Goals and Attitudes Related to Technology Use in a Social Studies Method Course

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What technology goals are essential to the preparation of prospective elementary school teachers? The National Council for the Accreditation of Teacher Education (NCATE, 1994) and the International Society of Technology in Education (ISTE, 1996) have recommended fundamental concepts and skills needed by all prospective teachers for applying technology in educational settings. ISTE recommended that all teachers need basic computer/technology operation and concepts, personal and professional use of technology, and specialty content preparation in educational computing and technology literacy. The following are ISTE guidelines related to technology in professional education programs.

> 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 foundation standards.

> 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.

> 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.

Technology content and skills are incorporated into teacher education programs, but typically, technology content is taught as a separate course, in which the primary goal is to provide a foundation in educational technology. However, many educators believe technology must complement the process of learning the content in a course of study in teacher education (Wilson & Marsh, 1995). Also, methods courses should be taught using technology rather than teaching technology separately (Pryor & Bitter, 1996). The instructional strategies and educational technologies used in preservice methodology courses should model effective methods of teaching that include technology. To meet the ISTE standards for the application of technology in instruction, prospective teachers need opportunities to apply educational computing and technology literacy to their specialty content areas.

Objectives for the integration of technology into social studies teacher education include applying emerging technologies, developing units that integrate technology, and engaging in problem solving related to the issues for successfully integrating technology (White, 1996). Moreover, the National Council for the Social Studies *Standards for Social Studies Teachers* (1997) stated that all social studies teachers at all levels should provide developmentally appropriate experiences as they guide learners in the study of technology. The prospective teacher should (a) address social,

ethical, and human issues, (b) use productivity tools, (c) use telecommunications and access information, and (d) use technology to research, problem solve, and develop products.

An intentional attempt to use technology in teaching can improve the curriculum and make a difference in the quality of instruction (Bruder, 1993). Technology tools that are used in a specific methodology course, such as the elementary social studies methods course, need to facilitate the students' technology skills and their methodology for teaching elementary school social studies. Students should use educational technologies to complete assignments and develop projects or presentations (White, 1995).

When prospective teachers do not have technology integrated into the professional courses, they cannot apply technology to teaching and learning within their field of study. Therefore, technology in teacher preparation needs to be threaded throughout the program. The pendulum is moving from only offering separate technology courses to infusing technology into pedagogy courses in professional education programs. The change will provide more opportunities for prospective teachers to apply technology to their specific disciplines.

To begin this change, technology was integrated into an elementary social studies methods course. Assignments and course content were designed for students to use technology while they learned about elementary school social studies. When infusing technology into the course, the impact of this change on students' attitudes toward technology and course content was unknown.

The specific questions that guided this research were as follows.
- What are the students' assessment of their knowledge and skills related to social studies education and their use of technology in a preservice elementary social studies education course?
- How did the students' technology usage change during the elementary social studies course?
- How do students' goals for technology change over a semester?
- Are students' changes in goals for technology related to their use of technology?
- How did the students' attitudes change during the semester toward social studies or technology?
- Is there a relationship between usage of technology and attitudes toward technology?
- Do students who report greater use of technology perform better?
- How does the integration of technology into an elementary social studies education course benefit the student?

To address these questions, a pre-inventory and postinventory about social studies and technology was administered that included time spent using technology, attitudes toward social studies and technology, and technology skills. This article offers an example of what students said about the integration of technology into an elementary social studies methods course.

Method

Participants

The population consisted of 42 students enrolled in Social Studies in the Elementary School, an undergraduate course required of elementary education majors at a large midwestern university. During the fall of 1997, all of the 42 students participated in the study by submitting pre- and post inventories. The population was 98% female and 93% Caucasian, with one Asian and two African American students. Eighty-five percent of the students were seniors, 10% were juniors, and 5% were graduate students.

The participants were not required to take a technology course as part of the preservice teacher education program. Because technology is infused throughout the teacher education program, the students were enrolled in other professional education courses during the same semester that incorporated technology. The students' goals and attitudes toward technology could have been influenced by these concurrent experiences.

Materials

The pre- and post inventories were completed through the course Web site at the beginning and end of the semester, respectively, and were designed to measure students' levels of experience with technology and assess their attitudes toward using technology in education. The inventory included items on how technology was used, attitudes toward social studies and technology, and skills using technology. The students recorded the total number of hours per week they spent using technology and the number of times and amount of minutes per week they used technology to communicate with peers, groups of peers, the instructors, and a mailing list that comprised all students in the class. Students rated their attitudes toward social studies and technology as very positive, positive, neutral, negative, or very negative. Students also rated their skills in using e-mail, mailing listserv, discussion groups, the Internet, online forms, and multimedia as beginner, moderate, or advanced. Last, students were asked (a) What technology goals do you have? (b) What technological goals do you have for social studies in the elementary school? (c) What are the benefits of using technology in this course? (d) How has the use of technology influenced your learning? and (e) Comment on your use of technology.

