webquest was an integration of technology in the lesson from Zeus’s presentation of lesson, the use of the WebQuest in the lesson enhanced students’ technology competencies in the following ways:
1. Students were required to use Internet links provided on the WebQuest to search for information relating to the lesson. For example, in Zeus’ WebQuest, the following instruction was given to students

   Links listed below are to help you find the role of your designated group. Some links have information for one group, and some have information for two or three group. Not all of the information is relevant so you will have to sift through the websites.

2. In addition, students were requested to word-process their findings in “1/2 page to 3/4 page” for presentation to the class.

3. Expert feedback via email was also included: Students were requested to submit their final reports as an attachment to Dr. Gilmartin, Professor of Roman History at North Carolina State University, Raleigh, N.C. for review and feedback from an expert in the field.

4. Zeus also had his email address on the WebQuest, so students could email him if they have questions about the project or assignment.

   During his practicum, Zeus used the following movies to enhance his instructor: clips from the movie “Gladiator” was used to demonstrate one battle scene and show the architectural beauty of Rome. “Spartacus” was also shown as part of the Roman unit. A short movie on the Crusades, a short video on the culture and literature of medieval times and the movie “Black Death” were also shown.

   **Zhora**

   At the beginning of the course, Zhora classified herself as an intermediate computer user. Zhora’s two-week lesson plan presentation was on “Political Parties.” The following types of technologies were presented in the lesson: PowerPoint, WebQuest and Internet resources. The PowerPoint presentation titled, “Political Parties” was used to introduce the
lesson and WebQuest and Internet searches were used to enhance the lesson. To design the lesson, Zhora used Internet searches to find her resources and websites. She used a template on the Pacbell bell website to write her Webquest. Zhora used 16 websites in her WebQuest designed for the “Political Parties” lesson as displayed in Table 4.25 (see Appendix Q for course website collection). Zhora designed a PowerPoint instructional presentation on Political parties that was used to introduce the topic. Zhora designed the Webquest titled “Political Parties WebQuest”, which can be accessed via the Internet at http://www.kn.pacbell.com/wired/fil/pages/webpoliticast.html.

Table 4.25

Internet Resources on Zhora’s WebQuest

<table>
<thead>
<tr>
<th>Internet Resources on Zhora’s WebQuest</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><a href="http://www.ncgop.org/">http://www.ncgop.org/</a></td>
<td>North Carolina Republican Party</td>
</tr>
<tr>
<td><a href="http://usgovinfo.about.com/library/weekly/aa041600a.htm">http://usgovinfo.about.com/library/weekly/aa041600a.htm</a></td>
<td>Why Third Parties?</td>
</tr>
<tr>
<td><a href="http://www.politics1.com/parties.htm">http://www.politics1.com/parties.htm</a></td>
<td>Directory of Political Parties</td>
</tr>
<tr>
<td><a href="http://www.democrats.org/about/donkey.html">http://www.democrats.org/about/donkey.html</a></td>
<td>The Democratic Donkey</td>
</tr>
<tr>
<td><a href="http://www.democrats.org/states/states.html">http://www.democrats.org/states/states.html</a></td>
<td>Democratic National Committee</td>
</tr>
<tr>
<td><a href="http://www.rnc.org/gopinfo/elephant">http://www.rnc.org/gopinfo/elephant</a></td>
<td>Who we are? Origin of the Elephant</td>
</tr>
</tbody>
</table>
Table 4.26

Additional Internet Resources used by Zhora’s WebQuest

<table>
<thead>
<tr>
<th>Additional Internet Resources used by Zhora’s WebQuest</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Group #1- Mothers against Drunk Driving: <a href="http://www.Madd.org">www.Madd.org</a></td>
</tr>
<tr>
<td>2. Group#2 – National organization for women: <a href="http://www.Now.org">www.Now.org</a></td>
</tr>
<tr>
<td>3. Group#3 – NAACP: <a href="http://www.naacp.org">www.naacp.org</a></td>
</tr>
<tr>
<td>4. Group#4 – ACLU: <a href="http://www.aclu.org">www.aclu.org</a></td>
</tr>
<tr>
<td>5. Group#5 – Sierra Club: <a href="http://www.sierraclub.org">www.sierraclub.org</a></td>
</tr>
<tr>
<td>6. Group#6 – Amnesty International: <a href="http://www.amnesty.org">www.amnesty.org</a></td>
</tr>
</tbody>
</table>

The WebQuest was designed as a presentation and instructional tool. As a presentation tool, Zhora presented the WebQuest as part of her presentation to her students. As an instructional tool, the students were required to follow the directions on the WebQuest to complete the required assignments. Apart from the fact that the WebQuest integrated technology from the teacher’s perspective, the use of the WebQuest addressed the students’ technology competencies in the following ways:

1. Students were required to use Internet links provided on the WebQuest to search for information relating to their assignments on the WebQuest. The following is an instruction for students on the WebQuest:

   Use the Internet information link below to answer the basic questions of who? What? Where? When? Why? and How? Be creative in exploring the information so that you answer these questions as fully and insightfully as you can.

Also, Zhora wanted to expand their knowledge of the topic by exploring the Internet as presented below “Objective: Use the Internet to research an assigned interest group. Prepare a 5-minute presentation that will teach the class about your interest group.”
2. Zhora also had her email address on the WebQuest so students could email her if they have questions about the project or assignment.

Scott

At the beginning of the course, Scott classified himself as an advanced user. Scott’s two-week lesson plan presentation was on “Voting and Elections”. The following types of technologies were presented in the lesson: Internet resources, Video, WebQuest activity and pamphlet design on elections. As part of the lesson, Scott presented students with one article from newsobserver.com entitled “NCAE Support up in air.” Scott also used video to enhance his lesson. Scott had students view a collection of Senate campaign commercials and identify techniques used by each candidate. As an assignment, Scott had the students create their own interest group pamphlet. This assignment addressed students’ technology competencies in desktop publishing. Scott designed the WebQuest “A hotlist on Sectionalism: An Internet Hotlist on Sectionalism,” which can be found at the following web address http://www.kn.pacbell.com/wired/fil/pages/listsectionamr.html.

Scott linked nineteen websites to his WebQuest. Table 4.27 outlines the websites used by Scott in his WebQuest (see Appendix Q for course website collection). Scott used the WebQuest as an instructional tool and this is how Scott introduced the WebQuests to the students, “Take a look at the websites you're assigned to. Read over them and look at pictures and maps.”
Table 4.27
Internet Resources on Scott’s WebQuest Hotlist

<table>
<thead>
<tr>
<th>Internet Resources on Scott’s WebQuest Hotlist</th>
<th>Pre-Civil War Timeline</th>
</tr>
</thead>
<tbody>
<tr>
<td><a href="http://www.sparknotes.com/history/american/precivilwar/htimeline.html">http://www.sparknotes.com/history/american/precivilwar/htimeline.html</a></td>
<td>Pre-Civil War Timeline</td>
</tr>
<tr>
<td><a href="http://www.learner.org/biographyofamerica/prog10/index.html">http://www.learner.org/biographyofamerica/prog10/index.html</a></td>
<td>Coming of the Civil War</td>
</tr>
<tr>
<td><a href="http://valley.vcdh.virginia.edu/maps.html">http://valley.vcdh.virginia.edu/maps.html</a></td>
<td>Images of the Civil War</td>
</tr>
<tr>
<td><a href="http://www.iath.virginia.edu/seminar/unit4/unit4.html">http://www.iath.virginia.edu/seminar/unit4/unit4.html</a></td>
<td>Summary of growing sectionalism</td>
</tr>
<tr>
<td><a href="http://www.history.ilstu.edu/Education/nhp_site/conflict/2doc2.html">http://www.history.ilstu.edu/Education/nhp_site/conflict/2doc2.html</a></td>
<td>Wilmot Proviso</td>
</tr>
<tr>
<td><a href="http://allsands.com/History/Places/californiastate_rfn_gn.htm">http://allsands.com/History/Places/californiastate_rfn_gn.htm</a></td>
<td>California Statehood</td>
</tr>
<tr>
<td><a href="http://www.encyclopedia.com/html/w/wilmotp1r.asp">http://www.encyclopedia.com/html/w/wilmotp1r.asp</a></td>
<td>Wilmot Proviso description</td>
</tr>
<tr>
<td><a href="http://www.californiahistory.net/goldFrame-statehood.htm">http://www.californiahistory.net/goldFrame-statehood.htm</a></td>
<td>California Statehood description</td>
</tr>
<tr>
<td><a href="http://www.nationalgeographic.com/railroad/">http://www.nationalgeographic.com/railroad/</a></td>
<td>Underground Railroad</td>
</tr>
<tr>
<td><a href="http://www.ushistory.com/rrlyric.htm">http://www.ushistory.com/rrlyric.htm</a></td>
<td>Underground Railroad Song</td>
</tr>
<tr>
<td><a href="http://www.iath.virginia.edu/utc/index2f.html">http://www.iath.virginia.edu/utc/index2f.html</a></td>
<td>Uncle Tom’s Cabin</td>
</tr>
<tr>
<td><a href="http://www.ghg.net/hollaway/civil/civil6a.htm">http://www.ghg.net/hollaway/civil/civil6a.htm</a></td>
<td>Describing the Abolitionist movement</td>
</tr>
<tr>
<td><a href="http://library.wustl.edu/vlib/dredscott/">http://library.wustl.edu/vlib/dredscott/</a></td>
<td>Dred Scott</td>
</tr>
<tr>
<td><a href="http://www.u-s-history.com/pages/h83.html">http://www.u-s-history.com/pages/h83.html</a></td>
<td>Kansas –Nebraska Act</td>
</tr>
<tr>
<td><a href="http://www.nebraskastudies.org/0500/frameset_reset.html">http://www.nebraskastudies.org/0500/frameset_reset.html</a>?</td>
<td>Kansas-Nebraska Act</td>
</tr>
<tr>
<td><a href="http://www.nebraskastudies.org/0500/stories/0502_0100.html">http://www.nebraskastudies.org/0500/stories/0502_0100.html</a></td>
<td>Assault on Charles Sumner</td>
</tr>
<tr>
<td><a href="http://www.spartacus.schoolnet.co.uk/USAbrooksP.htm">http://www.spartacus.schoolnet.co.uk/USAbrooksP.htm</a></td>
<td>Bleeding Kansas and Sumner</td>
</tr>
<tr>
<td><a href="http://www.gliah.uh.edu/database/article_display.cfm?HHID=332">http://www.gliah.uh.edu/database/article_display.cfm?HHID=332</a></td>
<td></td>
</tr>
</tbody>
</table>

Lita

At the beginning of the course, Lita classified herself as a beginner computer user.

Lita’s two-week lesson plan presentation was on “American Industrialization in the Late
1800s and early 1900s”. The following types of technologies were presented in the lesson: PowerPoint, Webquest, Internet resources, Video, and creation of an electronic news article.

To design this lesson, Lita used Internet searches to find her resources and web addresses. She used a template on the Pacbell bell website to write her Webquest. Lita used 21 websites in her WebQuest designed for this lesson and handouts given to students as presented in Tables 4.28 and 4.29 (see Appendix Q for course website collection). Lita designed a PowerPoint presentation titled, “Photos of Child Labor”, which was used to present pictures on child labor during the period being studied. Lita designed the WebQuest titled “American Industrialization in the Late 1800s and early 1900s”, which can be accessed via the Internet at [http://www.kn.pacbell.com/wired/fil/pages/webindustrili.html](http://www.kn.pacbell.com/wired/fil/pages/webindustrili.html).

<table>
<thead>
<tr>
<th>Internet Resources on Lita’a WebQuest</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>[<a href="http://memory.loc.gov/ammem/ndlpedu/features/timeline/riseind/ris">http://memory.loc.gov/ammem/ndlpedu/features/timeline/riseind/ris</a> eof.html](<a href="http://memory.loc.gov/ammem/ndlpedu/features/timeline/riseind/ris">http://memory.loc.gov/ammem/ndlpedu/features/timeline/riseind/ris</a> eof.html)</td>
<td>Rise of Industrial America 1876-1900</td>
</tr>
<tr>
<td><a href="http://www.engr.sjsu.edu/pabacker/industrial.htm">http://www.engr.sjsu.edu/pabacker/industrial.htm</a></td>
<td>The industrialization of America</td>
</tr>
<tr>
<td><a href="http://www.ohiou.edu/esl/elective/work.html#IndustrialRevolution">http://www.ohiou.edu/esl/elective/work.html#IndustrialRevolution</a></td>
<td>Americans At Work – Ohio University</td>
</tr>
<tr>
<td><a href="http://www.school.kiev.ua/Htm/Technologie/PC%20In%20School/USLection/ch27.html">http://www.school.kiev.ua/Htm/Technologie/PC%20In%20School/USLection/ch27.html</a></td>
<td>Cities and Workers</td>
</tr>
</tbody>
</table>
Table 4.28 (Continued)

<table>
<thead>
<tr>
<th>Internet Resources on Handouts Lita gave her Students</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Legacy of the Great Plains Indian Wars – <a href="http://www.sasinschool.com">www.sasinschool.com</a></td>
</tr>
<tr>
<td>Battle of Wounded Knee – <a href="http://www.sasinschool.com">www.sasinschool.com</a></td>
</tr>
<tr>
<td>Battle of Little Bighorn – <a href="http://www.sasinschool.com">www.sasinschool.com</a></td>
</tr>
</tbody>
</table>

The WebQuest was designed as a presentation and instructional tool. As a presentation tool, Lita presented the WebQuest as part of her presentation to her students. As an instructional tool, the students were required to follow the directions on the WebQuest to complete the required assignments. In addition to the fact that the WebQuest integrated
technology from the teacher’s perspective, the use of the WebQuest addressed the students’ technology competencies in the following ways:

1. Students were required to use Internet links provided on the WebQuest to search for information relating to their assignments on the WebQuest. The following is an instruction for students on the WebQuest:

   Read through the files linked to your group. If you print out the files, underline the passages that you feel are the most important. If you look at the files on the computer, copy sections you feel are important by dragging the mouse across the passage and copying/pasting it into word processor or other writing software…remember to write down or copy/paste the URL of the file you take the passage from so you can quickly go back to it if you need to prove your point.

Lita also had her email address on the WebQuest so students could email her if they have questions about the project or assignments.

**Athena**

At the beginning of the semester, Athena classified herself as an intermediate computer user. Athena’s two-week lesson plan presentation was on “Who’s Who in the Middle Ages”. The following types of technologies were presented in the lesson: PowerPoint, WebQuest, Internet resources, and word-processed journals. To design the lesson, Athena used Internet searches to find her resources and web addresses. She used a template on the Pacbell bell website to write her WebQuest including her results from the Internet searches. Athena used six websites in her WebQuest including the WebQuest that she designed for this lesson as presented in Table 4.30 (see Appendix Q for course website collection).

Athena designed the WebQuest titled “Who’s Who in the Middle Ages”, which can be accessed via the Internet at [http://www.kn.pacbell.com/wired/fil/pages/webmiddleaas.html](http://www.kn.pacbell.com/wired/fil/pages/webmiddleaas.html).
The WebQuest was designed as a presentation and instructional tool. As a presentation tool, Athena presented the WebQuest as part of her presentation to her students. As an instructional tool, the students were required to follow the directions on the WebQuest to complete the required assignments. Apart from the fact that the WebQuest integrated technology from the teacher’s perspective, the use of the WebQuest addressed the students’ technology competencies in the following ways:

1. Students were required to use Internet links provided on the WebQuest to search for information relating to their assignments on the WebQuest. The following is an instruction for students on the WebQuest:

   In this WebQuest you will be working together with a group of students in class. Each group will be assigned a character from medieval society. You will research that character using assigned webpages.

   In addition, a section of the assignment addressed student’s technology competencies, “each group will compose a one week [electronic] journal depicting the daily life of their character” and present to the class.

<table>
<thead>
<tr>
<th>Internet Resources in Athena’s WebQuest</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><a href="http://emuseum.mnsu.edu/history/middleages/contents.html">http://emuseum.mnsu.edu/history/middleages/contents.html</a></td>
<td>Choose a guide to the Middle Ages</td>
</tr>
<tr>
<td><a href="http://www.learner.org/exhibits/middleages/">http://www.learner.org/exhibits/middleages/</a></td>
<td>What was it really like to live in Middle Ages?</td>
</tr>
<tr>
<td><a href="http://www.usm.maine.edu/~flc/emily.htm">http://www.usm.maine.edu/~flc/emily.htm</a></td>
<td>Women in the Middle Ages</td>
</tr>
<tr>
<td><a href="http://www.kyrene.k12.az.us/schools/brisas/sunda/ma/ma/ma/home.htm">http://www.kyrene.k12.az.us/schools/brisas/sunda/ma/ma/ma/home.htm</a></td>
<td>Life in Middle Ages</td>
</tr>
<tr>
<td><a href="http://eawc.evansville.edu/mepage.htm">http://eawc.evansville.edu/mepage.htm</a></td>
<td>Exploring Ancient World Cultures</td>
</tr>
</tbody>
</table>
2. Athena also had her email address on the Webquest so students could email her if they have questions about the project or assignments.

Lewis

At the beginning of the course, Lewis classified himself as a beginner computer user. Lewis’ two-week lesson plan presentation was on “History of Banking”. Lewis used the following types of technologies in the lesson: PowerPoint, WebQuest, Internet resources, and word-processed journals. Lewis used existing WebQuests he found during his Internet search to introduce the concept of “History of Banking”. To design the lesson, Lewis used Internet searches to find resources and web addressed. Lewis used four websites in his two-week lesson plan presented to his students. Lewis used four different existing WebQuests to teach his lesson on the history of banking. Table 4.31 outlines the WebQuests Lewis integrated into his lesson (see Appendix Q for course website collection).

Table 4.31
Internet Resources Lewis used in his Two-Week Lesson Plan

<table>
<thead>
<tr>
<th>Internet Resources Lewis used in his Two-Week Lesson Plan</th>
<th>Social Studies for Kids</th>
<th>A brief history of the Central Bank of America</th>
</tr>
</thead>
<tbody>
<tr>
<td><a href="http://www.jmu.edu/madison/madonbanks1.htm">http://www.jmu.edu/madison/madonbanks1.htm</a></td>
<td>Banking Crisis</td>
<td></td>
</tr>
<tr>
<td><a href="http://xroads.virginia.edu/~MA02/volpe/newdeal/banking.html">http://xroads.virginia.edu/~MA02/volpe/newdeal/banking.html</a></td>
<td>Banking Crisis</td>
<td></td>
</tr>
</tbody>
</table>
Lewis used the WebQuest mainly as an instructional tool. Lewis printed one article from the Internet as a handout for students: “Banking Crisis - Banishing fear and restoring confidence” from http://xroads.virginai.edu/~MA02/volpe/newdeal/banking.html

B. J.

At the beginning of the course, B.J. classified himself as an advanced user. B. J.’s two-week lesson plan presentation was on “Slaves in the America” & “Elections and Voting”. The following types of technologies were presented in the lesson: WebQuest, Internet resources, and Video. B.J. used resources found through Internet searches to teach this topic. B.J. designed the WebQuest “Causes of the Civil War: An Internet Hotlist on Civil War Causes,” which can be found at the following web address http://www.kn.pacbell.com/wired/fil/pages/listcivilwael.html#cat3.

B.J. linked fifteen websites to his WebQuest. Table 4.32 outlines the websites used by B.J. in his WebQuest (see Appendix Q for course website collection). B.J. used the WebQuest as an instructional tool and this is how B.J. introduced the WebQuests to the students,

In addition to using books to find out about the causes of the Civil War, why not also use the power of the Internet? The links below will get you started. Today, we are going to look at various websites to get information to introduce you to our next unit on the time leading up to the Civil war. Use the various links to answer the questions on your worksheet. But before beginning the worksheet, go to the Underground Railroad link for a virtual experience of one possible trip from slavery to freedom.

