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PRESERVICE TO INSERVICE TECHNOLOGY INTEGRATION IN TEACHING

From Preservice to Inservice Teaching: A Study of Technology Integration

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Abstract

This study examines how social studies preservice teachers use pedagogical and technological applications and skills employed during their teacher education program, specifically the methods block. Qualitative data were collected from the methods course experience through student teaching and then, case study research for randomly selected first year teachers. Results indicate that technology skills and processes learned were transferred through time; however, expectations for teaching with technology and perceived challenges of doing so were complex. Participants in the study were more likely to emulate what "they were taught" versus applying individual creative technology integration plans. Common barriers to using technology in the classroom identified in the literature (Berson, 1996; Butler & Sellborn, 2002) were present, however, the researchers believe there is a need to enhance teacher education programs and teacher induction programs to include diverse technology integration experiences, and specifically creative ideas to address barriers of using technology in the classroom and increasing the ability to think outside the box.

From Preservice to Inservice Teaching:

A Study of Technology Integration

The ever-growing and evolving role of technology in teacher education and actual technology integration into classroom teaching is documented and supported by various accrediting agencies such as the National Council for Accreditation of Teacher Education (NCATE) and national technology standards such as those initiated by the International Society for Technology in Education (ISTE). These National Educational Technology Standards (NETS) written for students, teachers, and administrators were later adapted and/or adopted by numerous states and further used to write or re-write technology course of studies. In social studies education, technology integration has been limited (Ledford & Hattler, 1997), perhaps due to the perception that social studies instruction has been characterized as teacher-centered and text-centered (White, 1999), versus student-centered. Research has noted that secondary social studies teachers are less likely to use technology than elementary social studies teachers (Northrup & Rooze, 1990), although teachers have expressed the desire to use technologies in the classroom (Ross, 1991). Berson (1996), in a report that examined a variety of studies, described potential barriers to social studies teachers' use of technology. These included: (a) insufficient training, (b) inadequate resources (e.g., software), (c) limited awareness, (d) content coverage, and (e) preparation time. Whitworth and Berson (2003) analyzed more recent research and issues involved with technology in the social studies and concluded that similar barriers continue to exist, particularly regarding limited resources and preparation time. Butler and Sellborn (2002) identified similar barriers: lack of

hardware/software and institutional support, reliability of technology, time to learn, and uncertainty of technology's worth.

Teacher educators can initiate change and address these barriers through implementation of technology integration requirements in teaching and learning. It has been suggested that for change to take place regarding technology integration, change must begin with preservice teachers (Diem, 2000). White (1999) asserted that preservice teachers in social studies education must be given numerous opportunities to interact with K-12 students in field settings in a variety of ways and there should be technology links between the university and schools for sharing and reflection. Otero et al. (2005) challenged university teacher education faculty to become "proficient in technology use and . . . understand pedagogical uses of technology" (p. 8). While some may argue that state and national standards have driven technology use, therefore driving the *why*, our society and today's workplace demands technology skills.

In a study of faculty integrating technology, Strehle, Whatley, Kurz, and Hausfather (2001) found four common themes affecting faculty member's efforts in technology integration across a curriculum: 1) commitment toward change, 2) obstacles such as time and lack of proper hardware and software, 3) struggles implementing technology use in instruction, and, 4) attitudes toward technology use. However, teacher educators must also overcome challenges and barriers, practice effective modeling efforts (Hornung & Bronack, 2000), and help ensure that the preservice teachers observe, receive support (Wilson, 2003), and participate in appropriate technology practices in their field experiences, later applying what they have learned in their own classroom (Wang, 2000). Grove, Strudler, and Odell (2004) suggested that field experiences should

ensure student teachers placement with mentors who support lessons with technology. They stated that student teachers "need knowledgeable mentor teachers and adequate access to technology to practice and develop those lessons" (p. 102).

Perhaps teacher preparation programs are "painting too optimistic a picture of technology's role in the classroom" and subsequently, teacher educators should "infuse a dose of reality into the preparation of new teachers" (Pierson and Cozart 2004-2005, p. 61). Another dose of reality may be related to methods of empowering teachers to use technology. Beyerbach, Walsh, and Vannatta (2001), in their evaluation study of a preservice teacher technology infusion project noted the perception that teachers "had no choice" but to use technology in their classroom and often did so because they "had to" (p. 125). Otero et al. further noted the need for teacher education faculty and prospective teachers to understand the *why, when, and how* of using technology, developing critical dispositions that help generate meaningful uses of technology.