Design and Procedure

Within the course, the assignments and course content were designed for students to use technology while they learned about elementary school social studies. The course was Web-assisted with the syllabus and all assignments online. During the semester, students used e-mail, the class listserv, a newsgroup, online forms and the Internet to complete assignments. The Internet was used for researching social studies information and lesson plans. The listserv was used for class discussions on topics such as diversity, state standards, and the elementary social studies curriculum. The newsgroup was where students reviewed and reacted to articles in social studies journals. Data were gathered through the online inventory that was completed by the students at the beginning and end of the semester term.

In a computer laboratory during the 2nd and 14th weeks of the semester, the students completed

the inventories. The instructor provided directions for completing the online inventory and demonstrated the process for submission. Upon submission, the inventories for each student were stored separately in an online database. All students were expected to complete each item on the form.

Scoring

To examine the relationship between technology goals and technology usage, the number of hours per week students reported using technology were collapsed to three categories: (a) 1 '5 hours; (b) 6 ' 10 hours; and (c) over 10 hours. Similarly, the times per week the students used technology to communicate with peers were collapsed to the following three categories: (a) 0 times; (b) 1-5; and (c) over 5. Times per week communicating with groups of peers and instructors were collapsed to categories consisting of (a) 0 times; (b) 1-2 times; and (c) over 2 times. Times per week students reported communicating with listserv were collapsed into '0,' '1-3,' and 'over 3' categories. Since students wrote in the number of times or hours spent using technology, collapsing the data into categories was necessary to run the analyses.

Student responses to the questions concerning technology goals, in general, and technology goals for social studies were coded by the authors in terms of (a) if the goals referred to specific types of technology (i.e., Internet, multi-media, e-mail) or technology in general (i.e., use in my classroom); (b) the specific types of technology mentioned; and (c) if the goals changed from pre to post or remained the same. Discrepancies in coding were resolved through discussion among the authors. Responses to the other questions were read for content but not categorized.

Data Analysis

Correlational analyses were performed to investigate the relationships between use of technology and goals toward technology, attitudes toward technology, and attitudes toward social studies. Frequency counts were used to investigate changes in attitudes toward technology and social studies, technology usage, and technology and social studies goals over time

Results

Changes in Attitudes

Seventy-eight percent of students rated their attitudes toward social studies on the pre-inventory as positive or very positive, while 94% rated their attitudes as positive or very positive on the post-inventory. Similarly, 75% of students rated their attitudes toward technology on the pre-inventory as *positive* or *very positive*, while 82% rated their attitudes as *positive* or *very positive* on the post-inventory. Based on these findings, the student's attitudes toward technology and social studies improved over the course of the semester.

Changes in Technology Usage

Fifty-four percent of students reported on the pre-inventory using technology 10 or more hours per week, while 75% of the students reported on the post-inventory using technology 10 or more hours per week. Table 1 shows changes in the percentage of students who reported communicating electronically with peers, groups, instructors, or listservs one or more times per week. As can be seen, technology use increased throughout the semester for all types of communication except listserv, where usage decreased.

Changes in Goals

Sixty-four percent of the students on the pre-inventory reported specific types of technology goals, while 50% reported specific types of technology goals, on the post-inventory. Table 2 presents the specific types of goals for technology reported on the pre- and post inventories and the percentage of students reporting those goals. The percentage of students who reported wanting more experience with the Internet, multi-media, and Web page creation decreased over the semester, while the percentage of students who reported wanting more experience with e-mail, PowerPoint, listservs, and how computers work increased over the semester. Twenty percent of the students reported the same goals on the pre- and post inventories.

Forty percent of the students on the pre-inventory listed specific types of technology when reporting technology goals for social studies compared to 56% on the post inventory. Table 3 presents the specific types of technology listed for technology goals for social studies reported on the pre- and post inventories and the percentage of students reporting those goals. The percentage of students who reported technology goals of e-mail, Internet, PowerPoint, and communicating with others decreased from pre- to post inventory. In addition, several specific types of technology were listed on the post inventory but not on the pre-inventory. Forty-four percent of the students did not change their technology goals for social studies from pre- to post inventory.