Table 4.32
Internet Resources B.J. used in his Two-Week Lesson Plan

<table>
<thead>
<tr>
<th>Internet Resources B.J. used in his Two-Week Lesson Plan</th>
<th>Underground Railroad</th>
</tr>
</thead>
<tbody>
<tr>
<td><a href="http://www.nationalgeographic.com/railroad/">http://www.nationalgeographic.com/railroad/</a></td>
<td></td>
</tr>
<tr>
<td><a href="http://www2.h-net.msu.edu/~south/archives/threads/lincoln.html">http://www2.h-net.msu.edu/~south/archives/threads/lincoln.html</a></td>
<td>Goals of the Republican Party</td>
</tr>
</tbody>
</table>
Table 4.32 (Continued)

<table>
<thead>
<tr>
<th><a href="http://azimuth.harcourtcollege.com/history/ayers/chapter13/1">http://azimuth.harcourtcollege.com/history/ayers/chapter13/1</a></th>
<th>Charleston’s Reaction</th>
</tr>
</thead>
<tbody>
<tr>
<td><a href="http://www.vcdh.virginia.edu/vahistory/reconfiguring/cocke">http://www.vcdh.virginia.edu/vahistory/reconfiguring/cocke</a></td>
<td>Personal Letter</td>
</tr>
<tr>
<td>011061.html</td>
<td></td>
</tr>
<tr>
<td><a href="http://lincoln.lib.niu.edu/fimage/image.php?id=434">http://lincoln.lib.niu.edu/fimage/image.php?id=434</a></td>
<td>Electoral Map</td>
</tr>
<tr>
<td><a href="http://highered.mcgraw-hill.com/sites/0072417722/student_view0/chapter15/primary_source_documents.html">http://highered.mcgraw-hill.com/sites/0072417722/student_view0/chapter15/primary_source_documents.html</a></td>
<td>Southern newspaper on Lincoln’s election victory</td>
</tr>
<tr>
<td><a href="http://www.nps.gov/hafe/history.htm">http://www.nps.gov/hafe/history.htm</a></td>
<td>John Brown’s Reid</td>
</tr>
<tr>
<td><a href="http://education.ucdavis.edu/NEW/STC/lesson/socstud/railroad/images/reward.gif">http://education.ucdavis.edu/NEW/STC/lesson/socstud/railroad/images/reward.gif</a></td>
<td>Fugitive Slave Poster</td>
</tr>
<tr>
<td><a href="http://education.ucdavis.edu/NEW/STC/lesson/socstud/railroad/Stowe.htm">http://education.ucdavis.edu/NEW/STC/lesson/socstud/railroad/Stowe.htm</a></td>
<td>Excerpt from “Uncle Tom’s Cabin”</td>
</tr>
<tr>
<td><a href="http://www.pbs.org/wgbh/aia/part4/4p2951.html">http://www.pbs.org/wgbh/aia/part4/4p2951.html</a></td>
<td>Compromise of 1850</td>
</tr>
<tr>
<td><a href="http://www.infoplease.com/ce6/history/A0852373.html">http://www.infoplease.com/ce6/history/A0852373.html</a></td>
<td>Wilmot Proviso</td>
</tr>
<tr>
<td><a href="http://www.watson.org/~lisa/blackhistory/scott/">http://www.watson.org/~lisa/blackhistory/scott/</a></td>
<td>Introduction to Dred Scott</td>
</tr>
<tr>
<td><a href="http://www2.worldbook.com/features/features.asp?feature=aajourney&amp;page=html/bh037.html&amp;direct=yes">http://www2.worldbook.com/features/features.asp?feature=aajourney&amp;page=html/bh037.html&amp;direct=yes</a></td>
<td>Kansas-Nebraska Act</td>
</tr>
</tbody>
</table>

Table 4.33
Overview of Preservice Teachers’ Technology Integration during their practica experiences

<table>
<thead>
<tr>
<th>Students</th>
<th>Web Quest</th>
<th>Power Point</th>
<th>Email</th>
<th>Internet Searches</th>
<th>Software Use of WWW</th>
<th>Class Web Page</th>
<th>Word Processing</th>
<th>Video</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zhora</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>16</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Scott</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>19</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>B.J.</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>15</td>
<td>Desktop Publishing</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Lita</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>21</td>
<td>Similation</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Athena</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>06</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Zeus</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>09</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Lewis</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>04</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
</tbody>
</table>

• Denotes use of technology during their practica experiences
Preservice Teachers Perceptions of Instructor’s Modeling Style

The instructor used a variety of teaching styles to integrate technology in the social studies methods course. She modeled the task, explained the task, provided students with examples, provided the students with hand on experiences and used guided practice techniques. The impact of the instructor’s modeling behavior and technologies integrated in the methods course was seen across the products designed and used by preservice teachers during their practica experiences. In addition to the analyses of products and presentations, the interview data revealed preservice teachers’ perception of the instructor’s modeling style of integrating technology in the social studies methods course. Most preservice teachers felt that the instructor’s style of integrating technology was effective. Athena (2002, December) summed up the instructor’s style of integrating technology in the methods course as follows,

    It was the kind of technology that was more than cutesy presentation for our class. It was practical technology that we are going to use in our classroom…it was real world application tools that we can use in our classroom.

However, some students, especially the advanced students felt that the instructor’s modeling behavior did not meet their expectations but her modeling style was probably effective for beginner or intermediate users. Scott (2002, December) expanded on this in the following

    I did not have a problem in the way it was presented. If I didn’t have the knowledge prior to this course, I would have probably found it very effective…I think it was really important that [the instructor] broke it down to a point of really starting from square one, really explaining where we really needed to be. I think the programs that we learned about were relevant and were necessary. Even for a new user, I would not have spent so much time on a few of the programs such as PowerPoint. I might have implemented a few more programs to mix it up to add a little more to what we will be able to do coming out of sessions. As far as how she explained it and the general ideas, I think that a beginner would definitely get a lot of information out of it.

However, B.J. (2002, December) also an advanced user had a different perspective on the instructor’s technology integration approach in the class,
The class is definitely focused more than any other education class that I have taken. Its focused more …it obviously talked more about really integrating technology in the classroom and I would never have thought about it as a separate thing.

Scott (2002, December), who is an advanced user, had this to say about the depth of the instructor’s technology skills. He stated,

I think she needs to get more knowledge of how to do everything. I think sometimes she comes across as not being fully up on all the technologies. Sometimes, I felt I knew a lot more about the stuff than she did… it didn’t benefit me a lot to be in there because she didn’t have the technological know-how to go beyond my knowledge…but the way she presents it [technology information] is fine.

Zhora (2002, December), who is an intermediate user, saw the instructor’s presentation and modeling style in a different light,

I think she did a really good job. I think that she was honest. She let us know right up front that she is not perfect and not everybody is as computer literate as most other people, especially other students. I think that she did a good job taking us into it, introducing it to us and letting us basically explore the rest of it on our own, but still with guidance… I learn very well visually. To see somebody doing it and she did a lot of hands-on, showing demonstrations which helped a lot. Also, giving us the time to actually explore on our own was a great help, because I also learn well learning and doing by myself. So, I think that the way she handled it worked very well for me just for those reasons.

The beginner users had a different view of the instructor’s approach to integrating technology in the methods course. Lewis (2002, December) expressed his view of the instructor’s style of technology integration in the following statement,

As far as how she integrated it [technology], this was something that I think was straight to the point. What I mean by that is, this wasn’t something for you to go home and ponder about…she gave specific examples of how it could help you. She gave you materials to show you how it has helped other people. She gave materials to show how it’s helped her. That’s why I took her seriously. This wasn’t something she pondered that might work. First, she integrated herself. Second, she showed you how to integrate it yourself or with myself. Third, she asked us to look at the results of how we were integrating it. And I think that’s three very important things of her methods of integrating technology.
Zeus (2002, December), who is also a beginner user, shared the same sentiments about the instructor’s style of integration and summed up the instructor’s style in the following statement. He stated,

> Well, obviously it was very helpful. Without the instruction, I would not have been able to do what I did. She was also very respectfully in dealing with people on different levels because there were people in the course that were very equipped and already knew how to use PowerPoint and to some extent were familiar with WebQuest and then, there was me, who had never done a PowerPoint in my life but she was very receptive to the different levels. I never felt like I was asking a bad or too many questions. It was really a comfortable atmosphere…it was definitely effective because… she modeled. I realized pretty quickly that when I started teaching, if you do not model what you want the students to do, they won’t know exactly what you want them to do. She modeled and showed us what we needed to do as far as everything. Besides the technology part, she modeled how she wanted the portfolio done. Everything she did, she told you what she wanted, modeled it for you and any questions you asked she was there for you. I definitely say that she was effective.

**Preservice Teachers’ Attitudes Toward Computer**

The descriptive data by itself did not provide the depth needed to address preservice teachers’ attitude toward computer in this study. But a no noteworthy results of the descriptive statistics triggered this researcher to undertake an in depth analysis of the qualitative data to understand why the findings on the attitudes of the preservice teachers to computer were not noteworthy in this study. Since there were different computer user classifications in this study, this researcher analyzed the data from the perspectives of the different computer skill levels of preservice teachers- - beginners, intermediate and advanced-- at the beginning of the course and also their perspectives at the end of the course.
Attitude to Computer Technology at the Beginning of the Course

Preservice teachers held different views toward technology integration in social studies before enrolling in this course. However, though the views toward integration were different, one common thread was that they all felt technology integration was important, necessary and useful. Prior to this class, some preservice teachers were skeptical on how technology could be used in teaching because prior to this class in their teacher education program they have not experienced how technology could be integrated in teaching. Athena felt “it was necessary and the type of tool that would help us [preservice teachers], but didn’t really think that it applied to social studies as much as I see it does now.”

B.J. (2002, December) also reiterated this view,

Before I enrolled in the course, I thought it was very important…because I went to a high school that had a lot of technology and specialized in technology. So, I understood the importance of it. I was little concerned about how I would actually use it.

Zeus and Lewis, two beginner teachers on the other hand were skeptical about the use of technology. Zeus (2002, December) summed his skepticism in the following statement

Well, I am kind of unsure about it. I was never myself taught social studies using very much technology throughout high school. It was mostly the lecture method. The extent of technology integration was through videos not very much PowerPoint presentations and very little computer lab activities. So, I was kind of unsure about it, wondering if it would be as effective as the way I was use to learning.

Lewis (2002, December) on the other based his skepticism on his experiences with technology. He stated,

I did not have too much of a good outlook on it, that is just two fold. One just seeing other teachers use it. It just wasn’t that effective and just probably my own personal beliefs. I had never been exposed to it, so I didn’t think it was going to be effective at all.
Lita, the other beginner computer user on the other hand saw technology as a good supplement to instruction and nothing to rely upon heavily. Zhora (2002, December) an intermediate user summed her views of why technology is necessary in teaching in the following statement, “Well, I kind of thought that it was necessary. Just from a historical standpoint, and the research that I’ve done on my own. I think that it would be important in a social studies classroom.”

Effects of Methods Course on Attitudes to Computer technology (post-course)

Though the descriptive statistics findings did not yield a noteworthy finding, the qualitative data provided depth to this area. At the end of the course, there was an increased awareness coupled with “confidence,” “comfort” and “relevance”. All participants felt that technology integration in the methods course was very necessary and beneficial to them in varying degrees. Lita stated that technology integration, especially, the WebQuest, “sparked my interest” and “brought in a whole new aspect of how I can integrate technology in the classroom.”

Athena (2002, December) saw the relevance of integrating technology in the social studies methods course,

Now, I can see it’s more than an interactive thing. Other than overheads and videos and research on the net, I never put technology with social studies, but I see it a little bit more definitely.

On the other hand, the effect on Scott (2002, December) was skewed toward students. He stated “this class did make me conscious of how technology can help a student or how it can get a student more engaged and how it can actually help them understand the lesson better.”
B.J. (2002, December) an advanced user was more concerned with the implications of using technology in teaching. B.J. summed up the effects of this course on his attitude in the following statement,

...Not just to use technology for technology sake, but to actually try to figure out how it could be best utilized to help the kids. I think this course has really changed my attitude. Not that I was idealistic going into it, but I’m more realistic on expectations from the kids and when it comes to technology.

B.J. also elaborated on his view of why technology should be integrated in the methods course in the following statement,

I feel a lot of times the kids know more about the computers and technology than the teachers. So it’s hard for teachers to use technology to try to advance their [students’] technological knowledge when they [teachers] don’t have any themselves. So, I think teachers should actually have more technological training than they do.

Zhora (2002, December) on the other hand stated, “[this course has] given me more options and has introduced me to several things that I didn’t know that I could use in the classroom and hopefully, someday I’ll be able to use those techniques in my own classroom.”

For Lewis and Zeus, two beginner users, there was a shift from skepticism to relevance and confidence. Lewis presented this shift in the following statement, “For me, it’s helped me as a person … I’ve seen how it can help students… and how easy the technology can be integrated [in instruction].” Zeus (2002, December) on the other presented his shift from skepticism of integrating technology to the benefits students gained from teachers using technology in instruction

Now, I realize that without using technology in social studies you are not going to reach today’s kids… by using those PowerPoint along with other resources, such as, books and picture books to give them some real life pictures of what the cultures we still have today is, the kids seem to really grasp the technology.
Preservice Teachers’ Perceptions of Using E-mail as an Instructional Tool

During this case study, preservice teachers used e-mails mainly for communication within the educational environment. The nature of the emails were as follows:

1. Communicating with their cooperating teachers before and during the practicum.
2. Communication with course instructor through WebCT email component and through the traditional email system.
3. Communication with parents to inform them about activities in the class in general such as, upcoming exams and meetings. Zeus (2002, December) provided an example of such use,

   I just sent one [e-mail] out yesterday, “Thursday, we are having a test on the middle ages, Byzantine empire and Islam and there are about 12 numbers in that pack.” I listed them all in order and told them that we are having a review session on Wednesday and that I expect students to be ready for the review. “Make sure your children are ready to go with it. If you have any questions reply to this e-mail”. That’s pretty much it.

B.J. (2002, December) elaborated on the importance of email in communicating with the parents in the following statement,

   I think that the best thing with email that I’ve seen is that you can keep parents informed without having to go through the kids. You send notes home or you send interim reports home and you don’t know if the parents are signing or if the kids are forging their parent’s signatures. With email, you can guarantee the parents are getting the information. So I am going to use email a lot as a teacher.

4. Communication with students to inform them of upcoming tests and class activities.

   Zeus (2002, December) elaborated on how this was done in the following statement, “The students’ e-mails and parents’ emails were all together. So, the students got whatever the parents got.”
One preservice teacher used email in a project-based learning activity that is, using e-mail activity to seek expert input in instruction. Zeus used an email activity during his WebQuest activity on the Roman Empire. Each group emailed their final presentation to a professor of Roman History at a nearby university for validation of their findings. Zeus was the only preservice teacher, who integrated email as part of his instruction.

**The Future of Technology in their Classrooms**

The preservice teachers had a vision of how they intended to use computer and information technology in the classroom after the methods course. All the preservice teachers realized the importance of computer and information technology in teaching. Lita and Zhora saw technology as a good supplement to instruction. Zhora (2002, December) presented her view of technology integration succinctly in the following statement. She stated,

> I intend to make full use of computers and the Internet, as well as using video and overheads to supplement my lessons. I will use technology in any form that I can get my hands on. It seems to make the learning experience more fun and interesting for students and for teachers as well.

Athena also shared this view, “This is something I have always wanted to incorporate into lectures to make them interactive and fun!” Scott (2002, December) on the other hand took a cautious approach to technology integration in teaching because of the preparation involved.

> When I do use technology, such as WebQuests, or PowerPoint, I will need to plan well in advance. Since all of the devices will be outside the classroom, I will have to make a request from the library. I look forward to present lessons in diverse ways to optimize student learning.

Scott was more visionary in his approach to integrating technology in his teaching with a focus on student’s abilities and diversity.

> I am going to use computers a lot more than [did during my practicum] they do at [John Doe school]. I have many plans. I will set up a website that my students can access at school and at home that will list assignment, readings, extra credit, etc… I will set up chat rooms that I will occasionally conduct tutoring sessions with students.
Email will also play a large part in keeping in communication with both students and their parents…Overall, I plan on technology being a regular part of my teaching as a means of developing students’ skills and presenting information. Technology offers a means to reach kids of different learning styles and abilities.

In addition to using technology, Zeus (2002, December) focused on using technology in planning and using technology because of verbal persuasion from instructor. He stated,

I will use the Internet often when planning lessons, but I doubt I will be able to use it very often in the classroom itself… Regardless of how I obtain them, I definitely plan to use all of these types of technology in my classroom because just as [the instructor] said, “It is impossible to teach today’s kids without using all types of technology.

Zeus further stated “ I feel that children today are so used to technology in their daily lives that they will be more engaged in the lesson if there is technology that stimulates their minds.” Lewis (2002, December), who is a beginner user summed up his appreciate for technology in the following statement

I realized that I am more comfortable with computers. I see how it not only helps me out in the classroom but how it can affect students. I now honestly could say in hindsight that I would have wanted to be a lot more prepared now that I see how effective technology can be.

**Sub-Research Question #3 - What factors influenced preservice teachers’ attitude toward using information technology and computer as teaching and learning tools?**

The factors that influenced preservice teachers’ attitudes toward technology as teaching and learning tools were many and varied. This researcher analyzed this sub-research question from data derived from the formal and informal interviews with preservice teachers, preservice teachers’ reflections and discussions during class observations. An analysis of the data identified the following as factors that influenced preservice teachers attitudes toward using information technology and computer as teaching and learning tools in this case study.
research: Affective state of the preservice teacher, prior computer and technology knowledge, enactive experiences, vicarious experiences and verbal persuasion.

**Affective State of the Preservice teacher**

One key influence identified by preservice teachers was the affective state of the preservice teachers to technology. The preservice teachers felt that technology integration is necessary and relevant as a teaching and learning tool in social studies. Zhora (2002, December) espoused her view on this influence in the following statement,

> Well, I thought that it was necessary. Just from a historical standpoint, and the research that I’ve done on my own, I think that it would be important in a Social Studies classroom.

**Prior Computer/Technology Knowledge**

Prior experience with technology was also a key factor that influenced their attitude toward technology as a teaching and learning tool. Of the seven participants, three classified themselves as beginner users, two classified themselves as intermediate users and two classified themselves as advanced users. Scott (2002, December), who is an advanced user in addressing the influence of prior experience stated

> Before I enrolled in the course, I thought it was very important already because I went to a high school that had a lot of technology in it and specialized in technology. So I understood the importance of it.

**Enactive Experience with Technology**

During the course, the instructor ensured that preservice teachers had adequate hands on experiences with the technologies introduced in the course. Preservice teachers identified enactive experiences, as another key factor that influenced their attitude towards integrating technology as a teaching and learning tool. All preservice teachers were given opportunities
to work with the programs during the lab sessions and additional lab times were provided after the fifth lab session to provide preservice teachers with the opportunity to complete their programs. On the influence of enactive experiences on their attitudes toward technology, Lita (2002, December) stated, “She [instructor] would come in with an idea and say this is what we need to do because you know she had seen that before hand and then she would let us run with it.” Zhora (2002, December) further elaborated on the enactive experiences provided by the instructor, “…giving us the time to actually explore on our own was a great help, because I also learn well learning and doing by myself.”

**Vicarious Experience with Technology**

The instructor demonstrated every technology presented to the preservice teacher using an existing sample or by creating one e.g. WebQuest lab session. Preservice teachers cited the influence of vicarious experiences as one of the influences that positively impacted their attitudes toward integrating technology in social studies. Athena (2002, December) elaborated on this influence on her attitude toward technology in the following statement:

> Like when we were told to design a PowerPoint. You could tell someone make a PowerPoint and they would go home and figure it out on their own, but it had been a long time since I had made one. And just to have it on a huge screen and then have [the instructor] go through and say this is how you do this and this is how you get through the slides, was just really refreshing in a different light.

Zhora (2002, December) reiterated the importance of vicarious experiences on her attitude to technology in the following statement, “I learn very well visually. To see somebody doing it and she did a lot of hands-on and showing demonstrations which helped a lot.”
Verbal Persuasion to Use Technology

The instructor was very consistent in urging preservice teachers to use the different technologies presented to enhance their instructions. Preservice teachers identified instructor’s verbal persuasion as an influence on their attitudes to technology as an instructional tool. Zhora (2002, December) elaborated on the influence of verbal persuasion on her during the course,

I think the verbal persuasion is good, always reminding us that it is there and that we can use it…with the verbal persuasions, it kept the technologies in the back of my head to always consider when I was working on my lessons or something to that effect.

Zeus (2002, December) also reiterated the effects of verbal persuasion on his ability to use technology during the practicum in the following statement, “…just the urge of [the instructor] to use technology. You know without the stimulus to use it, I probably might not have used it as much because I wasn’t familiar with it.”

Sub-Research Question# 4: What factors promoted preservice teachers’ integration of technology during their practica experiences as an instructional tool?

Analyzing the data from informal and formal interviews, reflections and discussions during class observations, the following were identified as the factors that promoted the integration of technology during their practica experiences: the method course requirements, engaging students and the practicality of integrating technology, affective state of the preservice teachers, affective state of the students, different medium of instruction for students, teachers having access to computer at home, availability of resources and school climate, availability of technical support, students’ knowledge about technology (learning style), and aligning topics with technology.
Course Requirement

Course requirement was cited as a factor that influenced the integration of technology during the practica experiences. Scott stated, “…Part of it [technology] was required for the class.” Athena (2002, December) also echoed this view,

The fact that I had to turn stuff in for methods made it a good incentive…if I am going to put the work in it for methods, I might as well be able to use it … I guess if you are more comfortable with something, which the methods definitely helped with. Then you are more likely to use it in the classroom. So it made me more comfortable and I guess grade wise it gives you an incentive also.

Engaging Students and Practicality of Integrating Technology

In the following statement, Athena (2002, December) highlighted practicality and ability to engage all students as factors that influenced technology integration. She stated,

Practicality, that was the big one… I use the overhead like its going out of style and that’s just for the fact that I can use my overhead and remain facing my students while I write…And I used slides and pictures, I did a whole lesson on the renaissance and I was able to find slides of all the different works of art, so that was really beneficial to put a giant piece of art up on the board and pick out specific details with my students …But for them to be able to look at it as a class and look at details that way, it made a huge difference in how much they remembered and then it was practical because they weren’t flipping pages.

Affective State of the Preservice Teacher

The affective state of the preservice teachers was a factor that influenced integration of technology. B.J. (2002, December) reflected this view in the following statement,

I think technology is not used enough in school. I think most teachers are just kind of backwards when it comes to the use of technology and I think it’s very important that it’s actually used a lot more in class.
Affective State of Students

Zeus (2002, December) cited the affective state of the students as one of the major factors that influenced his integration of technology during his practicum. Zeus made this claim in the following statement,

All students today or anybody that is in high school or if you are a teenager you are pretty familiar with the Web a lot more than when I was in high school, which was only seven years ago. You know everybody is familiar with the Internet now. They really enjoy surfing on the web… Without the technology these students may see you right from the beginning as possibly a boring teacher.

Different Medium of Instruction for Students

Scott (2002, December) in reflecting on how technology provided a different medium of instruction for student stated,

I think the good thing with computers is you can get a different source of material for them. It breaks up the routines of going in there with lectures and notes. It really gives them a new source of information.

Teacher Having Access to Computer at Home

Having a computer at home was cited as one of the factors that influenced the integration of technology during the practicum period. Zeus (2002, December) stated the importance of having a computer at home in order to be able to integrate technology in the following statement, “And just having a computer at home was another …if I did not have a computer at home, it would pretty much be impossible to do.”

Availability of Resources and School Climate

Access to the computer lab, computers, LCD, and videos was a major factor that influenced the use of technology during the practica. Zhora (2002, December) made this case in the following statement
[Mary Doe] High School is one of the most highly technological schools I have ever seen. They have computer resources, VCRs, LCD projectors at every teacher’s disposal… also I observed her [cooperating teacher] using the TV/VCR combination, not to mention the wireless lab that is available at [Mary Doe] High School, which is 15 laptops that have wireless connections for the students. Also, the eight computers in her class were also used during those first 8 weeks.

Availability of Technical Support

Zhora (2002, December) cited the availability of technical support as a factor that influenced technology integration during the practicum. Zhora stated, “if we ever had any problem with technology, we have computer techs at the school. All we had to do was call.”

Students’ Knowledge about Technology (Learning Style)

Students’ demonstration of the technology presented by the teacher was cited as another factor that influenced technology integration. B.J. (2002, December) expanded on this influence in the following statement,

…but I’m more realistic on expectations from the kids and when it comes to technology, I feel a lot of times, the kids know more about computers and technology than the teachers.

Students’ Learning Style

Lewis (2002, December) saw the need to integrate technology because it was the learning style of the students. Lewis stated,

When I gave assignment they wanted to re-type it on the computer. Something that simple amazed me and even though I thought that it was time consuming for them to do, that was their learning style.

Aligning Topics with Technology

Aligning topics with technology was a factor that influenced integration of technology. Zhora (2002, December) made that connection in the following statement,
The recent election actually influenced my use of technology greatly. We were able to do quarter projects and do research on a national and state level to get the information for the students to participate in a youth election.

Lewis (2002, December) also elaborated on this influence in the following statement,

“initially, what got me very interested was the lesson plans on the Internet. The lesson plans got me wanting to look to use technology more.”

**Support of the Cooperating Teacher**

Zeus (2002, December) felt that the support that he received from his cooperating teacher was one of the factors that promoted his use of technology during his practicum. Zeus stated,

…the openness of my cooperating teacher. He was pretty much willing to let me do what ever I wanted to do as far as integrating any type of technology. Whatever I wanted to do, he was willing to help me with and he was very cooperative. He is a cooperative teacher and that was exactly what he was.

**Sub-Research Question #5 - What factors hindered preservice teachers’ integration of technology during their practica experiences?**

As preservice teachers integrated technology during their practica they encountered problems that prevented or limited technology integration. Analyzing the data collected from formal and informal interviews, class observations and preservice teachers’ reflections, the following were identified as problems that hindered technology integration during their practica experiences: integrating technology for technology sake, digital divide, teachers’ lack of knowledge, unreliability of technology, accessibility issues, availability of resources, the quality of available technology, students’ lack of basic technology skills, limited use of technology by cooperating teacher, lack of technical services, limited time, ability of students to handle independence, and the unreliability and transient nature of websites.
Integrating Technology for Technology Sake

Zhora (2002, December) in reflection of this problem stated, “…technology can become too important and teachers rely on it instead of their content knowledge and teaching skills.” B.J. (2002, December) expanded on this view on his observation of teachers using technology in the school, “you can see them using technology just for the sake of using technology, not really worrying about what the kids are getting out of it.”

Digital Divide

Zeus (2002, December) felt that the digital divide limited the potential use of technology within and beyond the confines of the physical classroom. Zeus stated, as a downside to technology use in schools,

If teachers rely too much on technology in the classroom and expect students to put in time at home on computers, they will likely find students from high income families doing better in class than students form low income families. Also, using technology can take away class time if the teacher must stop to show students how to use it.

Teachers’ Lack of Knowledge

Zeus (2002, December) cited teachers’ lack of knowledge on how to use technology as a downside to integrating technology in teaching. In a reflective statement at the beginning of the course, Zeus stated,

As much as I feel technology helps, I also feel somewhat nervous about incorporating it into the classroom because I am anything but a whiz with computers. I am planning on becoming much better with them as a result of taking this class though, and I will be very excited about putting more technology into the instruction of social studies.

Lewis in addressing this issue stated, “First of all, my own skill level wasn’t the greatest. So, students laughed at me about what I knew, at the very beginning.”
Unreliability of Technology

Lita (2002, December) thinks computer integration is great, but is concerned about its reliability. The following reflected Lita’s concerns about the unreliability of technology in instruction,

I think it was the frequent cases where the server went down, I counted at least six times that they actually came on the speaker system and told all teachers to turn off their computers completely because they had to shut down the server because something happened. I can count at least six times and this was just one semester and so I think it was very unreliable.

Accessibility

In environments were there were limited resources, accessibility to computer lab and resources was cited as a major factor that hindered technology integration during their practica experiences. Scott (2002, December), who is an advanced user reflected on the problems with accessibility,

…the fact that I had to request the computer lab a month in advance and was only able to get it for the one day, that really limited my ability to develop the students’ abilities on the computer. So, accessibility of technology is probably the most influential factor otherwise I would have used it a lot more.

Availability of Resources

In some environment, the lack of proper equipment or resources hindered preservice teachers from integrating technology. Zeus (2002, December) reflected on this issue in the following statement, “…what if you wanted to do PowerPoint but you don’t have an LCD projector, what do you do? You cannot buy it out of your teacher salary!”

The Quality of Available Technology

Preservice teachers cited poor quality of available equipment as a factor that hindered technology integration. B.J. (2002, December) made the case in the following statement,
…showing videos sometimes, you preview them and think the quality is fine and then you put it into the low quality VCRs they have at school and it skips and it buzzes and you can’t show it.

Lita (2002, December) discovered that the school was not even up to date with a common technology as she tried to integrate technology in her instruction. She stated,

I did notice that one-thing public schools do not have are DVD players. I had a DVD that I wanted to show the class. DVDs are so much easier to use because you can just pick out the frame, but they did not have a DVD player...they said it wasn't economically feasible because there’s not the education resources on DVD just yet.

**Students’ Lack of Basic Technology Skills**

The lack of computer skills on the part of the students made it difficult for preservice teachers to integrate technology effectively. Scott (2002, December) reflected on this problem in the following statement,

So, that was really interesting to see how that works [WebQuest] and to get students to switch from a teacher centered activity to a student-centered activity. I tried to do that with my class but it didn’t work as well as I would have liked it to because they didn’t have the skills developed as much as I would have hoped.

Scott also discovered another problem because of the lack of students’ technology skill, which significantly impacted how technology was integrated in the lesson. Scott (2002, December) expanded on the problem in the following statement,

I think that it’s really difficult trying to teach the students both how to use a computer and the lesson that you are trying to get across to them. I think that is always going to be a problem. As technology changes, you are going to be faced with not only teaching your curriculum but you are going to be teaching how to use the computer and how to use whatever software your are using.

**Limited Use by Cooperating Teacher**

Limited use of technology by the cooperating teachers was cited as a limitation because as Scott (2002, December) put it,
I obviously didn’t start teaching until the second quarter and these kids were used to seeing videos and doing worksheets off videos and learning activities from that medium, so I continued that use because it was successful. It was something that they had been used to.

**Lack of Technical Services**

Lack of technical services was cited as a factor that affected technology integration during their practicum. B.J. (2002, December) reflected on this problem in the following statement, “And the other thing with technology, it’s hard sometimes if your school doesn’t have good technological services. It’s hard to integrate it as much as I would like to.”

**Limited Time - Course Objectives**

Preservice teachers cited limited time to put together technology to match the content in the face of the course objectives and deadlines tied with end of course examinations. B.J. (2002, December) addressed this issue in the following statement,

You get in front of that class and you’re so worried about getting through all the objectives. You’ve got this big list of objectives that you have got to get through for the year and in time. So, a lot of time I think that some of that [technology] is valuable but it’s not something that’s necessary. So, a lot of times that gets shoved aside because there’s so much you have to get through because testing is so important and you have to get all this information in these kids by the end of May…I don’t think quite frankly there is enough time.

**Ability of the Students to Handle Independence**

The integration of technology promotes independence in the classroom because students are given the freedom to interact with the technology. Some preservice teachers felt that students were not quite prepared for the newfound freedom that technology brings to the classroom. Lita (2002, December) reflected on this issue in the following statement,

One thing you really need to look at as well as everything else is the level of the classes that is going to be using this technology. If they are really low-level class they
probably will not be able to use it. Not only because they can’t handle the independence but maybe they may not catch on as quickly.

**Unreliability and Transient Nature of Websites**

Websites are not permanent fixtures on the Internet. Preservice teachers pointed the unreliability of websites to be at a given web address as a set back to technology integration. Zhora stated, “The only real problem that I encountered using technology in the classroom is be sure that your websites work.”

**Sub-Research Question #6: What was the impact of technology integration in the social studies methods course on the basic computer skill levels of preservice teachers?**

This sub-research question was initially analyzed using descriptive statistics to compare the mean pre-course and post-course scores of the NCBTCE for a noteworthy finding. A noteworthy finding in this study is .50 and above score difference between the pre-course and post-course means. The findings from the descriptive statistics were then analyzed in conjunction with the case study data to align the descriptive statistics findings with the qualitative data. To fully understand the effects of technology integration in the methods course on the computer skill levels of the preservice teachers, this researcher developed an assumption that was analyzed using descriptive statistics.

**Assumption #1**

This assumption addressed the effects of technology integration on preservice teachers’ computer skill levels. It was the assumption of this researcher that there will not be a noteworthy difference between the pre-course and post-course mean scores of preservice teachers on the NCBTCE. The NCBTCE was used to measure the computer skill levels of preservice teachers pre and post the social studies methods course. Noteworthy difference was observed between the pre-course (3.33) and post-course (4.19) mean scores of preservice
teachers as listed in Table 4.34. The post-course mean percentile score was higher than the
pre-course score. There was a mean percentile increase of .86 between the pre-course and
post-course means of preservice teachers’ computer skill levels.

Table 4.34
Comparison of Mean Pre and Post Course Scores on NC Dpi Technology Competencies for
Educators – Modified by this Researcher

<table>
<thead>
<tr>
<th>Social Studies Methods Course</th>
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<th>M</th>
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<tbody>
<tr>
<td>Pre- course Technology Integration</td>
<td>07</td>
<td>3.33</td>
</tr>
<tr>
<td>Post- course Technology Integration</td>
<td>07</td>
<td>4.19</td>
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</table>

**Impact of Technology Integration on Preservice Teachers’ Computer Skill level**

Since the descriptive statistics findings were noteworthy, which was counter to the
assumptions of this researcher, the qualitative data were coded and analyzed from the
perspectives of the beginner, intermediate and advanced users on the effects of technology
integration on their computer skill levels. Preservice teachers came into the class with
different computer skill levels. Three of the seven participants rated themselves as beginner
users, two rated themselves as intermediate computer users and two rated themselves as
advanced users.

**The Effects of technology integration on the Beginner Computer users**

Beginner users summed up the effects of technology integration on their skill levels
not only in terms of the new skills gained but emphasized the effects of technology
integration on their skill level as one of “comfort” with technology. Zeus (2002, December)
summed up his view in the following statement. He stated,
It was not that I was scared of the computer before, but it was almost like I was unsure of what to do … besides the net and writing papers… Now I know how to do PowerPoint. Now, I do have much more comfort level in front of the computer and dealing with technology than I had before.

Lewis (2002, December) also a beginner user summed up the effects of technology integration on his computer skill level as follows, “Technology skills… now it is a matter of being comfortable. I think that’s the main priority now. So, now when I get on the computer, I’m not scared.” Lita on the other hand felt that integration of technology did not adversely affected her computer skill level because of her experiences prior to the class. However, she stated that though it did not affect her skill level it affected her thought process on technology integration. She stated “…I think just the ways that she used the technology might not have been the ways that I thought to bring it in.”

The Effects of technology integration on the Intermediate Computer users

The intermediate computer users felt that the technology integration in the course did not change their computer skill levels but increased their “confidence,” “comfort level” with computer and they learned how to integrate some new programs into their teaching. Athena (2002, December) summed up this effect of being comfortable with the computer in the following statement. She stated,

I think if anything, instead of changing my skill level, this course has just made me more comfortable with one or two programs…So, its made me more comfortable with specific programs but my computer usage level and knowledge level really hasn’t increased.

Zhora (2002, December) on the other hand identified more options, confidence, technological fluency and increased computer skills as the major effects on her computer skill level. She stated,
It’s given me more options and has introduced me to several things that I didn’t know that I could use in the classroom and hopefully someday I’ll be able to use those techniques in my own classroom… more fluency in technology in the programs used for school like PowerPoint and WebQuest and actually even email and Intergrade I have become intimately familiar with…Through this course, I have learned to design WebQuest, how to finesse, to finalize my knowledge on PowerPoint and actually to find out more secrets about it, which was really cool. It’s just helped me overall to become more computer literate and confident in my skills and be able to pass those skills on to my students and also learn from them in the process.

**The Effects of technology integration on the Advanced Computer users**

The advanced users felt that the way technology was integrated did not affect their computer skill level but increased their awareness and familiarity to some computer programs. They felt that technology integration was more beneficial to the beginner computer preservice teachers. Scott (2002, December) summed up his view of the effects of technology integration on his computer skill level as follows, “Very little, I really didn’t learn too many new computer skills through the class. I’m just becoming more familiar with some of the particular web sites. I don’t feel like my computer skill level has changed.” B.J. on the other hand had this to say about the effects of technology integration on his computer skill level, “my computer skill level hasn’t gone up any and there’s nothing that I learned in here that I didn’t know how to do before.”

**Summary**

The impact of technology on the computer skill level of the three groups was different and the findings from the qualitative data provided the reasons for the noteworthy findings from the descriptive statistics. There were more beginners than any other groups and they gained more skills than any other group. The qualitative data also show that the intermediate users also made some gains relating to their computer skill levels. Though the advanced used
claimed that their computer skills levels did not change. They claimed that they were more “confident,” “comfortable” and “more fluent” with technology.

**Limitation of the Study**

Three limitations may have adversely affected the outcomes of this case study. The first limitation was the participants of the study. The class was purposefully selected for this study because they met three basic requirements:

4. It has an established class of preservice secondary school social studies teachers.

5. The University has the technology resources and support to integrate technology as a teaching and learning tool.

6. Course instructor integrated technology in the methods course.

A second limitation was the depth of the technology integrated in the methods course. The study was a semester long study. Preservice teachers had only eight two-hour lab sessions during the semester during which students had hands on activities (enactive experiences). It is worth noting that the course instructor used other forms of technology (Movie and over head projector) outside the lab sessions and made numerous references to websites and different types of technology during class lectures.

A third limitation was the participant factors. All seven participants had some experiences with computer prior to the course and had varying computer skill levels. In addition, since this study was an intrinsic case study, the findings only related to the case studied. It is worth noting that though the result is limited to the case studied, conclusions and changes in educational interventions should not be based on a single case study.
Summary

The first sub-research question was to determine how the social studies methods course modeled a constructivist integration of technology as a teaching and learning tool. The data show that the instructor integrated components of the proposed constructivist model developed by Ewing et al. (1998) developed for the WWW STARS Project. The main components of the model, namely, learning should be context based, conceptual learning is through active involvement, learning is through collaboration with others, learner should have personal autonomy and control over learning, learning is personal growth were addressed in the course in varying degrees. The preservice teachers responded well to the constructivist teaching style and some adopted components of the constructivist model during their teaching. Preservice teachers used all the technologies that were integrated in the methods course during their practicum with positive results.

The second sub-research question was to determine the impact of the instructor’s modeling behavior on preservice teachers’ attitudes and practices toward information technology as a teaching and learning tool. Using the Teachers’ Attitude Toward Computer (TAC) scale, there was no noteworthy difference between the pre-course and post-course scores of preservice teachers’ attitudes toward computer. The case study data show that the main reason why the descriptive statistics data were not significant was that all the preservice teachers had positive attitudes toward computer at the beginning of the course and the course reinforced that positive attitude.

For preservice teachers’ attitudes toward information technology, the Teachers’ Attitude to Information Technology scale was used. There was no noteworthy difference in the pre-course and post-course scores of preservice teachers’ attitudes toward information
technology. The case study data show that the main reason why the descriptive statistics data were not significant was that preservice teachers had a positive disposition to information technology prior to the integration of technology in this course. A breakdown of the components of TAT yielded similar results. There was no noteworthy differences between the pre-course and post-course percentile mean scores of preservice teachers on the TAT-Email component. There was no noteworthy difference between the pre-course and post-course percentile mean scores of preservice teachers on the TAT- WWW component. There was no noteworthy difference between the pre-course and post-course percentile mean scores of preservice teachers on the TAT- Multimedia component. There was no noteworthy difference between the pre-course and post-course percentile mean scores of preservice teachers on the TAT- Teacher Productivity component. There was no noteworthy difference between the pre-course and post-course percentile mean scores of preservice teachers on the TAT- Student Productivity component. Though, the case study data show that preservice teachers had a positive attitude toward computer and information technology prior to the beginning of this course, one major finding was that preservice teachers stated that the integration of technology in the methods course made them “comfortable,” “confident” and “more fluent” in using technology in teaching.

Further analysis of the data documented preservice teachers’ perceptions of the instructor’s style of integrating technology in the methods class. Preservice teachers felt that the integration was beneficial to them in varying degrees. There were two perspectives on the instructor’s modeling behavior. The advanced users felt that the instructor’s modeling behavior did not meet their expectations for the course but shared the views of the beginners and intermediate users that it was sufficient for them.
The third sub-research question was to identify factors that influenced preservice teachers’ attitudes toward information technology and computer. Preservice teachers identified the following as factors that influenced their attitude towards information technology and computer technology: The affective state of the preservice teacher; prior computer/technology knowledge; enactive experience with technology; vicarious experience with technology; and verbal persuasion to use technology.

The fourth sub-research question was to identify factors that promoted preservice teachers’ integration of technology during their practica experiences. Preservice teachers identified the following as the factors that influenced the integration of technology during their practica experiences: course requirement; engaging students in learning and practicality of using technology; affective state of the student learner; different medium of instruction; learning style of student; teacher’s access to computer at home; availability of resources; availability of technical support; students skill level in using the technology; aligning topics with technology; and support of cooperating teacher.

The fifth sub-research question was to identify factors that hindered preservice teachers’ integration of technology during their practica experiences. Preservice teachers identified the following as factors that affected technology integration during their practica experiences: integrating technology for technology sake; digital divide; teachers’ lack of technology knowledge; unreliability of technology; availability of technology; accessibility to technology resources; the quality of available technology; students’ lack of basic computer skills; limited use by cooperating teacher; lack of technical support; limited time to plan and use technology; the ability of students to handle independence with technology and the unreliability and transient nature of websites.
The sixth question was to determine the impact of technology integration on the basic computer skill levels of preservice teachers. Using the NCBTCE modified by this researcher, there was a significant difference in the pre-course and post-course mean percentile scores of preservice teachers. The post-course scores were higher than the pre-course scores. Analysis of data yielded two perspectives on the effects of technology integration in the methods course on the computer skill levels of preservice teachers, advanced and intermediate users in one group and the beginners in other group. The advanced and intermediate users felt that technology integration did not make a significant difference on their computer skill levels, whereas the beginners felt that there was significant impact on their computer skill level. The beginner users felt they gained new skills.
Chapter Five

Discussion, Conclusions and Recommendations for Further Research

Since pre-service social studies students are expected to learn content by using information technologies, these technologies should be accounted for when researching the development of pedagogical content knowledge. While the role of the information technologies does not need to be the primary focus of an inquiry into development of pedagogical content knowledge, ignoring it would be unrealistic. The recognition of the place of information technology in the development of pre-service students' pedagogical content knowledge is practical and realistic.