Relationships

Correlational analyses revealed significant relationships between hours using technology and times per week communicating with instructor ($r = .31$, $p < .05$) and times per week communicating with peers ($r = .37$, $p < .05$). However, the correlations between hours using technology and times per week communicating with groups and listserv did not reach significance.

The correlation between pre-attitudes toward technology and postattitudes toward technology was $r = .55$, $p < .001$, indicating that if their attitudes were positive on the pre-inventory, they tended to be positive on the post-inventory. In addition, there was a significant relationship between pre-attitudes toward technology and whether or not the technology goal for social studies was general or specific ($r = -.31$, $p < .05$) indicating that, if a student's attitude toward technology was positive, they tended to report a specific type of technology in their technology goals for social studies. Moreover, a significant relationship between pre-attitudes toward technology and post attitudes toward social studies ($r = .40$, $p < .01$) emerged, indicating that the more positive the pre-attitude toward technology, the more positive the attitude toward social studies on the post inventory.

Significant relationships were also found between pre-attitudes toward social studies and

pre-attitudes toward technology ($r = .34$, $p < .05$), post attitudes toward social studies ($r = .49$, $p < .001$), and whether or not the goals for technology in social studies were general or specific ($r = -.30$, $p < .05$). If the pre-attitudes toward social studies were positive, then the pre-attitudes toward technology and post attitudes toward social studies also tended to be positive. Also, if the pre-attitudes toward social studies were positive, then the goals for technology in social studies tended to be specific.

Whether or not the pre-technology goals tended to be specific or general was significantly related to whether or not the pre- and post technology goals for social studies tended to be specific or general ($r = .33$, $p < .05$ and $r = .35$, $p < .05$, respectively). If the pretechnology goals were specific, then the pre- and post technology goals for social studies also tended to be specific.

Last, there was a significant relationship between post attitudes toward social studies and whether or not the pre technology goals for social studies were specific or general ($r = .30$, $p < .05$), indicating that if the post-attitudes toward social studies were positive, the pre-technology goals for social studies tended to be general.

Discussion

Attitudes Toward Social Studies and Technology

The results indicated that students' attitudes toward social studies and technology did improve from the beginning of the term to the end of the term. The positive change in attitudes toward social studies and technology indicated that students enjoyed learning about elementary school social studies while also enjoying using technology as a tool for learning. However, it is important to keep in mind that attitudes toward technology might have been affected not only by the use of technology in this course, but also by experiences in other courses students were taking concurrently that also infused technology.

A review of student responses to the questions asked revealed that the students believed electronic communication tools were less expensive, faster, and more convenient than meeting with an individual. The majority of the students thought the World Wide Web was good for researching information and finding resources. The students expressed positive opinions on how technology could be used in social studies to make 'learning fun' for students by providing communication tools such as e-pals, and helping the teacher develop new teaching strategies.

Not all the students' responses were positive about the use of technology in the course. The comments included 'not personal,' 'not reliable,' and 'scary.' The comments made by one student on the pre-inventory and post inventory revealed a positive change in attitude toward technology. On the pre-inventory she wrote, 'I am hesitant, apprehensive but willing to try. It is just too scary because I feel my grade is too dependent on it so I can't relax and really enjoy playing with it.' Her post inventory stated 'I keep plugging away. At least now I don't find it so scary as I find it challenging.'

Use of Technology

To meet the first ISTE standard, the students used computers and related technologies in an educational setting. The students in the course were required to complete assignments using technology. As a result, 22 students wrote that they felt more comfortable and confident using technology upon completion of the course.

The integration of technology into the Social Studies in the Elementary School course enabled students to use a variety of technologies. The students used technology in communicating, collaborating, conducting research, and solving problems. The students used the Internet to research social science topics and find lesson plans. They had to plan and deliver instructional units that integrate a variety of software, applications, and learning tools. Throughout the term, they used online reflective journals to provide feedback and reflection on the course. Electronic communication tools such as the listserv, newsgroup, Internet, discussion groups, and weekly online reflective journals were used to complete specific tasks.

The students indicated on the post inventory that their overall usage of the electronic communication tools increased throughout the term. The listserv was the only electronic communication that decreased in use, and this may be due to the fact that the listserv was not used for submitting assignments or for the students to communicate with the class in the later part of the semester.