This case study research studied the nature of technology integration in the social studies methods course and its impact on the practices of preservice teachers during the course and during their teaching practica experiences. Chapter I presented the rationale for investigating the nature of technology integration in the social studies methods course. Chapter II presented the social cognitive theory with emphasis on the Triadic Reciprocal Determinism model, intertwined with the constructivist theory as the conceptual framework guiding the research. Researches supporting technology integration in social studies were also addressed in this chapter. In Chapter III, the postpositivist paradigm supporting this study, the case study approach design interlaced with a component of descriptive statistics to enrich the case study approach used in this study, the data collection process and method of analysis were outlined. A description of the nature of technology integration in the social studies methods course and results were presented in Chapter IV. The present chapter elaborates on the results of the study described in Chapter IV, conclusions and recommendations for further research. The discussion is organized around the six sub-research questions developed using the constant comparative method and the results found are linked to theory and research.
Summary

The literature on the integration of technology in teacher education programs indicates that teacher education programs were not giving preservice teachers the needed training to integrate technology into their teaching, (Green, 1999; ISTE 1999; WBEC, 2000). Lee (2000) states, “since pre-service social studies students are expected to learn content by using information technologies, these technologies should be accounted for when researching the development of pedagogical content knowledge” (p.1998). To effectively integrate technology with preservice teachers, instructors need to strive to integrate technology, model the technology, provide opportunities for design and use, and motivate preservice teachers to understand the influence educational technology can have in their lives and classrooms, (Gunter, Gunter and Wiens, 1998).

The overarching question guiding this researcher was: what is the nature of technology integration in the social studies methods course and its impact on the practices of preservice teachers during the course and during their practica experiences? Sub-research questions were developed to provide an in depth study of the overarching question. The first sub-research question was to determine the nature of the constructivist integration of technology in the social studies methods course. The following technologies were integrated into the methods course: Internet search for instructional resources, review of the NCDPI advanced technology competencies, using WebQuests as an instructional tool, using PowerPoint as instructional tool, designing class websites and using GIS in instruction. Preservice teachers collectively stated that the integration of technology in the social studies methods course was beneficial to them in varying degrees, mainly in line with their computer skill levels. However, the more advanced preservice teachers suggested a more in-depth
approach to the technologies integrated such as, web design and GIS. Another suggestion from the preservice teachers was the addition of more programs that are directly related to teaching activities such as, grading programs, test making programs, instructional software and databases.

The integration of technology in the social studies methods course by the instructor supported by the constructivist theory provided the impetus for the needed change in contemporary social studies methods course and classrooms (White, 1999). The integration of technology in the social studies methods class supported many facets of the constructivist model proposed by Ewing et al. (1998) such as, using collaboration for problem solving, enabling the construction of knowledge by students, having the learning occur in meaningful contexts and relating learning to students’ experiences. The qualitative data show instances that learning was context based, conceptual learning was through active involvement, learner had personal autonomy and control over their learning and learning ensured personal growth of preservice teachers in varying degrees.

The preservice teachers responded well to the constructivist teaching style of integrating technology in the social studies methods course and some adopted components of the constructivist model during their teaching such as, group activities, learning outcomes from different perspectives and reflections. The more advanced computer preservice teachers advocated for a more in-depth approach to the constructivist theory. They wanted more independence to be creative with the technologies integrated in the social studies methods course. Preservice teachers used all the technologies that were integrated in the methods course during their practica experiences and were able to relate it to the context of social studies. However, there were two dimensions of the constructivist model that were not fully
incorporated in the social studies methods course by the course instructor. First, instructor
did not consistently take into consideration the computer prior knowledge of preservice
teachers when integrating technology. For example, for the web design session, two
preservice teachers, Lita and B.J. had extensive webpage design experiences before this
course, but they were not given the option to incorporate their prior web design skills and
web-authoring tool during the lab session. They had to go through the Netscape Composer
tutorial because that was the design tool selected for this course. Second, the designs of
products followed a blueprint identified by the instructor. Preservice teachers in most
instances felt that they had to design products similar to what was presented by the instructor
e.g. web design and WebQuest products. This was also evident in the findings as some
preservice teachers wanted a more in depth approach to their individual products and felt that
they were limited in their design. Zhora made this point in evaluating the nature of
technology integration in the methods course in the following statement. She stated, “I would
probably not limit the web creation activities to a certain WebQuest format, but to maybe
present different formats that other students have done and let them be more creative that
way.”

The second sub-research question addressed the impact of instructor’s modeling
behavior on preservice teachers’ attitudes and practices towards information technology as
teaching and learning tools. To better understand the impact of technology integration on the
attitudes of preservice teachers toward information technology and computer, this
researcher’s assumptions were tested using descriptive statistics and the findings used to
enrich the case study in this area. Researches on technology integration in teacher education
program show that teacher education programs are not doing a good job in integrating
computer as a teaching and learning tool (ISTE, 1999; WBEC, 2000). Therefore, the integration of technology in the social studies methods course as an instructional tool should have a positive impact on the attitudes of preservice teachers toward technology as an instructional tool. This led this researcher to the assumption that there would be a noteworthy difference in the pre-course and post-course mean scores on the attitudes of preservice teachers toward computer technology as a result of technology integration in the methods course. Using the Teachers’ Attitude Toward Computer (TAC) scale, there was no noteworthy difference in pre-course and post-course mean scores of preservice teachers’ attitudes toward computer. The post-course scores (3.48) were not significantly higher than the pre-course scores (3.33). The pre-course and post-course mean score difference was .15. The case study data show that the main reason why the descriptive statistics data was not noteworthy was that all the preservice teachers had positive attitudes toward computer at the beginning of the course and that this course reinforced their positive attitude. As stated earlier, prior knowledge to technology was one of the influences identified by preservice teachers for responding to the integration of technology during the methods course. The qualitative data also support this finding, but the data show that the prior experiences of preservice teachers to technology were not gained during the teacher education program or as part of their university education experience. Preservice teachers attributed their experiences to their high school and community experiences. For most of the preservice teachers, this course was the first course during their teacher education program in which technology was integrated as a teaching tool. This finding also supports the literature that teacher education programs are doing a poor job of integrating technology with preservice teachers (ISTE, 1999; WBEC, 2000).
For preservice teachers’ attitude to the integration of information technology in the social studies methods course, the Teachers’ Attitude to Information Technology (TAT) scale was used. Research shows that the content area of social studies is most likely to benefit from technology integration than any other content area (White, 1998). This led this researcher to the assumption that there would be a noteworthy difference on the attitudes of preservice teachers toward information technology as a result of technology integration in the methods course. The result shows that there was no noteworthy difference between the pre-course and post-course mean scores of preservice teachers’ attitudes towards information technology. The post-course mean score (3.82) was lower than the pre-course mean score (3.94). The difference was a decrease of .12 mean score between the pre-course and post-course. The case study data show that the main reason why the descriptive statistics data was not noteworthy was because preservice teachers had a positive disposition to information technology prior to the integration of technology in this course. Also, another reason could be attributed to the fact that advanced and intermediate computer users stated they did not gain new information technology skills from the social studies methods course. The advanced and intermediate users stated that they did not benefit greatly from the information technologies presented because of their prior experiences.

A breakdown of the components of TAT to get a clearer picture of technology integration with the different information technologies yielded similar results. However, there were areas with more deficits than others. The first component of TAT was the email component. There was no noteworthy difference between the pre-course (4.13) and post-course (4.11) percentile mean scores of preservice teachers on the TAT- Email component. The difference between the pre-course and post-course mean scores was a decrease of .2.
The case study data show that preservice teachers did not use email extensively during the practicum but had a positive disposition to email as an instructional tool. Zeus was the only preservice teacher, who used email as an instructional tool. All the other preservice teachers used it for communication purposes only.

The second component of TAT is the World Wide Web component. There was no noteworthy difference between the pre-course (3.84) and post-course (3.71) percentile mean scores of preservice teachers on the TAT- WWW component. The mean difference between the pre-course and post-course mean scores was a decrease of .13. The case study data show that Internet search was one skill all the preservice teachers were familiar with before enrolling in the course. What they gained from the integration of the Internet activity in the methods course was the awareness of instructional materials on the web such as, lesson plan, WebQuests and how the Internet can be incorporated into teaching.

The third component of TAT is Multimedia. There was no noteworthy difference between the pre-course (4.03) and post-course (3.88) percentile mean score of preservice teachers on the TAT- Multimedia component. The percentile mean difference between the pre-course and post-course mean scores was a decrease of .15. The case study data show that the multimedia technologies that were integrated were PowerPoint and Videos. The data also show that PowerPoint was the least beneficial of the lab sessions for the two advanced users and most beneficial for four other preservice teachers. The use of limited multimedia in the methods course was probably the reason for the negative difference from the pre-course to the post-course scores. As stated earlier, this was one area preservice teachers requested more depth. Preservice teachers wanted the integration of instructional software in the methods course.
The fourth component of TAT is Student Productivity. There was no noteworthy difference between the pre-course (3.81) and post-course (3.66) percentile mean scores of preservice teachers on the TAT- Student Productivity component. The percentile mean difference between the pre-course and post-course mean scores was a decrease of .15. The case study data show that preservice teachers integrated a variety of information technology - Internet searches, WebQuests, PowerPoint, and email - but did not measure it in terms of students’ productivity. This lack of connection could be attributed to various reasons. First, the teaching aspect of the practicum overwhelmed some preservice teachers. Therefore, they were focused on the relationship between their teaching and students’ performance, rather than on technology use and student performance. Second, preservice teachers encountered several problems in integrating technology. However, in the case study data, there were statements made about the effects of using technology with students. Some preservice teachers felt that students made significant gains in performance because of technology integration. Zhora reflected on the effects of technology on student performance in the following statement, “using technology with these web activities that were created, not only reinforced what I was trying to teach them about, but I think it had a positive effect on how my students performed in the classroom.” Zeus on the other hand saw a direct relationship between using technology and students’ performance. Zeus stated,

And in the test that I gave after we completed the unit, some of the best, least missed questions were those questions on Roman law and government, as a result of them taking a real life account of what it was like to be in the Roman government and the role of protecting it. So, I found the WebQuest to be relevant and very effective in teaching that part.

The fifth component of TAT was Teacher Productivity. There was no noteworthy difference between the pre-course (3.87) and post-course (3.73) percentile mean scores of
preservice teachers on the TAT- Teacher Productivity component. The percentile mean
difference between pre-course and post-course was a decrease of .14. One major factor that
could have contributed to this was the fact that preservice teachers encountered several
problems and obstacles in integrating technology during the practica experiences. Therefore,
they failed to draw a connection between technology integration and teacher productivity.

Though the descriptive statistical data did not show noteworthy differences in
preservice teachers’ attitudes towards computer and information technology, the case study
data (interviews, observations, and document analysis) show that preservice teachers have
positive attitudes toward computer and information technology. The case study data also
show that preservice teachers had a positive disposition toward technology as a teaching and
learning tool before the start of the course. Despite their positive attitudes toward technology
prior to the course, one major finding of this case study was that preservice teachers of all
computer skill levels stated that the integration of technology in the methods course made
them “comfortable,” “confident” and “more fluent” in using technology as a teaching tool.

As a group, the preservice teachers responded positively to the instructor’s style of
integrating technology in the methods class. They felt that the integration of technology in
the social studies methods course was beneficial to them as they prepared for their teaching
practica. However, further analysis of the data revealed two perspectives on the instructor’s
modeling behavior. The advanced users felt that the instructor’s modeling behavior did not
meet their expectations for the course but shared the views of the beginner and intermediate
users that it was sufficient for them. The advanced users stated that the integration of
technology did not affect their computer skill level. However, the preservice teachers agreed
that the instructor’s modeling behavior was adequate for the class and addressed the needs of
the computer skill level of beginner and intermediate users. The data also show that the
instructor’s modeling behavior impacted advanced users in a positive way because it was a
consensus of the advanced and intermediate users that the integration of technology in the
social studies methods course made them more “comfortable” and “confident” around
computers. The instructor’s objective in integrating technology was to model how the
technologies should be used in teaching and teach the fundamentals of each technology
introduced through modeling. Since preservice teachers did not have the basic skills to design
instruction using the technologies, the instructor had to teach the fundamentals of each
technology and then teach how to integrate the technology in teaching social studies. This
aspect frustrated the advanced and intermediate users because they had to go through
concepts that they were already familiar with, but this approach appeased the beginners. One
purpose that was quite evident in the social studies methods course was that technology was
not integrated for the sake of integration (Mason, Alibrandi, Berson et al. 2000). The
technology integrated was directly related to the content area of social studies, (Ewing et al.,
1998; Mason et al., 2000) and this greatly impacted the instructional skills of the preservice
teachers because they saw the relationship between teaching social studies and integrating
technology. All preservice teachers integrated technology during their practica (see Table
4.33) and developed a technology portfolio as fulfillment for licensure requirements set up by
the state.

The third sub-research question addressed factors that influenced preservice teachers’
attitudes toward using information technology and computer as teaching and learning tools.
Preservice teachers identified the following as factors that influenced their attitudes toward
information technology and computer technology: the affective state of the preservice teacher
(Bandura, 1986; Milbrath & Kinzie, 2000); prior computer/technology knowledge (Ewing et al., 1998; Vygotsky, 1978; Kellenberger, 1996); enactive experience with technology (Bandura, 1986; Mason, Alibrandi, Berson et al., 2000); vicarious experience with technology (Bandura, 1986); verbal persuasion to use technology (Bandura, 1986).

The fourth sub-research question addressed factors that promoted preservice teachers’ integration of technology during their practica experiences. Preservice teachers identified the following as factors that promoted technology integration during their practica: the methods course requirements (technology portfolio); engaging students in learning and practicality of using technology (Ewing et al., 1998); affective state of the student learner (Bandura, 1986; Ropp, 1999); different medium of instruction; learning style of student; teacher’s access to computer at home (Vasu & Atkins, 2000); availability of resources (NCES, 2000); availability of technical support (Diem, 2000); students skill level in using the technology; aligning topics with technology; and support of cooperating teacher.

The fifth sub-research question addressed factors that hindered preservice teachers’ integration of technology during their practica experiences. Preservice teachers identified the following as factors that affected technology integration during their practicum, integrating technology for technology’s sake (Mason, Alibrandi, Berson et al., 2000); digital divide; preservice teachers lack of technology knowledge (Mason, Berson, Diem et al., 2000); unreliability of technology (NCES, 2000); availability of technology (NCES, 2000); accessibility to technology resources (NCES, 2000); the quality of available technology; students’ lack of basic computer skills; limited use by cooperating teacher; lack of technical support (NCES, 2000); limited time to plan and use technology; the ability of students to handle independence with technology and the unreliability and transient nature of websites.
The sixth sub-research question addressed the impact of technology integration in the social studies methods course on the basic computer skill levels of preservice teachers. Research on integrating technology with preservice teachers documented that the “Nintendo” generation would be more capable of handling technology integration because of their exposure to technology at school and at home (Flaker, 2001). This led this researcher to the assumption that there would not be a noteworthy difference on the pre-course and post-course computer skill level as a result of technology integration in the social studies methods course. Using the NCBTCE modified by this researcher, there was a noteworthy difference in the pre-course and post-course mean percentile scores of preservice teachers. The post-course scores (4.19) were higher than the pre-course (3.33) scores. The difference between the post-course and pre-course mean scores was .86. Though the post-course mean scores were higher than the pre-course mean scores, the only group that expressed the fact that integration of technology impacted their computer skill level was the beginners. There were two perspectives on the effects of technology integration in the methods course, the advanced and intermediate users, and the beginner users. The advanced and intermediate users felt that technology integration in the social studies methods course did not make a significant difference on their computer skill levels, whereas the beginners felt that there was significant impact on their computer skill levels because of technology integration in the methods course. The beginner users felt they gained new computer skills because of the integration of technology in the social studies methods course. The advanced and intermediate users stated that the integration of technology in the social studies methods course made them “confident”, “comfortable” and “more fluent” with computers. Probably, being “confident”,
“comfortable” and “more fluent” were reflected in the post-course NCBTCE questionnaire completed by the intermediate and advanced users.

**Conclusions**

Technology is no longer a “sleeping giant” (Martorella, 1997). The giant is awake!
The integration of technology in this social studies methods course for the last three years is a strong indicator that the “giant” is awake. The follow up question becomes, what is the nature of technology integration and how effective is the technology integration in the social studies methods course? According to Mason, Berson, Diem et al. (2000),

When preservice teachers enter the classroom, they will rely heavily on teaching strategies and methods acquired while in their teacher preparation courses. Therefore, if teachers are to use technology in the classroom, it is important that they receive appropriate technological training in methods and other education courses. Appropriate training focuses on integrating various types of technology to make lessons better, rather than learning technology simply to acquire technological skills (p. 109-110).

This case study supports the research that if more social science courses involved meaningful uses of technology, more preservice teacher education students would learn how to reconceptualize disciplinary content and utilize technology to effectively teach content (Milman and Heinecke, 2000). This case study reinforced the literature that the instructor is the catalyst for technology integration in the social studies methods course (Vannatta & Beyerbach, 2000). For technology to be integrated in the teacher education program, the instructor must model technology and connect it to the course content, objectives and assignments (Vannatta & Beyerbach, 2000). The instructor modeled technology and connected it to the course content, objectives and assignments in the social studies methods course. The preservice teachers stated that the instructor’s modeling behavior was crucial to how technology was integrated in the social studies methods course. Zeus described the
instructor’s modeling style as “helpful” and “respectfully in dealing with people of the different levels”.

The study supports the research that using effective models of technology integration with preservice teachers in their teacher education courses better prepares them to integrate technology in their future classrooms (Milman & Heinecke, 2000). In this study, the integration of technology in the social studies methods course supported by the constructivist theory provided the impetus for the needed change in contemporary social studies classrooms. Since technology integration in this social studies methods course seems to be in its embryonic stage, using the constructivist model by itself limits the amount of influence exerted upon the preservice teachers. Therefore, the intertwining of social cognitive theory and constructivism in the integration of technology with preservice teachers, adds a dimension to the environmental influences (instructors’ integration of technology) that creates conditions that exercise powerful constraints over preservice teachers’ behavior toward technology, and cognitive and personal factors. The data from this case study lend support to social cognitive theory (Triadic Reciprocality Determinism theory) as a basis for integrating technology using the constructivist approach. However, for the constructivist approach to be effective when intertwined with social cognitive theory, the environmental factors should be meaningful to the participants. The prior experiences of preservice teachers should play a significant role in technology integration. Second, the integration of technology should foster preservice teachers’ creativity in designing technological products. Third, the goal in using the constructivist approach to integrate technology in social studies methods course as a teaching and learning tool should be to let the preservice teacher determine how to integrate technology rather than technology determining the route the preservice teacher
takes (Mason, Berson, Diem et al., 2000). To ensure a meaningful integration of technology in the social studies method course, the integration of technology should reflect the abilities, prior skill knowledge and interests of the preservice teachers.

Using effective models of technology integration with preservice teachers in their teacher education courses better prepares them to integrate technology in their future classrooms (Milman & Heinecke, 2000). Preservice teachers were able to integrate in their practica experiences the technologies they were taught in the methods course. This study also supports the research that preservice teachers who were taught with technology tend to use it in the future in their classroom (Bronack et al., 1999). Zhora reiterated this in the following statement, “it’s [technology] given me more options and has introduced me to several things that I didn’t know that I could use in the classroom and hopefully someday I’ll be able to use those techniques in my own classroom.”

This study shows that teaching technology basics in a class with a variety of computer skill level of the preservice teachers in the social studies methods course, stifles the creativity level of the intermediate and advanced users and limits the constructivist approach of technology integration. As part of her constructivist teaching approach, the course instructor focused on the prior technology knowledge of preservice teachers as a guide to integrate technology in the social studies methods course. Since preservice teachers lacked technology basic skills, the teaching of technology basics became part of the social studies methods course. One implication of this finding in this study is that as more advanced users enroll in the social studies methods course, the constructivist model of integrating technology would be the ideal method to integrate technology to meet the needs, interests and abilities of these preservice teachers. It is quite clear that preservice teachers came into the methods course
with varying computer skill levels and with the skill levels came different expectations. It was evident that because of the varying skills, the instructor did not meet the technological needs of all the students. The advanced students claimed they did not gain much from the course, but the beginners benefited greatly from the course. If our future expectations are true that each new generation of preservice teachers will be more technologically advanced than their predecessors, then instructors would not be faced with teaching technology basics. An implication of this finding on technology integration in teacher education program in general is that as preservice teachers become advanced technologically, technology integration in the methods course would have to reflect the depth of knowledge of the preservice teachers. Though there were varying technology skills of preservice teachers in the methods course, the preservice teachers as a group wanted more instructional programs such as, database, spreadsheet, instructional software and advanced web design programs (Dream Weaver) integrated into the methods course.

This study supports the ISTE (1999) review that teacher education programs do not adequately prepare preservice teachers to use technology. The focus of technology integration in the methods course was to teach students how to integrate the different types of technologies as teaching and learning tools, as reflected in the use of the North Carolina advanced technology competencies for educators as a guide for technology integration in the course, and not to teach about the basics of the different technologies as defined in the North Carolina basic technology competencies for educators. Since some preservice teachers had limited basic computer skill level, more time was spent on teaching fundamentals of the technologies than was spent on integrating it as teaching and learning tools. This had a negative impact on the advanced computer preservice teachers. Also, preservice teachers had
a difficult time differentiating between integrating a technology and learning about the technology. Since this was their first encounter with many applications in their teacher education program as teaching tools, preservice teachers felt that the methods course was the environment they had to learn about the fundamentals of the different applications in depth. If preservice teachers are to integrate technology in teaching, do we wait until they get to the methods course to learn about how to integrate technology or learn both about the technology and how to integrate it? This study shows that when preservice teachers had to learn both the fundamentals of different types of technologies and how to integrate them in their content area, it limited the abilities of the instructor to effectively teach integration of technology as teaching and learning tools. Secondly, it limited the ability of the instructor to reach the more advanced users in the course. It is worth noting that the instructor consistently encouraged the advanced users to work with the beginners as they design their technology products to foster a constructivist atmosphere and for the beginners to tap into the resources of the advanced users. However, there was not enough evident to support the depth and effects of this collaboration effort during the course.

This study supports the research that knowledge about computers does not translate to technology integration (Hoter, 2000). All preservice teachers, including the advanced users, came to the course with experiences with Internet searches but did not know how to translate their Internet skills toward integration in teaching. This shows that preservice teachers had problems identifying or aligning learned technologies with content area. In addition, this study supports the research that higher faculty training is a crucial component to developing technology savvy using preservice teachers (Vannatta and Beyerbach, 2000). In this study the technology skill level of the social studies methods course instructor was sufficient for the
beginners and probably adequate for the intermediate users. However, it was quite evident that the advanced users felt that they did not gain new skills because of the technology skill level that was integrated and the computer skill level of the instructor. This study shows that when the content area instructor has to teach the technical aspects of the technologies, the depth of technology knowledge presented is limited, especially if there are beginner computer users in the class. This also limits the depth of the knowledge that preservice teachers gained, especially those getting that information for the first time, because the focus of the class is on integration and not on the fundamentals of the technologies presented. Though there were different perspectives on the computer skill level of the instructor, the data collected support both perspectives. However, it should be noted that to be a true constructivist, the instructor had to modify her instruction to meet the needs of the preservice teachers. Since there were students with basic needs in the course, the instructor focused on using the basic teaching approach to reach those students. This study did not collect enough data to assess the depth of the computer skill level of the instructor outside what was presented in the course.

The teacher education program has to ensure the following to effectively integrate technology in the social studies methods course:

1. That preservice teachers have the necessary basic skills and exposure to technology required of the social studies methods course before they enroll in the social studies methods course. Overbaugh and Reed (1992) report that introducing computer technology in an introductory course or a content-specific course results in preservice teachers’ increased computer
competency, confidence and decreased anxiety in using computer technology in teaching.

2. If the expectation is for the social studies methods instructor to teach the technologies, then the teacher education program has to ensure that the social studies instructor is adequately prepared to integrate technology to advanced technology preservice users.

This study supports the research that preservice teachers with positive attitudes toward technology use technology in teaching (Vannatta & Beyerbach, 2001). The preservice teachers had positive attitudes toward computer and information technology prior to enrollment in the course, which translated to use during their teaching practica. This study also supported the research that vicarious and enactive experiences are crucial to how preservice teachers learn about technology and integrate technology in their teaching (Albion, 1999; Mason, Berson, Diem et al., 2000). Preservice teachers felt that the instructor’s modeling behavior and the hands-on experiences provided were significant in developing the skills necessary for integrating technology during their practica experiences.

This study shows that some public schools are not quite equipped and ready to handle the technology needs of preservice teachers to put into practice the technology skills that they learned in their teacher education program. Preservice teachers faced several problems including lack of resources, lack of technical support, limited resources, and limited technology skills of their students as they integrated technology during their practica. If the social studies methods course is preparing preservice teachers to integrate technology in teaching that they cannot put into practice, the question then becomes: how effectively are we integrating technology in the educational system at large?
Recommendations for Further Research

This study has been an attempt to study the nature of technology integration in a social studies methods course and its impact on the practices of preservice teachers during their practica experiences. While the findings of the study show positive and promising trends for technology integration in the social studies methods course, future research could address several of the limitations of the study including the following:

1. Conduct a similar research study with a larger randomly selected sample.
2. Conduct research designed to focus on the effects of technology integration in a social studies methods course on the attitudes of a group of advanced preservice teachers toward information technology.
3. Conduct research that focuses on the effects on preservice teachers’ attitudes toward integrating information technology in technology-rich school.
4. Conduct research that examines the effects of using the constructivist approach to integrating technology with different computer skill levels (advanced, intermediate, and beginners) of preservice teachers.
5. Conduct research that uses a team teaching approach (social studies content instructor and Instructional Technologist) to integrate technology with a group of preservice teachers in a social studies methods course.
6. Conduct research that focuses on the effects of technology integration on preservice teachers’ productivity.
7. Conduct research that focuses on how preservice teachers measure students’ productivity as a result of technology integration.
8. Conduct research to determine how technology is integrated in the teacher education program prior to preservice teachers’ enrollment in the social studies methods course.

The integration of technology as a teaching and learning tool is vital to the success of the current educational system in light of the millions of dollars that is allocated to technology (WBEC, 2000). For technology to be integrated in teaching at the K-12 level, teachers have to integrate it. It is clear that teacher education programs have the onus to train preservice teachers to integrate technology (Green, 1999). If teacher education programs fail to adequately train teachers to implement technology, then technology would not be utilized to its fullest as a teaching and learning tool. This study shows that social studies methods courses that integrate a technology component are moving in the right direction to integrate technology in preservice teacher education programs. The question that needs to be answered is: Are the graduating preservice teachers in this study adequately prepared to integrate technology in their future classrooms? The answer from the preservice teachers in this research is that they may not be sufficiently prepared to integrate technology in their teaching but feel that they are adequately prepared to integrate technology in their teaching because of technology integration in the methods course and prior experiences. They also feel that they are more “comfortable,” “confident” and “more fluent” in using technology in their future teaching. This was demonstrated by the fact that they did take the opportunity during student teaching to practice technology integration.
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Appendices
Appendix A. NC Basic Technology Competencies for Educators
NC Basic Technology Competencies for Educators
http://www.ncpublicschools.org/tap/basic.htm

1.0 COMPUTER OPERATION SKILLS

ESSENTIAL KNOWLEDGE AND SKILLS: Demonstrate these skills:

1.1 Start up and shut down computer system and peripherals
1.2 Identify and use icons, windows, menus
1.3 Start an application and create a document
1.4 Name, save, retrieve, revise a document
1.5 Use printing options
1.6 Insert and eject floppy disk and CD-ROM
1.7 Initialize, name/rename floppy disk and hard disk
1.8 Copy document from hard disk to floppy disk and vice versa
1.9 Create and name/rename subdirectories/folders
1.10 Save, open, place documents inside subdirectories/folders
1.11 Open and work with more than one application at a time
1.12 Use special operating features for people with disabilities

Demonstrate knowledge through practical application:

1.13 Terms such as graphical user interface, document, application, K (kilobyte), hierarchical file system, directory, operation system, system software, RAM
1.14 Storage capacity of floppy/hard disks, CD-ROMs
1.15 Similarities/differences and advantages/disadvantages of various operating systems

EXPANDED KNOWLEDGE AND SKILLS: Demonstrate these skills:

1.16 Make more memory available
1.17 Install/reinstall and update system software and printer drivers
1.18 Exchange disks and files among Macintosh, MS-DOS/Windows and Apple II computers

2.0 SETUP, MAINTENANCE, AND TROUBLESHOOTING

ESSENTIAL KNOWLEDGE AND SKILLS

Demonstrate these skills:

2.1 Setup computer system and connect peripheral devices
2.2 Protect and care for floppy disks
2.3 Clean computer components and printer
2.4 Make backup copies of key applications and documents
2.5 Use self-help resources to diagnose and correct common hardware/printing problems
2.6 Installing and upgrade an application
Demonstrate knowledge through practical application:

2.7 Proper operating environment for computer and peripherals
2.8 Protection against computer viruses
2.9 Technical assistance resources available at local level

3.0 WORD PROCESSING/INTRODUCTORY DESKTOP PUBLISHING

ESSENTIAL KNOWLEDGE AND SKILLS

Demonstrate these skills:

3.1 Enter and edit text and copy and move a block of text
3.2 Copy and move blocks of text
3.3 Change text format and style, set margin, line spacing, tabs
3.4 Check spelling, grammar, word usage
3.5 Create a header or footer
3.6 Insert date, time, page number
3.7 Add columns to document
3.8 Insert clip art into document

Demonstrate knowledge through practical application:

3.9 Terms such as cursor, format, font, style, header, footer, spelling checker

4.0 SPREADSHEET/GRAFHING

ESSENTIAL KNOWLEDGE AND SKILLS

Demonstrate these skills:

4.1 Interpret and communicate information in an existing spreadsheet
4.2 Enter data in an existing spreadsheet
4.3 Create a spreadsheet with rows, columns, headings
4.4 Create/copy formulas and functions to perform calculations
4.5 Create a graph from spreadsheet data
4.6 Insert a spreadsheet into a word processing document

Demonstrate knowledge through practical application:

4.7 Terms such as spreadsheet, cell, data entry bar, formula, function
5.0 DATABASE

ESSENTIAL KNOWLEDGE AND SKILLS

Demonstrate these skills:

5.1 Use information from an existing database
5.2 Sort a database by specific fields, add and delete record
5.3 Create database with multiple fields and records
5.4 Create custom layouts including columnar reports
5.5 Insert database fields into word processing document

Demonstrate knowledge through practical application:

5.6 Terms such as database, field, record, layout, sort/arrange, search/select/filter, mail merge

6.0 NETWORKING

ESSENTIAL KNOWLEDGE AND SKILLS

Demonstrate these skills:

6.1 Use a file server (connect/log on, retrieve a program or document, save a document to a specified location)
6.2 Share files with others on a network

Demonstrate knowledge through practical application:

6.3 Terms such as local area network, wide area network, access rights, security passwords, file server, zone

EXPANDED KNOWLEDGE AND SKILLS

Demonstrate these skills:

6.4 Select/de-select a network zone

7.0 TELECOMMUNICATIONS

ESSENTIAL KNOWLEDGE AND SKILLS

Demonstrate these skills:

7.1 Connect to the Internet or an on-line service
7.2 Use Electronic Mail (compose, send, retrieve, read, respond)
7.3 Access and use resources on Internet and World Wide Web

Demonstrate knowledge through practical application:
7.4 Terms such as telecommunications, direct access, dial-in access, modem, baud rate, Internet, World Wide Web
7.5 Obtain/maintain an account on the Internet or an on-line service that provides Internet access
7.6 On-line conferences relevant to professional information needs
7.7 Use of Telnet to connect to a remote computer on the Internet

EXPANDED KNOWLEDGE AND SKILLS

Demonstrate these skills:

7.8 Connect a computer to a modem and telephone line for dial-in access
7.9 Install and configure telecommunications software
7.10 Upload a text file and send as electronic mail
7.11 Use specialized e-mail lists relevant to professional information needs
7.12 Create and use group addresses for electronic mail
7.13 Read, save, print, reply to, forward electronic mail
7.14 Use Gopher to browse resources on the Internet
7.15 Use FTP to send or retrieve files from remote computers
7.16 Use effectively distance learning, desktop video conferencing, and teleteaching technologies

8.0 MEDIA COMMUNICATIONS (INCLUDING IMAGE AND AUDIO PROCESSING)

ESSENTIAL KNOWLEDGE AND SKILLS

Demonstrate these skills:

8.1 Produce print-based products (e.g., newsletters, brochures, posters, books)
8.2 Produce electronic slides/overheads
8.3 Set up and operate a videocassette recorder/player and monitor/TV
8.4 Connect a video output device (e.g., LCD panel) to computer for large screen display

Demonstrate knowledge through practical applications:

8.5 Terms such as painting tool, drawing tool, compression
8.6 Role of media in effective communication
8.7 Characteristics, strengths, and weaknesses of different media
8.8 Consumer issues, including identification/evaluation of available media communication resources

EXPANDED KNOWLEDGE AND SKILLS

Demonstrate these skills:

8.9 Use painting and drawing tools
8.10 Use digital camera and scanner
8.11 Use camcorder and edit video from a camcorder
8.12 Produce a video
8.13 Set up and operate a videodisk player and TV receiver or monitor

9.0 MULTIMEDIA INTEGRATION

ESSENTIAL KNOWLEDGE AND SKILLS

Demonstrate these skills:

9.1 Use a linear multimedia presentation
9.2 Use a non-linear, hypermedia presentation

Demonstrate knowledge through practical application:

9.3 Terms such as media, multimedia, hypermedia, clip media

EXPANDED KNOWLEDGE AND SKILLS

Demonstrate skills of:

9.4 Plan/produce a linear multimedia presentation
9.5 Plan/produce a non-linear, hypermedia presentation
9.6 Use a file compression utility
9.7 Input and digitize sound from microphone and audiocassette player/recorder
9.8 Create simple animations
Appendix B. NC Basic Technology Competencies for Educators- Modified
NC Technology Basic Competencies for Educators Modified
Modified by Prince Hycy Bull

This self-assessment is designed to determine your computer entry skills profile. Please complete all items even if you feel that some are redundant. This should require about 10 minutes of your time. Your answer will remain confidential.

In the box below, please enter the last four digits of your social security numbers:

Part 1
Directions: Please answer each of the questions below by circling one response, filling in the blank, or providing an answer where appropriate.

1. What is your age in years?
   1= 17-29
   2= 30-39
   3= 40-49
   4= 50-59
   5= 60+

2. What is your gender?
   0= Female
   1= Male

3. What race do you consider yourself to be?
   1= White (Caucasian)
   2= Black (African-American)
   3= Native American
   4= Hispanic (Latin-Latina)
   5= Asian
   6= Other (specify)_____________

4. How many semester hours of technology courses have you taken?
   0= None
   1= 1-3 hours
   3= 4- 6 hours
   4= 7-10 hours
   5= 11+

5. How many courses have you taken in semester hours in which technology was used by instructor or integrated?
   0= None
   1= 1-3
   2= 4- 6
   3= 7-10
   4 11+
6. In your use of computer and Internet technology, how would you classify yourself?
   0= A nonuser
   1= A novice
   3= Intermediate
   3= Experienced

7. Do you have access to the Internet at home?
   Yes_________    No_________

8. How often do you use computer technology as part of your educational program?
   0= Never
   1= Daily
   3= Weekly
   4= Monthly
   5= Quarterly
   6= Once or twice a Semester
Instructions: Select one level of agreement for each statement to indicate how you feel about your technology skill level.

SD = Strongly Disagree, D = Disagree, U = Undecided, A = Agree,
SA = Strongly Agree

Part 2

<table>
<thead>
<tr>
<th>I am confident that I could demonstrate these skills:</th>
<th>SD</th>
<th>D</th>
<th>U</th>
<th>A</th>
<th>SA</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.1 Start up and shut down computer system and peripherals</td>
<td></td>
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<tr>
<td>2.2 Identify and use icons, windows, menus</td>
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<tr>
<td>2.3 Start an application and create a document</td>
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<tr>
<td>2.4 Name, save, retrieve, revise a document</td>
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<tr>
<td>2.5 Use printing options</td>
<td></td>
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</tr>
<tr>
<td>2.6 Insert and eject floppy disk and CD-ROM</td>
<td></td>
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<tr>
<td>2.7 Initialize, name/ rename floppy disk and hard disk</td>
<td></td>
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<tr>
<td>2.8 Copy document from hard disk to floppy disk and vice versa</td>
<td></td>
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<tr>
<td>2.9 Create and name/ rename subdirectories/folders</td>
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<tr>
<td>2.10 Save, open, place documents inside subdirectories/folders</td>
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<tr>
<td>2.11 Open and work with more than one application at a time</td>
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<tr>
<td>2.12 Use special operating features for people with disabilities</td>
<td></td>
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<tr>
<td>2.13 Terms such as graphical user interface, document, application, K (kilobyte), hierarchical file system, directory, operation system, system software, RAM</td>
<td></td>
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<tr>
<td>2.14 Storage capacity of floppy/hard disks, CD-ROMs</td>
<td></td>
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<tr>
<td>2.15 Similarities/differences and advantages/disadvantages of various operating systems</td>
<td></td>
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<tr>
<td>2.16 Make more memory available</td>
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<tr>
<td>2.17 Install/reinstall and update system software and printer drivers</td>
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<tr>
<td>2.18 Exchange disks and files among Macintosh, MS-DOS/Windows and Apple II computers</td>
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</tbody>
</table>

Part 3

<table>
<thead>
<tr>
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<th>U</th>
<th>A</th>
<th>SA</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.1 Setup computer system and connect peripheral devices</td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
</tbody>
</table>
3.2 Protect and care for floppy disks
3.3 Clean computer components and printer
3.4 Make backup copies of key applications and documents
3.5 Use self-help resources to diagnose and correct common hardware/printing problems
3.6 Installing and upgrade an application
3.7 Proper operating environment for computer and peripherals
3.8 Protection against computer viruses
3.9 Technical assistance resources available at local level

**Part 4**

<table>
<thead>
<tr>
<th>I am confident that I could demonstrate these skills:</th>
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</thead>
<tbody>
<tr>
<td>4.1 Enter and edit text and copy and move a block of text</td>
</tr>
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<td>4.2 Copy and move blocks of text</td>
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<td>4.4 Check spelling, grammar, word usage</td>
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<td>4.5 Create a header or footer</td>
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<tr>
<td>4.6 Insert date, time, page number</td>
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<tr>
<td>4.7 Add columns to document</td>
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<tr>
<td>4.8 Insert clip art into document</td>
</tr>
<tr>
<td>4.9 Terms such as cursor, format, font, style, header, footer, spelling checker</td>
</tr>
</tbody>
</table>

**Part 5**

<table>
<thead>
<tr>
<th>I am confident that I could demonstrate these skills:</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.1 Interpret and communicate information in an existing spreadsheet</td>
</tr>
<tr>
<td>5.2 Enter data in an existing spreadsheet</td>
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<tr>
<td>5.3 Create a spreadsheet with rows, columns, headings</td>
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<td>5.4 Create/copy formulas and functions to perform calculations</td>
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<tr>
<td>5.5 Create a graph from spreadsheet data</td>
</tr>
<tr>
<td>5.6 Insert a spreadsheet into a word processing document</td>
</tr>
<tr>
<td>5.7 Terms such as spreadsheet, cell, data entry bar, formula, function</td>
</tr>
</tbody>
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**Part 6**

<table>
<thead>
<tr>
<th>I am confident that I could demonstrate these skills:</th>
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</thead>
<tbody>
<tr>
<td>6.1 Use information from an existing database</td>
</tr>
<tr>
<td>6.2 Sort a database by specific fields, add and delete record</td>
</tr>
</tbody>
</table>
6.3 Create database with multiple fields and records
6.4 Create custom layouts including columnar reports
6.5 Insert database fields into word processing document
6.6 Terms such as database, field, record, layout, sort/arrange, search/select/filter, mail merge

Part 7

<table>
<thead>
<tr>
<th>I am confident that I could demonstrate these skills:</th>
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<th>D</th>
<th>U</th>
<th>A</th>
<th>SA</th>
</tr>
</thead>
<tbody>
<tr>
<td>7.1 Use a file server (connect/log on, retrieve a program or document, save a document to a specified location)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7.2 Share files with others on a network</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>7.3 Terms such as local area network, wide area network, access rights, security passwords, file server, zone</td>
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<tr>
<td>7.4 Select/de-select a network zone</td>
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</tbody>
</table>

Part 8

Instructions: Select one level of agreement for each statement to indicate how you feel about your technology skill level.