Several students stated they liked using e-mail to communicate with the instructor and that the electronic communication tools facilitated access to the instructor. The students also stated that they appreciated receiving prompt replies from the instructor to their e-mail messages. The students felt they benefited from using the listserv to discuss current issues in social studies education. One student's comment on the use of technology was, ' By using technology in this course, I have been forced to learn and use various types of technology.' Many other comments on the use of technology indicated that the students needed to continue to have experiences with technology and to learn new technologies. As students continue through their professional education program and become classroom teachers, there will more opportunities to use technologies in educational settings.

Technology Goals

One of the guiding research questions was, 'How have students' goals for technology changed over a semester?' The technology goals for 80% of the students changed during the term, and half of the students continued to have specific technology goals at the end of the term.

The percentage of students who reported learning more about the Internet as a technology goal decreased by the end of the term. This was due to the fact that there were diverse activities that integrated the Internet throughout the term. The students used the Internet on a weekly basis to search for professional organizations, research social studies content, and submit lesson plans. Because they were required to use the Internet frequently during the course, the students' skills in using the Internet increased and, therefore, their need for experience in using the Internet decreased by the end of the semester. When students use the Internet in a course on a regular basis, their technology skills can improve.

The changes in the frequency of those who responded with multimedia skills and Web page creation as specific technology goals cannot be attributed to this course, since the students did not

develop multimedia presentations or create a Web page in the course. Rather, the change in goals could be attributed to the Inquiry into Schools, Community, and Society course the students took during the same semester in which they learned about multimedia presentations and Web page creation. The students also developed PowerPoint presentations for an assignment and worked on a web-based teaching portfolio in this other class. The students' need for more multimedia experiences and Web page creation decreased, but they did want more experience with PowerPoint.

While most students reported specific types of software for technology goals, 14% of the students stated that they wanted to learn more about how computers work at the end of the term, while no students specified this as a goal on the pre-inventory. One student summed up her goal related to technology as, 'What to do when a computer freezes up and how different computers are capable of different things.' The students continued to learn about how computers function and what technology is available to complete particular tasks. It is possible that the specific goal of how computers work was stated on the post inventory but not the pre-inventory because, as the students used technology throughout the course, they were discovering problems associated with technology and new uses for the technology.

The third ISTE standard for the preparation of teachers is for the prospective teacher to 'integrate teaching methodologies with knowledge about use of technology to support teaching and learning.' Within the course the students learned methods for infusing technology into the elementary school social studies curriculum. One student wrote, 'I do feel I have learned enough to begin using technology in my classroom when I begin teaching.' The students are planning instructional units that integrate technology, but they do not have an opportunity to deliver the instruction with a variety of technologies. Only a few elementary classrooms are equipped with technology for early field experiences. The students will continue to grow in their knowledge of methodologies and management of technology for the elementary classrooms as they do internships and begin the teaching profession.

Social Studies Goals

The second ISTE standard for the preparation of teachers is to 'provide concepts and skills that prepare teachers to teach computer/technology applications and use technology to support other content areas.' A sample student goal on the application of technology into social studies was, 'Use knowledge in teaching students how to use technology to research information and communicate with others.' Throughout the term the students were striving to apply technology to teaching social studies in the elementary school.

Three-fourths of the students wanted to learn more about using the Internet in social studies education. They wanted more experiences finding quality Internet sites for their elementary classroom. They also wanted to teach elementary students how to use the Internet to 'do searches for class projects.'

The students had goals related to specific technologies to use in the classroom. On the post inventory, 21% of the students reported that CD-ROMS were a specific type of technology they wanted to use in social studies. A student wrote, 'Learn about different CD-ROMS and use them in classrooms.' During the course, educational software was only explored during one class period. The students need to have more exposure to educational software during the teacher education program.

Students were developing specific strategies for using electronic communication in the elementary school. The students wanted to create long distance communication opportunities for elementary school students. One student stated that technology could be used to 'build community.' Several students discussed how e-mail could be used for elementary students to talk to other students around the world with Web sites such as e-pals.

Conclusions

The students have begun to see the connection between the use of technology in the elementary social studies methods course and the use of technology in elementary social studies education. A student in the course put it this way: 'It [technology] has broadened my horizons and has informed me on more topics in social studies.' Another student wrote, 'I use technology when it will increase students' learning.' During their professional preparation in technology literacy, preservice elementary social studies teachers are making decisions on the integration of technology into the elementary social studies curriculum.

Students can set individual technology goals and design a plan for carrying out the goals for infusing technology into elementary school social studies. With positive attitudes and operational and production skills in technology, the students have a foundation for developing applications for technology in teaching. The students need experiences in delivering technological concepts and skills in the elementary social studies classroom. The students also need the knowledge and skills to maintain the technological infrastructure in a classroom setting.