SD = Strongly Disagree, D = Disagree, U = Undecided, A = Agree, SA = Strongly Agree

<table>
<thead>
<tr>
<th>I am confident that I could demonstrate these skills:</th>
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<th>D</th>
<th>U</th>
<th>A</th>
<th>SA</th>
</tr>
</thead>
<tbody>
<tr>
<td>8.1 Connect to the Internet or an on-line service</td>
<td></td>
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</tr>
<tr>
<td>8.2 Use Electronic Mail (compose, send, retrieve, read, respond)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8.3 Access and use resources on Internet and World Wide Web</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8.4 Terms such as telecommunications, direct access, dial-in access, modem, baud rate, Internet, World Wide Web</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8.5 Obtain/maintain an account on the Internet or an on-line service that provides Internet access</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8.6 On-line conferences relevant to professional information needs</td>
<td></td>
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</tr>
<tr>
<td>8.7 Use of Telnet to connect to a remote computer on the Internet</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>8.8 Connect a computer to a modem and telephone line for dial-in access</td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8.9 Install and configure telecommunications software</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>8.10 Upload a text file and send as electronic mail</td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8.11 Use specialized e-mail lists relevant to professional information needs</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
8.12 Create and use group addresses for
electronic mail
8.13 Read, save, print, reply to, forward
electronic mail
8.14 Use Gopher to browse resources on
the Internet
8.15 Use FTP to send or retrieve files from
remote computers
8.16 Use effectively distance learning,
desktop video conferencing, and
tele-teaching technologies

I am confident that I could demonstrate these
skills:
9.1 Produce print-based products (e.g.,
newsletters, brochures, posters, books)
9.2 Produce electronic slides/overheads
9.3 Set up and operate a videocassette
recorder/player and monitor/TV
9.4 Connect a video output device (e.g., LCD
panel) to computer for large screen display
9.5 Terms such as painting tool, drawing tool,
compression
9.6 Role of media in effective communication
9.7 Characteristics, strengths, and weaknesses of
different media
9.8 Consumer issues, including
identification/evaluation of available media
communication resources
9.9 Use painting and drawing tools
9.10 Use digital camera and scanner
9.11 Use camcorder and edit video from a
camcorder
9.12 Produce a video
9.13 Set up and operate a videodisk player and
TV receiver or monitor

I am confident that I could demonstrate these
skills:
10.1 Use a linear multimedia presentation
10.2 Use a non-linear, hypermedia
presentation
10.3 Terms such as media, multimedia,
hypermedia, clip media
10.4 Plan/produce a linear multimedia
presentation
10.5 Plan/produce a non-linear, hypermedia
presentation
10.6 Use a file compression utility
10.7 Input and digitize sound from
microphone and audiocassette
player/recorder
10.8 Create simple animations
Appendix C. Teachers’ Attitudes Toward Computer
Teachers’ Attitudes Toward Computer

This questionnaire is derived from well-validated portions of several attitudinal surveys that have been used with teachers in the past. We will use your responses to help develop a profile of how teachers view technology. Please complete all items even if you feel that some are redundant. This should require about 10 minutes of your time. Usually it is best to respond with your first impression, without giving a question much thought. Your answers will remain confidential.

ID: __________
Use the ID assigned to you or the last four digits of your social security #

### Part 1
Instructions: Select one level of agreement for each statement to indicate how you feel.
SD = Strongly Disagree, D = Disagree, U = Undecided, A = Agree, SA = Strongly Agree

<table>
<thead>
<tr>
<th></th>
<th>SD</th>
<th>D</th>
<th>U</th>
<th>A</th>
<th>SA</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. I think that working with computers would be enjoyable and stimulating. (186)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>2. I want to learn a lot about computers. (103)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>3. The challenge of learning about computers is exciting. (211)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>4. Learning about computers is boring to me. (180)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>5. I like learning on a computer. (181)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>6. I enjoy lessons on the computer. (10)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>7. I can learn many things when I use a computer. (9)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>8. I believe that it is very important for me to learn how to use a computer. (12)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>9. A job using computers would be very interesting. (101)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>10. The people who give me the best ideas for improving teaching also tend to know a lot about computers.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>11. I concentrate on a computer when I use one. (4)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>12. I believe that I am a better teacher with technology.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>
## Part 2

**Instructions:** Select one level of agreement for each statement to indicate how you feel.

**SD = Strongly Disagree, D = Disagree, U = Undecided, A = Agree, SA = Strongly Agree**

<table>
<thead>
<tr>
<th></th>
<th>SD</th>
<th>D</th>
<th>U</th>
<th>A</th>
<th>SA</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. I get a sinking feeling when I think of trying to use a computer. (263)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>2. Working with a computer makes me feel tense and uncomfortable. (230)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>3. Working with a computer makes me nervous. (17)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>4. Computers intimidate me. (227)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>5. Using a computer is very frustrating. (18)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>6. I feel comfortable working with a computer. (15)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>7. Computers are difficult to use. (20)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>8. I think that computers are very easy to use. (13)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>9. I have a lot of self-confidence when it comes to working with computers. (88)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>10. Computers are hard to figure out how to use.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

## Part 3

**Instructions:** Select one level of agreement for each statement to indicate how you feel.

**SD = Strongly Disagree, D = Disagree, U = Undecided, A = Agree, SA = Strongly Agree**

<table>
<thead>
<tr>
<th></th>
<th>SD</th>
<th>D</th>
<th>U</th>
<th>A</th>
<th>SA</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. If I had a computer at my disposal, I would try to get rid of it. (150)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>2. Studying about computers is a waste of time. (192)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>3. I can't think of any way that I will use computers in my career. (74)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>4. I will probably never learn to use a computer. (154)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>5. I see the computer as something I will rarely use in my daily life. (123)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>6. Knowing how to use a computer is a worthwhile skill. (94)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>7. I look forward to having a computer in my home. (164)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>8. Using a computer prevents me from being creative. (257)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>9. You have to be intelligent to work with computers. (261)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>10. Not many people can use computers. (262)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>11. I would never take a job where I had to work with computers. (272)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>
### Part 4

Instructions: Select one level of agreement for each statement to indicate how you feel.

**SD = Strongly Disagree, D = Disagree, U = Undecided, A = Agree, SA = Strongly Agree**

<table>
<thead>
<tr>
<th></th>
<th></th>
<th>SD</th>
<th>D</th>
<th>U</th>
<th>A</th>
<th>SA</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>The use of Electronic mail (E-mail) makes the student feel more involved. (282)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>2.</td>
<td>The use of E-mail helps provide a better learning experience. (284)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>3.</td>
<td>The use of E-mail makes a class more interesting. (281)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>4.</td>
<td>The use of E-mail helps the student learn more. (283)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>5.</td>
<td>The use of E-mail increases motivation for class. (280)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>6.</td>
<td>More courses should use E-mail to disseminate class information and assignments. (276)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>7.</td>
<td>The use of E-mail creates more interaction between students enrolled in the course. (278)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>8.</td>
<td>The use of E-mail creates more interaction between student and instructor. (279)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>9.</td>
<td>E-mail provides better access to the instructor. (277)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>10.</td>
<td>E-mail is an effective means of disseminating class information and assignments. (274)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

### Part 5

Instructions: Select one level of agreement for each statement to indicate how you feel.

**SD = Strongly Disagree, D = Disagree, U = Undecided, A = Agree, SA = Strongly Agree**

<table>
<thead>
<tr>
<th></th>
<th></th>
<th>SD</th>
<th>D</th>
<th>U</th>
<th>A</th>
<th>SA</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Computers are changing the world too rapidly. (142)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>2.</td>
<td>I am afraid that if I begin to use computers I will become dependent upon them. (215)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>3.</td>
<td>Computers dehumanize society by treating everyone as a number. (138)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>4.</td>
<td>Our country relies too much on computers. (135)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>5.</td>
<td>Computers isolate people by inhibiting normal social interactions among users. (144)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>6.</td>
<td>Computers have the potential to control our lives. (134)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>7.</td>
<td>Working with computers makes me feel isolated from other people. (241)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>8.</td>
<td>Use of computers in education almost always reduces the personal treatment of students. (176)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>9.</td>
<td>Working with computers means working on your own, without contact with others. (251)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>
10. The Internet will help narrow the societal gap between the "haves" and "have nots".

11. Computers will some day be smarter than people. (218)

Part 6
Instructions: Select one level of agreement for each statement to indicate how you feel.

<table>
<thead>
<tr>
<th>SD</th>
<th>D</th>
<th>U</th>
<th>A</th>
<th>SA</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Computers could increase my productivity. (202)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>2. Computers can help me learn. (204)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>3. Computers are necessary tools in both educational and work settings. (226)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>4. Computers can be useful instructional aids in almost all subject areas. (175)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>5. Computers improve the overall quality of life. (207)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>6. If there was a computer in my classroom it would help me to be a better teacher. (163)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>7. Computers could enhance remedial instruction. (168)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>8. Computers will improve education. (162)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>9. Computers can be used successfully with courses which demand creative activities. (170)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>10. Having a computer available to me would improve my general satisfaction. (149)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

Part 7
Instructions: Choose one location between each adjective pair to indicate how you feel about computers.

Computers are:

<table>
<thead>
<tr>
<th>Unpleasant</th>
<th>Pleasant</th>
<th>Fresh</th>
<th>Exciting</th>
<th>Likeable</th>
<th>Comfortable</th>
<th>Good</th>
<th>Happy</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. unpleasant</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>2. suffocating</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>3. dull</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>4. unlikable</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>5. uncomfortable</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>6. bad</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>7. unhappy</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
</tbody>
</table>

Part 8
Instructions: Select one level of agreement for each statement to indicate how you feel.

<table>
<thead>
<tr>
<th>SD</th>
<th>D</th>
<th>U</th>
<th>A</th>
<th>SA</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. I like to talk to others about computers. (98)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>
2. It is fun to figure out how computers work. (193)

3. If a problem is left unsolved in a computer class, I continue to think about it afterward. (85)

4. I like reading about computers. (100)

5. The challenge of solving problems with computers does not appeal to me. (57)

6. When there is a problem with a computer that I can't immediately solve, I stick with it until I have the answer. (69)

7. Computers can be exciting. (99)

8. I don't think I would do advanced computer work. (60)

9. I will use computers many ways in my life. (54)

10. I like to scan computer journals. (104)

**Part 9**

Instructions: Select one level of agreement for each statement to indicate how you feel.

SD = Strongly Disagree, D = Disagree, U = Undecided, A = Agree, SA = Strongly Agree

<table>
<thead>
<tr>
<th>Statement</th>
<th>SD</th>
<th>D</th>
<th>U</th>
<th>A</th>
<th>SA</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. It is important for students to learn about computers in order to be informed citizens. (96)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Students should understand the role computers play in society. (172)</td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>3. All students should have some understanding about computers. (173)</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>4. All students should have an opportunity to learn about computers at school. (95)</td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Computers could stimulate creativity in students. (199)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Computers could help students improve their writing. (198)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Computers can help accommodate different learning styles.</td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. Students work harder at their assignments when they use computers.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. Students help one another more while doing computer work.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. Student time on the Internet is time well-spent.</td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11. Learning about computers is worthwhile. (62)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12. Having computer skills helps one get better jobs. (97)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13. I am sure that with time and practice, I can be comfortable working with computers. (216)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>14. Learning to operate a computer is like learning any new skill - the more you practice, the better you become. (214)</td>
<td></td>
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</tr>
</tbody>
</table>
Appendix D. Teachers' Attitudes Toward Information Technology
Teachers' Attitudes Toward Information Technology

This five part questionnaire is designed to assess your perceptions of the use of information technology for your own productivity as well as for the benefit of your students. It should require less than 10 minutes of your time. Usually it is best to respond with your first impression, without giving a question much thought. Your answers will remain confidential.

Use the assigned ID or the last four digits of your social security #.

Instructions: Choose one circle between each adjective pair to indicate how you feel about the object.

To me, electronic mail is:

1. important
2. boring
3. relevant
4. exciting
5. means nothing
6. appealing
7. fascinating
8. worthless
9. involving
10. not needed

To me, using the World Wide Web is:

1. important
2. boring
3. relevant
4. exciting
5. means nothing
6. appealing
7. fascinating
8. worthless
9. involving
10. not needed

To me, multimedia (HyperStudio, KidPix, etc) is:

1. important
2. boring
3. relevant
4. exciting
5. means nothing
6. appealing
To me, using computers for my professional productivity is:

<table>
<thead>
<tr>
<th></th>
<th>important</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th>unimportant</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>important</td>
</tr>
<tr>
<td>2</td>
<td>boring</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>interesting</td>
</tr>
<tr>
<td>3</td>
<td>relevant</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>irrelevant</td>
</tr>
<tr>
<td>4</td>
<td>exciting</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>unexciting</td>
</tr>
<tr>
<td>5</td>
<td>means nothing</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>means a lot</td>
</tr>
<tr>
<td>6</td>
<td>appealing</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>unappealing</td>
</tr>
<tr>
<td>7</td>
<td>fascinating</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>mundane</td>
</tr>
<tr>
<td>8</td>
<td>worthless</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>valuable</td>
</tr>
<tr>
<td>9</td>
<td>involving</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>uninvolving</td>
</tr>
<tr>
<td>10</td>
<td>not needed</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>needed</td>
</tr>
</tbody>
</table>

For my students, using computers in the classroom is:

<table>
<thead>
<tr>
<th></th>
<th>important</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th>unimportant</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>important</td>
</tr>
<tr>
<td>2</td>
<td>boring</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>interesting</td>
</tr>
<tr>
<td>3</td>
<td>relevant</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>irrelevant</td>
</tr>
<tr>
<td>4</td>
<td>exciting</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>unexciting</td>
</tr>
<tr>
<td>5</td>
<td>means nothing</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>means a lot</td>
</tr>
<tr>
<td>6</td>
<td>appealing</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>unappealing</td>
</tr>
<tr>
<td>7</td>
<td>fascinating</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>mundane</td>
</tr>
<tr>
<td>8</td>
<td>worthless</td>
<td></td>
<td></td>
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<td></td>
<td>valuable</td>
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<tr>
<td>9</td>
<td>involving</td>
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<td></td>
<td></td>
<td></td>
<td>uninvolving</td>
</tr>
<tr>
<td>10</td>
<td>not needed</td>
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</tbody>
</table>

Thank you for your time.
TAT v. 2.01
Appendix E. Post-Social Studies Methods Course Interview Questions
Post-Social Studies Methods Course Interview Questions

1. What were your feelings toward integrating technology as a teaching and learning tool in social studies before you enrolled in this course?

2. How has this course affected/changed your feelings toward technology as a teaching and learning tool?

3. What would you highlight as the major technological gains from this course as it relates to technology integration as a teaching and learning tool? Provide relevant examples.

4. What effects did the technology integration in this course have on your computer skill level? (In the initial questionnaire that you filled at the beginning of the course you identified yourself as a --------- user. How has this course affected that classification?)

5. How beneficial were the computer lab sessions to you?

6. Which of the computer lab sessions was most beneficial to you? Why?

7. Which of the computer lab sessions was least beneficial to you? Why?

8. What factors influenced your use of technology as a teaching and learning tool during the course? Relate this also to your practicum?

9. How did your cooperating teacher integrate technology during your first 8 weeks of observation? Give detail examples.

10. How did you integrate technology during your practicum? Be specific on the different technologies used.

11. How would you describe the instructor’s style of integrating technology in social studies methods course?

12. Was the instructor’s style of integrating technology effective? If yes, why yes. If no, why and what would you have done differently?

13. If you were to re-design technology integration in this course, how would you do it?

14. What were some of the problems you encountered as you integrated technology as a teaching tool during this course and your practicum?

15. What were some of the factors that promoted your use of technology during this course and your practicum?

16. During the course of the semester, how did you use email as a teaching and learning tool? What was the nature of the emails?

17. What are perceptions of GIS as a teaching and learning tool as presented in the Social Studies Methods course? How would you integrate GIS in your teaching?

<table>
<thead>
<tr>
<th>Categories and Dimensions</th>
<th>Technology Integration</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. <strong>Learning should be context based</strong></td>
<td></td>
</tr>
<tr>
<td>Learning involves making sense of the real life environment</td>
<td></td>
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<tr>
<td>Learned experiences should be contextualized in authentic activities</td>
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<tr>
<td>Learning is through making links with existing knowledge in the context of real life experience</td>
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</tr>
<tr>
<td>The content of a learning context should be meaningful and have already established links with the learner’s past experience.</td>
<td></td>
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<tr>
<td>2. <strong>Conceptual learning is through active involvement</strong></td>
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<tr>
<td>Learners derive understandings and interpretations of the task in hand by active participation in it</td>
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<tr>
<td>Knowledge is constructed and reconstructed personally and internal to the learner</td>
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<tr>
<td>Knowledge grows from reconceptualizing based on personal (and therefore unique) background experience</td>
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<tr>
<td>Learning involves creating personal meaning and understanding</td>
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<tr>
<td>The experience with an idea becomes part of its meaning</td>
<td></td>
</tr>
<tr>
<td>3. <strong>Learning is through collaboration with others</strong></td>
<td></td>
</tr>
<tr>
<td>Learning involves sharing existing knowledge with others and a willingness to resolve misunderstandings</td>
<td></td>
</tr>
<tr>
<td>Sharing means engaging in interaction with others regarding shared knowledge and new knowledge</td>
<td></td>
</tr>
<tr>
<td>The learner’s ideas and notions are available to others for comment, suggestion and argument</td>
<td></td>
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<tr>
<td>Enhanced understanding of reality is the outcome of shared construction</td>
<td></td>
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<tr>
<td>Learning involves negotiation with peers and teachers in reaching learning outcomes</td>
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</tr>
<tr>
<td>4. <strong>Learner should have personal autonomy and control over learning</strong></td>
<td></td>
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<tr>
<td>Learning involves a significant proportion of personal decision making</td>
<td></td>
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<tr>
<td>Learning requires learners to derive and develop their own learning strategies and sometimes their own goals</td>
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<tr>
<td>Learning event should help learners to develop skills to construct their own plans for problem solving</td>
<td></td>
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<tr>
<td>The mediation of the teacher depends on the needs and skills of the learners</td>
<td></td>
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<tr>
<td><strong>5. Learning is personal growth</strong></td>
<td></td>
</tr>
<tr>
<td>Learning is thinking within the task to reach shared understandings</td>
<td></td>
</tr>
<tr>
<td>Effective learning requires a personal assessment or reflection on progress</td>
<td></td>
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<tr>
<td>Ideas and concepts should become more refined through argument if it leads to reflection</td>
<td></td>
</tr>
<tr>
<td><strong>6. Learning outcome is a perspective and an understanding</strong></td>
<td></td>
</tr>
<tr>
<td>Specific content and learning outcomes should not be prespecified</td>
<td></td>
</tr>
<tr>
<td>Learning outcomes in terms of meaningful and personal construction of knowledge are unique to the learner</td>
<td></td>
</tr>
<tr>
<td>There have to be opportunities for multiple perspectives and learned outcomes within a learning task</td>
<td></td>
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<tr>
<td>A multiplicity of sources of information should allow differing approaches to knowledge acquisition and understanding</td>
<td></td>
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</tbody>
</table>
Appendix G.  Computer/Technology Skills Curriculum Grades 9-12
Computer/Technology Skills Curriculum

Grades 9-12

http://www.ncpublicschools.org/curriculum/computer.skills/9_12.html

STRANDS: SI = Societal Issues; KU/WP/DTP = Keyboard Utilization/Word Processing/Desk Top Publishing; DB = Database; SS = Spreadsheet; T = Telecommunications; M/P = Multimedia/Presentation

Competency Goal 1
The learner will understand important issues of a technology-based society and will exhibit ethical behavior in the use of computer and other technologies.

1.1 Practice ethical behavior in using computer-based technology for class assignments and projects.
1.2 Identify issues surrounding complex technology environments.

Competency Goal 2
The learner will demonstrate knowledge and skills in the use of computer and other technologies.

2.1 Practice and refine knowledge and skills in keyboarding/word processing/desktop publishing, spreadsheets, databases, multimedia, and telecommunications in preparing classroom assignments and projects.
2.2 Select and use appropriate technology tools to efficiently collect, analyze, and display data.

Competency Goal 3
The learner will use a variety of technologies to access, analyze, interpret, synthesize, apply, and communicate information.

Social Studies
3.1 Select and use appropriate technology tools to efficiently collect, analyze, and display data.
3.2 Use databases to collect, record, analyze, and display data.
3.3 Use electronic resources for research.
3.4 Select and use technological tools for class assignments, projects, and presentations.
3.5 Adhere to Fair Use and Multimedia Copyright Guidelines, citing sources of copyrighted materials in papers, projects, and multimedia presentations.
3.4 Adhere to Fair Use and Multimedia Copyright Guidelines, citing sources of copyrighted materials in papers, projects, and multimedia presentations.
Appendix H. Social Studies Curriculum (9-12)
Social Studies Curriculum (9-12)

http://www.ncpublicschools.org/curriculum/socialstudies/912intro.html

Introduction to the Secondary Program (9-12)
Builds upon K-8 sequence

At the secondary level (grades 9-12), students polish and deepen their understanding of history and the social sciences. Following the essentially geographic perspective of the elementary and middle levels, the secondary social studies program builds upon the formal historical study of North Carolina with formal study of the history of the United States; links economics and political science (government) in a course intended to provide students with the knowledge, skills, and habits of mind to enter effectively into adult citizenship; offers several perspectives for world study; and suggests a variety of social studies electives.

Economics, law and government
Through their study of the Economic, Legal, and Political Systems in Action, students consider basic economic concepts, economic institutions, and reasoned approaches for analyzing economic problems, actions, and policies. Political, governmental, and legal topics in the course engage students in an examination of the legal and political systems of our society leading to analysis of legal and political phenomena and problems.

World Studies
The high school world studies program offers students, teachers, and curriculum planners three complementary but distinct approaches to the study of the world. World History examines the world through time, focusing on the historical development of phenomena, and the rise and fall of civilizations and their unique contributions to humanity. World Geography considers the earth from a spatial perspective, examining world areas through the five basic themes of geography: place, location, region, human-environmental interaction, and movement. World Cultures uses a cultural perspective, examining the peoples of the world through their cultural arrangements: their economic, social, and political institutions, their systems of values and beliefs, and their interactions with peoples unlike themselves and with the general global culture.

United States history
The study of United States History in high school builds on historical perspectives gained from the middle-level study of North Carolina: The History of an American State and on economic and political perspectives gained from the study of The Economic, Legal, and Political Systems in Action. Studies in the world studies program will enable students to place the United States in a world context. Given these foundation studies, it is appropriate that this high school course in United States History emphasize the economic, social, and political developments of the twentieth century. In this context, the study of our nation's history concentrates on understanding cause-and-effect relationships and on developing an understanding of multiple causation, the knowledge that things are as they are for many reasons. Such historical study leads beyond the mere memory of unexamined and isolated facts toward the ability to detect trends, analyze movements and events, and develop a "sense of history."

Electives
The elective program in social studies consists of well-balanced offerings in history and the social sciences. The elective courses offered to students are designed to give them opportunities for pursuing areas of special interest, for preparing themselves for further study, and for completing high school graduation requirements in the area of social studies. Elective courses may vary in length; some may be year-long courses, while others may be one-semester courses.
Appendix I. TAT & TAC Reliability Estimates
TAC & TAT Reliability Estimates

Reliability Estimates for Nine Scales of the TAC Ver. 5.11

<table>
<thead>
<tr>
<th>Scale</th>
<th>Alpha</th>
<th>Number of Items</th>
<th>N cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Part 1 - Interest</td>
<td>.91</td>
<td>10</td>
<td>520</td>
</tr>
<tr>
<td>Part 2 - Comfort</td>
<td>.94</td>
<td>9</td>
<td>533</td>
</tr>
<tr>
<td>Part 3 - Accommodation</td>
<td>.84</td>
<td>11</td>
<td>523</td>
</tr>
<tr>
<td>Part 4 - Interaction (Electronic mail)</td>
<td>.96</td>
<td>10</td>
<td>522</td>
</tr>
<tr>
<td>Part 5 - Concern</td>
<td>.89</td>
<td>10</td>
<td>530</td>
</tr>
<tr>
<td>Part 6 - Utility</td>
<td>.93</td>
<td>10</td>
<td>525</td>
</tr>
<tr>
<td>Part 7 - Perception</td>
<td>.97</td>
<td>7</td>
<td>520</td>
</tr>
<tr>
<td>Part 8 - Absorption</td>
<td>.89</td>
<td>10</td>
<td>532</td>
</tr>
<tr>
<td>Part 9 - Significance</td>
<td>.93</td>
<td>10</td>
<td>525</td>
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</table>

Note: Reliability estimates are based on data gathered from 550 K-12 teachers in a large metropolitan school district in Texas during April – May 2000.

TAT Reliabilities for K-12 teachers from six Texas schools (1997)

<table>
<thead>
<tr>
<th>Subscales</th>
<th>Alpha</th>
<th>No. Of Variables</th>
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</thead>
<tbody>
<tr>
<td>Electronic mail (teacher)</td>
<td>.93</td>
<td>10</td>
</tr>
<tr>
<td>WWW (teacher)</td>
<td>.95</td>
<td>10</td>
</tr>
<tr>
<td>Multimedia (teacher)</td>
<td>.96</td>
<td>10</td>
</tr>
<tr>
<td>Productivity (teacher)</td>
<td>.96</td>
<td>10</td>
</tr>
<tr>
<td>Productivity (students)</td>
<td>.96</td>
<td>10</td>
</tr>
</tbody>
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Appendix J. NCSS Technology Standards
NCSS Technology Standards

Teaching about Science, Technology and Society in Social Studies: Education for Citizenship in the 21st Century

http://www.socialstudies.org/standards/positions/aboutscience.html

Prepared by the Science and Society Committee
Approved by NCSS Board of Directors, 1989

GUIDELINES

1. Choosing a Topic

1.1 Science, technology, society (STS) topics and lessons should focus on the social context in which they operate. Ideally, teachers should choose topics that
a. encourage learners to develop an understanding of themselves as interdependent members of society, and society as a responsible agent within the natural ecosystem;
b. present clearly the mutual relationships and widespread effects of science, technology and society;
c. present clearly the relationships and effects of scientific developments and new technologies to relevant issues on local or global scales;
d. facilitate the presentation of a balance on differing viewpoints about issues and options and a critical review of the positions and sources of these viewpoints;
e. provide opportunities for learners to develop and practice problem-solving and decision-making skills;
f. provide opportunities for learners to apply the content, attitudes, and skills learned to responsible personal action and societal action or both;
g. help and encourage learners to consider an expanded perspective on science, technology, and society including issues of personal and societal values and ethics; and
h. foster confidence in the learners for handling science, technology and society issues.

1.2 Teachers must assess potential topics or units of study according to variables within the instructional setting such as:

a. teacher background and expertise;
b. resources available such as textbooks, videotapes, films, maps and atlases, artifacts, displays in local museums and outside resource persons;
c. students' interests and concerns

d. social, emotional, cognitive levels and abilities of students;
e. relevance to courses of study or instructional goals of social studies and the instructional setting;
f. sensitivities to the topic in the school and community;
g. appropriateness to the age and developmental levels of learners; and
h. selection of topics that are STS issues and worthy of examination.

1.3 Topics or lessons should have many entry points within the curriculum.

1.4 Topics or lessons should be dynamic; they should respond to current issues and problems and be relevant to the needs and interests of students.
1.5 Topics or lessons should build upon the current and relevant literature and issues, and the related work of professional organizations.

1.6 Topics or lessons should be interdisciplinary, i.e., geographical, historical, political, economic, legal, aesthetic, sociological, scientific, and ethical perspectives. They should require learners and teachers to apply knowledge, skills, and values learned in many content areas to science and technology issues and their effects on human existence.

2. Knowledge of Content

Teachers should help students to acquire knowledge about the following:

2.1 Science, technology, and society terms, concepts, and principles including:

a. definitions of science, technology, and society;
b. interactions and interdependence of science, technology, and society;
c. nature of modern science and technology and their interrelationships with human existence from personal to global scales;
d. increased dependency on technology in daily life;
e. effects of emerging technologies on career choices;
f. relationship of science and technology to the development of society and to our national and international heritage; and
g. interaction of the values and beliefs of a society and their effects on personal and public decision making regarding STS topics and issues.

2.2 Science, technology, society issues such as:

a. nature of an STS issue and how to structure its components;
b. sources of STS issues (local, state, national, and global levels);
c. resources and their use (e.g., energy, food, materials, and land);
d. political and social aspects of problems requiring the use of technology in their solution;
e. human needs and aspirations (e.g., family and social relations, communications, food, clothing, transportation, commerce and industry, and work) and the relation of these to technological advancements; and
f. effects of technology on local, state, national, and global levels.

2.3 Historical and geographical influences of society on science and technology and the resulting influences of science and technology on society;

2.4 Political and economic influences of science and technology and influences of science and technology on politics and economics;

2.5 Assessment and control of science and technology by individual choices and social mechanisms such as:

a. Role of technology and science assessment;
b. nature of science and technology in public and social decision making;
c. roles of business and industry, government, and private sectors in policy making and the development of technology;
d. citizen influences: participation strategies for individuals and groups; and
e. roles and effects of mass communication, transportation, and medical advancements.
3. Values

The teacher will provide opportunities for students to learn and evaluate:

3.1 Value positions of groups and individuals in responding to science, technology and society-related issue definitions and resolutions;

3.2 The role of ethics and ethical responsibility in seeking resolutions to STS problems and issues;

3.3 Attitudes and beliefs of people regarding science and technology including personal and societal values, ethics, and how these affect the interaction of science, technology, and societal change;

3.4 Value positions as a source of unity or conflict within and among people and subsets of society;

3.5 Civic responsibility of an individual as an independent member of society, and society as a responsible agent with the natural ecosystem; and

3.6 The effects of values and ethics on the formation of public policy (how it is made, how it deals with topics or issues with special attention to the relationship between democratic values and STS issues).

4. Thinking Processes

Teachers will help learners to:

4.1 Develop models or frameworks that represent the complexity of the issue and the various perspectives, including historical, geographical, political, economic, legal, aesthetic, sociological, scientific, and ethical. These models or frameworks should be used to:

a. Collect, analyze, and evaluate information and its sources; and
b. apply the information in rational and responsible problem solving and decision-making.

4.2 Identify topics for investigation that expand critical thinking by:

a. Defining and clarifying occasions for STS decisions (select issues or problems directly relevant to the learners whenever possible);
b. describing the situation or context giving rise to the problem or issue (e.g., political, economic, social, or physical causes);
c. identifying points of disagreement among individuals or groups; and
d. identifying alternatives and consequences to recommended actions.

4.3 Analyze STS topics and issues using stated criteria including but not limited to:

a. Technological factor(s) present such as available resources (energy and materials), available human resources (numbers of individuals, skills) and available technologies;
b. social and physical conditions existing prior to the application of technology that can be affected by
the application of technology;
c. science factors related to the technology and the relationship(s) such as genetic engineering and
cryogenics;
d. intended results of the applications of technology and possible consequences (affected areas in
regions or aspects of society);
e. benefits and costs of the application of technology; who gains and who pays economically or
socially (individuals, groups, subsets of society, or society); and
f. values and value frameworks that entered into the decision to develop and use the technology such
as the use of the atomic bomb at end of World War II.

4.4 Locate and process information to:

a. Acquire information through careful analytic reading, listening, observing of material in mass
media (television, newspapers, radio), interviews and presentations by authorities, computerized data
bases, books, and other publications;
b. collect primary data through the design and use of interviews, questionnaires, rating scales,
opinionnaires, and controlled observations;
c. develop basic science and technology vocabulary related to the issue, topic, or problem;
d. use and interpret pictures, charts, graphs, tables, and maps and use these tools to report findings to
others;
e. locate and describe appropriate local, state, and national individuals, groups, agencies, and
organizations that have a vested interest or regulatory responsibility regarding the problem or issue;
f. develop inquiry strategies that distinguish reliable and relevant information from unreliable and
non-related information, identify the variables related to the issue or problem and that provide a
sound basis for analysis and statement of conclusions;
g. develop concepts and generalizations supported by information; and
h. present and defend alternative solutions to problems or issues.

4.5 Evaluate information to:

a. Distinguish fact from opinion;
b. compare information for supporting and contradicting arguments or data within one source and
among a variety of sources;
c. recognize propaganda and bias and its purpose in a given context;
d. evaluate information received from media sources including media events, television coverage,
videotapes, and computer programs;
e. evaluate the integrity of sources of information (e.g., expertise, vested interest) and the techniques
used in these sources for collecting and reporting data; and
f. evaluate the relevance of the information to the issue or problem.

4.6 Work with others in solving problems, making decisions, or resolving controversy by:

a. Interacting with individuals and groups that have differing points of view, alternative explanations,
differing value orientations, and apparent power considerations or interests;
b. including strategies for discussion such as:
formulating positions, including rationale, on STS issues or problems using supportive information
that include empirical as well as value oriented data;
communicating verbally and supporting a position on each issue;
listening to the position and perspectives of those with opposing viewpoints;
discussing the positions with others and negotiating a constructive resolution to conflicts; and reaching a consensus, when possible, a joint position to which all sides can agree; and  
c. democratic decision making is predicated on group processes.

4.7 Use technologies (such as computers), whenever possible, in collecting, analyzing, and applying data.

4.8 Encourage the use of established problem-solving and decision-making models and computerized forecast models that organize and set priorities for information.

5. Civic Action

Teachers should assist students to:

5.1 Apply the knowledge, skills, and values learned to real situations that require responsible civic problem solving and decision making such as:

a. in a school setting; and  
b. in the local community.

5.2 Identify examples from history, the present day, and forecasts of the future that illustrate the importance of technologically competent citizens: those who can make informed judgments and rational decisions and can plan actions affecting human well-being, the national and global welfare, and the individual's quality of life.

5.3 Identify present action plans that clearly illustrate the relation of science and technology to decisions about personal and social issues and problems.

5.4 Prepare an action plan, taking into consideration:

a. formats for participation considering such concepts as consensus and trade-offs;  
b. alternatives and possible consequences based on empirical (cognitive and affective) information;  
c. relevance to values, beliefs, and behavior of self and significant others;  
d. goals of action plans;  
e. available resources and support; and  
f. evaluation of the action plan in a simulated setting.

5.5 Implement the plan.

5.6 Evaluate the results of the course of action including:

a. collecting evidence related to action goals;  
b. evaluating the effectiveness and widespread effects on individuals, organizations, and groups;  
c. making value judgments about the results; and  
d. deciding whether to continue, modify the plan, or attempt alternate approaches.

6. Instructional Techniques and Strategies

Teachers should select and use materials and methods of instruction that consider the following:
6.1 Provide ample opportunities for knowledge, skills, and experience acquisition, development of values and attitudes, and participation in a social context.

6.2 Provide experiences that build on previous experiences and are consistent with the level of the learner's cognitive and social development.

6.3 Focus basic instructional strategies on active learning and should take into consideration:
   a. student participation in problem solving and decision making where learners experience the outcomes of plans and are responsible for them;
   b. opportunities for considering original data sources, integrity of data, and the separation of fact from fiction;
   c. opportunities to explore diverse societal norms, individual perceptions of those norms, the influences of these norms on the formation of attitudes and values, and how these attitudes and values shape individual behavior toward scientific and technological issues;
   d. teaching thinking skills as a part of the regular curriculum (teachers should give particular emphasis to thinking about those personal, cultural, and societal issues that influence the well-being of human beings); and
   e. opportunities for students to engage in cooperative and collaborative activities.

6.4 Instructional methods and materials should include activities and devices such as:
   a. direct and indirect experiences in various social contexts;
   b. active participation in school and community activities;
   c. indirect experiences through simulation, role playing, and simulation games and including emerging technologically-oriented hardware and software; and
   d. use of present and emerging technology to obtain, interpret, and apply data to consider STS issues and problems. This should include hardware and software found in places such as classrooms, libraries, and laboratories.

6.5 Instruction should provide students with a clear focus on the relation of science and technology in historical, present-day, and future perspectives.

7. Assessment and Evaluation

In developing assessment and evaluation tools and procedures, the following should be important considerations:

7.1 The characteristics that distinguish STS lessons and topics from others (Section 1.1), should provide the primary focus for both the development of assessment and evaluation tools and procedures, and the goals for student learning.

7.2 Evaluation and criteria for student learning and instructional effectiveness should be based primarily on the statement of objectives by the respective school.

7.3 Expectations of students should be sensitive to cognitive, affective, and social developmental levels of students and to the social context of the local school district.

7.4 Assessment and evaluation should include both formative and summative techniques; those that measure on-going learning as well as long-term learning.
Assessment and evaluation should include a variety of techniques that assure higher order thinking, application skills, and affective learning as well as those that measure knowledge acquisition (e.g., decision making, civic participation). Examples of these techniques might include:

a. quizzes, examinations, and oral and written reports;
b. individual and group presentations by students that encourage the use of a variety of media;
c. interviews with students, both individually and in groups;
d. teacher observation and assessment of students during class activities using devices such as checklists and rating scales;
e. student presentations in and out of class;
f. technological devices (e.g., computers, video camera, video tape recorder);
g. student action plans and the implementation of these in the classroom or in an out-of-class social context; and
h. individual and group student projects, including dramatizations, forums or round table discussions, and role playing.

Assessment and evaluation should provide opportunities for expressing different student views, as long as relevant facts support them.

Implementation Strategies

The teacher should consider the following strategies for placing of lessons or units of instruction within the school curriculum:

**8.1 Infusion into existing courses of study:**

a. adds content systematically and pervasively to courses on history, geography, and civics, for example;
b. becomes an integral part of the existing curriculum; and
c. omits some content in standard courses or may not identify STS content clearly when its effects are discussed.

**8.2 Extension of existing units of study:**

a. adds STS content and activities to the end of lessons in traditional social studies courses;
b. permits the extension and applications of traditional social studies content;
c. has the advantage of maximum flexibility in placement and length of STS content; and
d. can result in superficial and unsystematic treatment of STS content.

**8.3 Creation of separate courses of study:**

a. tends to be interdisciplinary or multidisciplinary in content;
b. permits systematic and sustained study of various interrelationships of science, technology, and society; and
c. may include the main disadvantages of difficulty in achieving sustained school support or constant challenges to organizing course content from various academic disciplines.

**8.4 Awareness of STS conceptual framework for learners by emphasizing STS content already included in standard curricula, i.e., American history courses. It would be beneficial if technological and scientific events were identified as such when their effects were discussed.**
• STS Education: the understanding of how science and technology shape and are shaped by society, the problems and opportunities they create, and how citizens can relate most effectively to them.

References


Contributors to this statement include: Phillip Heath, Ohio State University, Lima; Fred Splittgerber, University of South Carolina, Columbia; Gerald Marker, Indiana University, Bloomington; Barbara Barchi, The Pennsylvania State University, University Park; Charles White, George Mason University, Fairfax, Virginia; John Patrick, Indiana University, Bloomington; and David Seiter, Davis County School System, Utah.
Appendix K. International Society for Technology in Education (ISTE)
International Society for Technology in Education (ISTE)

Standards for Initial Endorsement in Educational Computing and Technology Literacy

1.0 Prerequisite Preparation - Foundations.
Professional studies culminating in the educational computing and technology literacy endorsement prepare candidates to use computers and related technologies in educational settings. All candidates seeking initial certification or endorsements in teacher preparation programs should have opportunities to meet the educational technology foundations standards.

1.1 Basic Computer/Technology Operations and Concepts.
Candidates will use computer systems run software; to access, generate, and manipulate data; and to publish results. They will also evaluate performance of hardware and software components of computer systems and apply basic troubleshooting strategies as needed.

Performance Indicators - Candidates Will: Courses or Experiences to Fulfill the Program Standards

1.1.1 operate a multimedia computer system with related peripheral devices to successfully install and use a variety of software packages.
1.1.2 use terminology related to computers and technology appropriately in written and oral communications.
1.1.3 describe and implement basic troubleshooting techniques for multimedia computer systems with related peripheral devices.
1.1.4 use imaging devices such as scanners, digital cameras, and/or video cameras with computer systems and software.
1.1.5 demonstrate knowledge of uses of computers and technology in business, industry, and society.

1.2 Personal and Professional Use of Technology.
Candidates will apply tools for enhancing their own professional growth and productivity. They will use technology in communicating, collaborating, conducting research, and solving problems. In addition, they will plan and participate in activities that encourage lifelong learning and will promote equitable, ethical, and legal use of computer/technology resources.

Performance Indicators - Candidates Will: Courses and Experiences to Fulfill the Program Standards

1.2.1 use productivity tools for word processing, database management, and spreadsheet applications.
1.2.2 apply productivity tools for creating multimedia presentations.
1.2.3 use computer-based technologies, including telecommunications, to access information and enhance personal and professional productivity.
1.2.4 use computers to support problem solving, data collection, information management, communications, presentations, and decision making.
1.2.5 demonstrate awareness of resources for adaptive assistive devices for students with special needs.
1.2.6 demonstrate knowledge of equity, ethics, legal, and human issues concerning use of computers and technology.
1.2.7 identify computer and related technology resources for facilitating lifelong learning and emerging roles of the learner and the educator.
1.2.8 observe demonstrations or uses of broadcast instruction, audio/visual conferencing, and other
distant learning applications.

1.3 Application of Technology in Instruction.
Candidates will apply computers and related technologies to support instruction in their grade level
and subject areas. They must plan and deliver instructional units that integrate a variety of software,
applications, and learning tools. Lessons developed must reflect effective grouping and assessment
strategies for diverse populations.

Performance Indicators - Candidates Will: Courses or Experiences to Fulfill the Program
Standards
1.3.1 explore, evaluate, and use computer/technology resources including applications, tools,
educational software, and associated documentation.
1.3.2 describe current instructional principles, research, and appropriate assessment practices as
related to the use of computers and technology resources in the curriculum.
1.3.3 design, deliver, and assess student learning activities that integrate computers/technology for a
variety of student grouping strategies and for diverse student populations.
1.3.4 design student learning activities that foster equitable, ethical, and legal use of technology by
students.
1.3.5 practice responsible, ethical, and legal use of technology, information, and software resources.

2.0 Specialty Content Preparation in Educational Computing and Technology Literacy.
Professional studies in educational computing and technology provide concepts and skills that prepare
teachers to teach computer/technology applications and use technology to support other content areas.

2.1 Social, Ethical, and Human Issues.
Candidates will apply concepts and skills in making decisions concerning social, ethical, and human
issues related to computing and technology.

Performance Indicators - Candidates Will: Courses and Experiences to Fulfill the Program
Standards
2.1.1 describe the historical development and important trends affecting the evolution of technology
and its probable future roles in society.
2.1.2 describe strategies for facilitating consideration of ethical, legal, and human issues involving
school purchasing and policy decisions.