There are multiple ways to infuse the technology, but the instructor is key to matching the specific technologies with the objectives for the lesson. The instructor of the course determines the connection between social studies and technology. The teacher determines the course content and when or if technology should be used. The teacher decides when technology will enhance the curriculum and what tools will best support the teaching strategies. The instructor must balance the technological skills of the students with the course content. As the latest technological tools become available, educators will continue to develop new methods for infusing the technology into the curriculum for teacher education students.

Several issues related to incorporating technology into preservice elementary social studies methods courses remain. First, there is not a systematic plan to determine which technology to use in the teacher education program to build on prior knowledge and skills of the students and include diverse experiences with technology. Pre-assessment measures need to be developed so, when students enter the program or course, the instructor can design technology-related assignments that are appropriate to the students and the technology standards. As new technologies are developed, the integration of technology into the social studies methods course needs to be modified. Within the teacher education courses, the technology experiences need to vary across the courses within the student's teacher preparation.

Second, the computer skills and interests of students varied widely, making it difficult to meet the technology needs of the students in the course. Just as some students dislike social studies, others may have an aversion to technology. The positive or negative technology experiences of students will influence their use of technology. Due to their prior personal and educational exposure to technology, students come to education courses with diverse needs and desires toward technology.

Third, the students have limited experiences and skills in integrating technology into the

elementary school curriculum. The students need to develop skills in designing lessons for elementary school that will be educational and not entertaining. Elementary students need to be shown the educational value of technology in social studies for communicating, collaborating, conducting research, and solving problems. Students need opportunities to design and implement social studies lessons with technology. Preservice students need to understand and develop strategies for classroom management that promote inquiry learning and the use of technology.

Fourth, the students need to be critical consumers of technology. Technology can be flashy and fun, but the preservice teacher needs to obtain the skills in selecting and using educational technology that will support the social studies curriculum. The technology must provide accurate social studies content and consider multiple viewpoints. Students need tools to assess the quality of technology and the cost benefits.

Fifth, to be an agent for change, university professors and teacher education students must have the time and technical support to develop new strategies for the inclusion of technology into teaching. Professors need to stay current on the latest and best technology for teaching social studies. Professors need to change the way they work with students through technology in the classroom and beyond.

Future research needs to explore the use of technology in the elementary social studies methods courses of preservice teacher education students. How can the social studies curriculum be designed to address social, ethical, and human issues within society and the use of technology? Is technology used as a process tool or a production tool in teaching social studies? Is the use of technology promoting higher order thinking skills of preservice teachers? Are students thinking critically about when it is beneficial to use technology and how to best infuse technology into the social studies curriculum? Are there specific technology skills and tools that preservice social studies need to obtain in a teacher education program? What would be a model for infusing technology into the field experiences for preservice elementary social studies education? As first year teachers, are the graduates prepared to use technology to teach elementary school social studies?

The technology applications must be linked to the methodology courses. The technology must be presented within the courses so students have specific methods for using technology to teach social studies in the elementary school. Beyond the scope of the elementary social studies methods course, teacher education programs must develop a scope and sequence for the integration of technology in the preparation of preservice teachers. The integration of technology into teacher education has to be throughout the preservice teacher education program and field experiences in technology rich elementary classrooms. Teacher education programs and social studies educators must continue to quest for knowledge about the role of technology in elementary school social studies.

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Table 1: Percentage of Students Reporting Engaging in Different Types of Electronic Communication for one or More Times per Week on Pre- and Post-Inventories

	Time of Reporting	
Type of Communication	Pre	Post
Communicating with peers	75	95
Communicating with group	52	68
Communicating with instructor	54	64
Communicating with listservs	54	45

Table 2: Percentage of Students Reporting Specific Types of Technology for Goals on the Pre- and Post-Inventory

	Time of Reporting	
Type of Technology	Pre	Post

E-mail	14	23
Internet	43	41
Multimedia	25	5
Web page creation	25	14
PowerPoint	18	27
Listservs	4	9
How computers work	0	14

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Table 3: Percentage of Students Reporting Specific Types of Technology for Social Studies Technology Goals on the Pre- and Post-Inventory

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	Time of Reporting	
Type of Technology	Pre	Post
E-mail	12	8
Internet	82	75
Multimedia	0	4
PowerPoint	12	0
Listservs	0	4
Reflective journals	0	4
CD-ROMS	0	21
Computer games	0	4
Communicate with others	18	8
Research	6	8

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