2.2 Productivity Tools.
Candidates integrate advanced features of technology-based productivity tools to support instruction.

Performance Indicators - Candidates Will: Courses or Experiences to Fulfill the Program
Standards
2.2.1 use advanced features of word processing, desktop publishing, graphics programs, and utilities
to develop professional products.
2.2.2 use spreadsheets for analyzing, organizing, and displaying numeric data graphically.
2.2.3 design and manipulate databases and generate customized reports.
2.2.4 use teacher utility and classroom management tools to design solutions for a specific purpose.
2.2.5 identify, select, and integrate video and digital images in varying formats for use in
presentations, publications, and/or other products.
2.2.6 apply specific-purpose electronic devices (such as a graphing calculator, language translator,
scientific probeware, or electronic thesaurus) in appropriate content areas.
2.2.7 use features of applications that integrate word processing, database, spreadsheet,
communication, and other tools.

2.3 Telecommunications and Information Access.
Candidates will use telecommunications and information access resources to support instruction.

**Performance Indicators - Candidates Will: Courses or Experiences to Fulfill the Program Standards**

2.3.1 access and use telecommunications tools and resources for information sharing, remote information access and retrieval, and multimedia/hypermedia publishing.

2.3.2 use electronic mail and web browser applications for communications and for research to support instruction.

2.3.3 use automated on-line search tools and intelligent agents to identify and index desired information resources.

**2.4 Research, Problem Solving, and Product Development.**

Candidates will use computers and other technologies in research, problem solving, and product development. Candidates use a variety of media, presentation, and authoring packages; plan and participate in team and collaborative projects that require critical analysis and evaluation; and present products developed.

**Performance Indicators - Candidates Will: Courses or Experiences to Fulfill the Program Standards**

2.4.1 identify basic principles of instructional design associated with the development of multimedia and hypermedia learning materials.

2.4.2 develop simple hypermedia and multimedia products that apply basic instructional design principles.

2.4.3 select appropriate tools for communicating concepts, conducting research, and solving problems for an intended audience and purpose.

2.4.4 participate in collaborative projects and team activities.

2.4.5 identify examples of emerging programming, authoring, or problem solving environments.

2.4.6 collaborate in on-line workgroups to build bodies of knowledge around specific topics.

2.4.7 use a computer projection device to support and deliver oral presentations.

2.4.8 design and publish simple on-line documents that present information and include links to critical resources.

2.4.9 develop instructional units that involve compiling, organizing, analyzing, and synthesizing of information and use technology to support these processes.

2.4.10 conduct research and evaluate on-line sources of information that support and enhance the curriculum.

**Professional Preparation.**

Professional preparation in educational computing and technology literacy prepares candidates to integrate teaching methodologies with knowledge about use of technology to support teaching and learning.

**3.1 Teaching Methodology.**

Candidates will effectively plan, deliver, and assess concepts and skills relevant to educational computing and technology literacy across the curriculum.

**Performance Indicators - Candidates Will: Courses or Experiences to Fulfill the Program Standards**

3.1.1 design and practice methods and strategies for teaching concepts and skills related to computers and related technologies including keyboarding.

3.1.2 design and practice methods and strategies for teaching concepts and skills for applying productivity tools.

3.1.3 design and practice methods/strategies for teaching concepts and skills for applying information access and delivery tools.
3.1.4 design and practice methods and strategies for teaching problem solving principles and skills using technology resources.
3.1.5 observe in a K-12 setting where K-12 computer technology concepts and skills are being taught.
3.1.6 practice methods and strategies for teaching technology concepts and skills in a lab and classroom setting.
3.1.7 identify and support implementation and revision of computer/technology literacy curriculum to reflect on-going changes in technology.
3.1.8 design and implement integrated technology classroom activities that involve teaming and/or small group collaboration.
3.1.9 identify activities and resources to support regular professional growth related to technology.
3.1.10 describe student guidance resources, career awareness resources, and student support activities related to computing and technology.
3.1.11 compare national K-12 computer/technology standards with benchmarks set by local school districts and critique each
3.1.12 identify professional organizations and groups that support the field of educational computing and technology.
3.1.13 design a set of evaluation strategies and methods that will assess the effectiveness of instructional units that integrate computers/technology.

3.2 Hardware/Software Selection, Installation, and Maintenance.
Candidates will demonstrate knowledge of selection, installation, management, and maintenance of the infrastructure in a classroom setting.

Performance Indicators - Candidates Will: Courses or Experiences to Fulfill the Program Standards
3.2.1 develop plans to configure computer/technology systems and related peripherals in laboratory, classroom cluster, and other appropriate instructional arrangements.
3.2.2 identify and describe strategies to support development of school/laboratory policies, procedures, and practices related to use of computers/technology.
3.2.3 research, evaluate, and develop recommendations for purchasing instructional software to support and enhance the school curriculum.
3.2.4 research, evaluate, and develop recommendations for purchasing technology systems.
3.2.5 design and recommend procedures for the organization, management, and security of hardware and software.
3.2.6 identify strategies for troubleshooting and maintaining various hardware/software configurations.
3.2.7 identify and describe network software packages used to operate a computer network system.
3.2.8 configure a computer system and one or more software packages.
Appendix L. National Council for Social Studies: Background Statement
National Council for Social Studies: Background Statement

http://www.socialstudies.org/about/background.shtml

"Social studies is the integrated study of the social sciences and humanities to promote civic competence."

Founded in 1921, National Council for the Social Studies is the largest association in the nation devoted solely to social studies education. Its membership is organized into a network of more than 110 affiliated local, state, and regional councils and associated groups composed of pre-K-12 classroom teachers, college and university professors, school officials, supervisors and consultants, publishers, and other social studies professionals. There are currently some 26,000 individual and institutional members representing all states in the U.S. and many other countries.

NCSS defines social studies as "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. In essence, social studies promotes knowledge of and involvement in civic affairs. And because civic issues--such as health care, crime, and foreign policy--are multidisciplinary in nature, understanding these issues and developing resolutions to them require multidisciplinary education. These characteristics are the key defining aspects of social studies.

The Council published *Expectations of Excellence: Curriculum Standards for Social Studies* which provides an articulated K-12 social studies program that serves as a framework for the integration of other national standards in social studies, including U.S. and world history, civics and government, geography, global education, and economics. NCSS standards ensure that an integrated social science, behavioral science, and humanities approach for achieving academic and civic competence is available to guide social studies decision makers in K-12 schools. The NCSS framework consists of ten themes incorporating fields of study that correspond with one or more relevant disciplines. The organization believes that effective social studies programs include experiences that provide for the study of:

Culture, people, places, and environments, individuals, groups, and institutions production, distribution, and consumption global connections time, continuity, and change individual development and identity power, authority, and governance science, technology, and society civic ideals and practices

The basic purpose of the social studies program is to teach students the content knowledge, intellectual skills, and civic values necessary for fulfilling the duties of citizenship in a participatory democracy. The mission of National Council for the Social Studies is to provide leadership, service, and support for all social studies educators.
Appendix M. Letter of Request to Participate in Study
Letter of Request to Participate in Study

August 21, 2002

Dear Student

The role of technology in education continues to grow. How we use technology in teaching and learning is crucial to the effectiveness of technology as an instructional tool at the university and in the schools. To understand the use of technology as an instructional tool, your course, ECI 460/464 was selected for a doctoral dissertation research. The researcher is Prince Hycy Bull, a doctoral student at NCSU, College of Education, Department of Curriculum and Instruction. The research is under the supervision of Dr. Ellen Vasu and Dr. Marsha Alibrandi.

The purpose of this letter is to kindly request your permission to participate in the research study. As participant of this study, you will be required to participate in the following activities:

1. Complete of three surveys at the beginning of the course and at the end of the course.
2. Participate in a focus group discussion on the use of technology in teaching social studies.
3. Participate in a 30- 45 minutes interview on the use of technology in teaching social studies.

In addition to your participation listed above, the researcher would like to observe at least one lesson during which you use technology as part of your lesson, review your end of course portfolio, lesson plans, web activities and observe and audio record class activities. I would like to assure you that all information collected would be used strictly for my dissertation research. Confidentiality of all information will be strictly maintained and only aliases will be used in the final write up of the paper. The data collection, analysis and final write up will in no way impact your academic standing in course.

If you have any question about the research and your participation at anytime during the semester, please feel free to email me at hycybull@nc.rr.com. Please sign attached letter of participation after review of this letter. I hope that your participation and the findings of the research will make a contribution to the literature on the integration of technology in social studies methods course. Thank you for your assistance and cooperation in this effort!

Sincerely,

Prince Hycy Bull
Researcher
Doctoral Student, Curriculum & Instruction
Appendix N. Confidentiality Letter
Confidentiality Letter

Prince Hycy Bull
Researcher
Doctoral Student, Curriculum & Instruction
hycybull@nc.rr.com

Permission To Use Information in Doctoral Research Study

I ___________________________ do hereby give Prince Hycy Bull, researcher, doctoral student at the College of Education, NCSU, permission to use information collected in ECI 460/464 as outlined in letter of Request to Participate in Study for his doctoral research. I have been assured that all information collected will be used for his doctoral research, academic presentations and follow up academic articles. I have been assured that confidentiality of all information would be strictly ensured. I have also been assured that my participation in this research does not impact on my academic standing in this course.

Signature: ___________________________     Date: ___________________________
Appendix O. Course Syllabus
# Social Studies Methods Course Syllabus

**ECI  Methods of Teaching Secondary Social Studies**

**Instructor:**

**Email:**

### Theory, Methods, & Materials Schedule (subject to change)

<table>
<thead>
<tr>
<th>Date</th>
<th>Topic</th>
<th>Readings</th>
<th>Assignment DUE</th>
<th>Researcher Presence</th>
</tr>
</thead>
<tbody>
<tr>
<td>8/21</td>
<td>What IS/ARE Social Studies?</td>
<td>Course Description</td>
<td>Writing: Some Questions to Begin with</td>
<td>Present</td>
</tr>
<tr>
<td>8/23</td>
<td><strong>Computer Lab</strong></td>
<td><strong>Web searches:</strong> Lesson plans</td>
<td>Skills of Beginning Teachers/ 2 Lesson Plans</td>
<td>Present</td>
</tr>
<tr>
<td>8/28</td>
<td>Observing Learning &amp; Teaching</td>
<td>Elements of Effective Teaching</td>
<td>HOW does the teacher make these things happen?</td>
<td>Present</td>
</tr>
<tr>
<td>8/29</td>
<td>Learning &amp; Cognition</td>
<td>HowardGardner: Frames of Mind</td>
<td>Reflections on ourselves as learners</td>
<td>Present</td>
</tr>
<tr>
<td>8/30</td>
<td><strong>Computer Lab:</strong></td>
<td><strong>DPI Technology Competencies</strong></td>
<td><strong>Observing for learning:</strong> Hand in and discuss</td>
<td>Present</td>
</tr>
<tr>
<td>9/4</td>
<td>Principles of Learning/</td>
<td>Cognition</td>
<td>HowardGardner: Frames of Mind</td>
<td>Present</td>
</tr>
<tr>
<td>9/5</td>
<td>Observing Learning Discussion</td>
<td>Freire; Barr, Barth &amp; Shermis;</td>
<td>Observing for Learning &amp; Teaching:</td>
<td>Absent</td>
</tr>
<tr>
<td>9/6</td>
<td><strong>Computer Lab</strong></td>
<td><strong>Introducing WebQuests</strong></td>
<td>Select a Module from UVa for testing</td>
<td>Present</td>
</tr>
<tr>
<td>9/11</td>
<td>Planning: Methods Workshops</td>
<td>Unit Plan Format (Alibrandi)</td>
<td>Wigginton discussion</td>
<td>Present</td>
</tr>
<tr>
<td>9/12</td>
<td>Whose History?</td>
<td>Akutagawa, Zinn, Wigginton</td>
<td>Hand in &amp; discuss observations &amp; Computer Lab</td>
<td>Present</td>
</tr>
<tr>
<td>9/13</td>
<td><strong>Computer Lab</strong></td>
<td><strong>Power Point</strong></td>
<td></td>
<td>Present</td>
</tr>
<tr>
<td>9/18</td>
<td>New Perspectives on History</td>
<td>Takaki, Brown</td>
<td>Book reviews and discussion</td>
<td>Present</td>
</tr>
<tr>
<td>9/19</td>
<td>Practice for equity</td>
<td>Delpit, Sadler &amp; Sadler</td>
<td>Observing for equity</td>
<td>Absent</td>
</tr>
<tr>
<td>9/20</td>
<td><strong>Computer Lab</strong></td>
<td><strong>Constructing Class Websites</strong></td>
<td>Developing Teaching units for presentation</td>
<td>Present</td>
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<tr>
<td>9/25</td>
<td>Methods Workshops: Geography</td>
<td>Alibrandi</td>
<td>Hand in Observing for equity assignment</td>
<td>Present</td>
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<tr>
<td>9/26</td>
<td>Geography</td>
<td>Student Presentations</td>
<td>Observing for Planning</td>
<td>Absent</td>
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<tr>
<td>9/27</td>
<td>Economics</td>
<td>“Computer Lab Time”</td>
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<td>Present</td>
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<tr>
<td>10/2</td>
<td>Legal &amp; Political Systems</td>
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<td>Present</td>
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</table>
### ECI xxxxxxxx Assignments:
- **Weekly visits** (Mondays and Tuesdays, all day) in practicum site, Observing, assisting and designing instruction
- **Weekly Observation reports**: some will have particular foci
- **Book Review** (format will be provided) of a book from the Recommended Readings list
- **Presentation** of a Curriculum Unit for use during your student teaching (guidelines will be forthcoming)
- **Portfolio**: Suggested materials and formats for presentation under separate cover
- **Application for Certificate**: Visit from Certification Officer Debbie Andrews to complete applications

**Grading Policy**: Consistent with university practice, this course will be graded using +/- designations based on attendance, completion of assignments, and initiative.
Academic Responsibility and Integrity: University policy regarding student responsibility to academic integrity is outlined in the attached statement. Students in 598Q are expected to respect and meet the university requirements.

Schedule of Student Teaching Practicum ECI xxxx (shaded areas):

<table>
<thead>
<tr>
<th>Monday</th>
<th>Tuesday</th>
<th>Wednesday</th>
<th>Thursday</th>
<th>Friday (Computer Lab)</th>
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</table>

Seminars

Questions to students after 2 weeks of computer labs:

- Assess your knowledge of Social Studies Instructional Technology prior to this class
- What have you learned as of 2 computer lab sessions?
- How have you seen Instructional Technology used in your Social Studies practicum setting?
- How do you intend to use Instructional Technology in Social Studies?

Shown below in gray are the ECI 464 Field experience and Practicum components of your Student Teaching semester. On these days, you will observe and assist in your practicum site classroom. From Fall Break on, you will have Teaching responsibilities for specific classes.

Over the first 8 weeks, you and your Co-operating Teacher will co-plan and implement curriculum, you should assist in preparation, instruction, correction, and grading of student work. As you approach your transition into the teaching role, you and your Co-operating teacher should identify classes and appropriate units that you will prepare. These must be presented to and approved by the Co-operating teacher prior to your instruction.

The ECI 460T Theory, Methods, and Materials (TMM) component of the course will take place on campus Tuesdays and Thursdays. Within the TMM component, you will meet your Student-Teaching Supervisors. [The Supervisor will visit you and your Co-operating Teacher, and conduct observations and provide feedback on your progress during your practicum.]

During your practicum, we will meet once weekly to reflect on your practice and to discuss "Practical Matters." On Thursday evenings, we will meet on campus (or at a designated site) to discuss relevant topics, concerns, and necessities. On some of these evenings, Nancy Cope, President of the North Carolina Council for Social Studies, will join us and share her expert wisdom on educational practice in North Carolina.

Introduction
In a speech in 1988, the late Seth Kreisberg introduced his comments by saying

"Teaching Social Studies is at once social, political, moral, and intellectual."

The practice of teaching Social Studies is currently underrated. Why is that? We will examine the political contexts of Social Studies education, influences affecting "what Social Studies IS," how we as teachers must interpret society's messages and expectations, and what we will DO in response to those expectations. In order to accomplish the goals of teaching Social Studies, we will examine learning, practice a variety of methods, use a variety of materials and media, and develop a variety of assessments designed to determine whether learning has in fact occurred. We will reflect on our own learning about Social Studies education, and develop practices that will keep us open to new developments, to be willing to experiment to creating new developments, and to find sources of wisdom of practice and resources for our practice.

In order to inform our practice, we will examine theory and research in Social Studies Education and in the various fields of Social Studies to determine best practices for learning and teaching.

**Goals of the Course:**

This course is designed to meet the multiple expectations of incorporating theory, practice, reflection, and preparation. The overall goal is the preparation of a practicing Social Studies teacher. The components of the course are designed to provide time for developing skills, strategies, and resources for teaching. In conjunction with the Student-teaching practicum, the course also provides the opportunity to develop ongoing habits of reflection and professional development.

**Objectives of the Course:**

1. Expand our notions of Social Studies to incorporate growth and change in the field.
2. Develop understandings of learning to inform our decision-making in teaching.
3. Develop and practice skills of teaching for learning in Social Studies.
4. Identify the political contexts that influence Social Studies education.
5. Incorporate and practice the routine use of multiple perspective-taking and multi-cultural perspectives.
6. Prepare prospective teachers with background and skills for teaching for both life-long and student learning.

**Required Readings:**

- One book from the “Optional” list below.
- All class-distributed readings and assignments

**Recommended Readings:** (on Reserve in LRL)


You may suggest other books for the list as well

**Recommended Professional Journals:** (Available in LRL)

- Social Education
- Journal of Geography

Some questions to begin with:

What IS or ARE Social Studies?

What is your current view of why it is important to teach Social Studies?

*The epistemological questions:*

HOW did you come to this understanding? & WHY do you feel this way?
(Events in your life? Influential individuals? Intellectual curiosity?)

How do you feel about *LEARNING* Social Studies?
(Your experiences in High School? College? Life?)

What are your CONCERNS about teaching Social Studies?

What would be most helpful to YOU right now, in this course, for us to address?
Appendix P- Advanced Technology Competencies (Vasu & Atkins, 1997)
Advanced Technology Competencies for Educations Grid

Vasu and Atkins (1997)

<table>
<thead>
<tr>
<th>Computer Skills Curriculum</th>
<th>Possible Activities</th>
<th>Alternative Activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>10.1 – Use the computer skills curriculum to identify what students should know and be able to do</td>
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<tr>
<td>10.2 – Use school television resources that support the curriculum</td>
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<tr>
<td>10.3 – Access resources for planning instruction available via telecommunications</td>
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<tr>
<td>10.4 – Goals of the NC Computer Skills Curriculum</td>
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<tr>
<td>10.5 – The NC Computer Skills Assessment</td>
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<tr>
<td>11.1 – Use technology in the discipline/subject for learning and as a medium for communications</td>
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<tr>
<td>11.2 – Use of media and technology to present the subject so that it is comprehensible to others</td>
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<tr>
<td>11.3 – Use of technology-based tools that are specific to the discipline</td>
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<tr>
<td>11.4 – Use of technology to facilitate teaching strategies specific to the discipline</td>
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<tr>
<td>12.1 – Develop performance tasks that require students to locate and (a) analyze information as well as draw conclusions and (b) use a variety of media to communicate results clearly.</td>
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<tr>
<td>12.2 – Use computers and other technologies effectively and appropriately to collect information on student learning using a variety of methods.</td>
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</tr>
<tr>
<td>12.3 – Use computers and other technologies effectively and appropriately to communicate information in a variety of formats on student learning to colleagues, parents, and others.</td>
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<td>12.4 – Physical settings that support active student involvement, inquiry, and collaboration</td>
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<tr>
<td>12.5 – Organizational and management strategies that support active student involvement, inquiry, and collaboration</td>
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<tr>
<td>12.6 – Resources available including satellite, cable, wireless, and ITFS (Instructional television Fixed Service)</td>
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<tr>
<td>13.1 – Use media and technology to address differences in children’s learning and performance</td>
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<tr>
<td>13.2 – Use media and technology to support learning for children with special needs</td>
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<tr>
<td>13.3 – Use media and technology to support learning and children whose primary language is not English</td>
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<tr>
<td>13.4 – Use appropriate local, state, and national services or resources to meet diverse learning needs through technology</td>
<td></td>
<td></td>
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<tr>
<td>14.1 – Establish classroom policies and procedures that ensure compliance with copyright law, fair use guidelines, security and child protection</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
APPENDIX Q – Collection of 167 Websites Used in this Course
Collection of 167 Websites Used in this Course

<table>
<thead>
<tr>
<th>Websites</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><a href="http://webct.ncsu.edu/SCRIPT/eci460_0001/scripts/serve_home">http://webct.ncsu.edu/SCRIPT/eci460_0001/scripts/serve_home</a></td>
<td>Course Webct link</td>
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<td><a href="http://www.socialstudies.org/">http://www.socialstudies.org/</a></td>
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