Keiper, Harwood, and Larson (2000) stress the importance of preservice teachers understanding of how to integrate technology into daily lessons. Teacher educators are providing opportunities to experience technology infusion in university classrooms and field experiences instead of taking a technology specific course (Bielefeldt, 2001; Pope, Hare, & Howard, 2002). Teacher educators should also focus on increasing the preservice teacher's attitudes toward technology's benefits in teaching and learning (Abbott & Faris, 2001). Mason et al. (2000) assert that the teacher educator must be at the forefront of integrating technology into pedagogical practices if true education reform is going to occur in classrooms. Pierson and Cozart further challenge teacher educators to "more actively assist students in brainstorming appropriate technology integration

strategies" (p. 62). In order to provide multiple opportunities to acquire new technology

skills and to meet these many challenges, teacher education programs are utilizing

electronic portfolios (EP) in their teacher preparation programs. Such experiences can

help in providing preservice teachers "focused experiences", as noted in the research of

Pierson and Cozart (2004-2005), to help in removing barriers of using technology to

ensure meaningful integration.

Skills Learned Through Electronic Portfolio Development

A portfolio, whether electronic or paper, is a *collection* or showcase of work,

artifacts, and typically, demonstrates a variety of skills learned. Electronic portfolios

differ from traditional portfolios in that students are required to (a) collect, save, and store

information and artifacts in an electronic format (Barrett, 1998), (b) given an opportunity

to exhibit their progress (Lankes,1998) anytime and anywhere, (c) encouraged to enhance

their multimedia development skills (Barrett, 2000), and (d) demonstrate growth and

generate learning (MacDonald, Liu, Lowell, Tsai, & Lohr, 2004). As the electronic

portfolio is created, "students learn purposes of technology and the necessary

technological skills" (Hewett, 2004, p. 5) needed to complete the portfolio, including web

page design. Depending on what artifacts are required for inclusion, students can learn

skills from basic desktop publishing to digital video editing and multimedia design.

Wilson (2003) found that preservice social studies teachers participating in field

experiences believed the electronic portfolio process helped them to be more creative in

using technology in their classrooms. Wilson further noted that the preservice teachers

believed "that technology could enhance their instruction" (p. 35). Meyer and Tusin

(1999) suggested that "teacher educators must help preservice teachers make explicit

links among their coursework, field experience, and their pedagogical beliefs to build effective understanding and use of portfolios" (p. 136). Building electronic portfolios gives the preservice teachers various opportunities (and potential skills) for technology integration. Abbott and Faris (2001) indicate that multiple opportunities can enhance preservice teachers' attitudes about technology's benefits. Zhao and Cziko (2001) purport that teachers do not lack skills, but lack the motivation to use technology because there must be a "perceived need to use technology" (p. 23). The challenge to teacher educators is to ensure preservice teachers learn technology skills, see a need and benefit in using technology in the classroom, and can demonstrate creative technology infusion methods to enhance instruction.

The purpose of the present study was to examine a group of secondary social studies teachers' transfer of technology skills and processes learned during the methods classes (primarily through development of their electronic portfolios) into the student teaching experience, and later first year of teaching. The research questions which guided this study included:

- Were the pedagogical and technological applications and skills employed during teacher preparation used during the social studies preservice teachers' teaching experiences and later during the induction year?

- What factors influenced them as they utilized (or did not utilize) technology applications and skills learned in the methods class from the EP to the process of technology integration during the student teaching experience and later, in first year teaching?

Background of Preservice Teacher's Experiences

At the institution where this study took place, preservice teachers are encouraged to learn multiple technology skills and methods of technology integration, specifically while developing their personal electronic portfolios during the secondary education program's methods block of courses. State technology standards are integrated across the secondary curriculum at this institution (therefore, secondary students are not required to take a technology specific class), with many of the standards being implemented in this methods block. The methods block consists of four courses (secondary social studies methods, content area literacy, clinical experiences, and test and measurement). Instructors for these courses collaborate to coordinate coursework to ensure technology integration across the four courses also meets the state technology standards and the college's technology infusion goals, including a primary goal to introduce students to strategies for effectively integrating technology in the classroom to enhance teaching and learning. In large measure, this is accomplished through assigned products, artifacts, reflections (with majority being content specific) for the preservice teacher's EP, posted online and written to a CD-RW. Products for the EP include lesson plans, resource databases, WebQuests, PowerPoints, photo galleries of clinical experiences, reflections of teaching, philosophy statement, digital videos, and presentations. Common software is selected for all assignments. Barrett (2002) indicated software selection can "enhance" or "constrain" technology use. Efforts to ensure hardware and software used in the teacher education program is also available at most of the clinical sites was an important consideration. Preservice teachers may also checkout equipment from the college, if needed, in order to present technology infused lessons.

Preservice teachers are required to write lessons that integrate technology and in varying assignments, reflect upon the success of such integration in actual classroom instruction. Throughout the methods block, the preservice teachers are introduced (and hopefully obtain) multiple technology skills which can enhance their ability to integrate technology for teaching and learning in methods, their student teaching experience, and later in their own classrooms.

Methodology

Methods

Qualitative research methodology provided the framework for this study and data were collected in three stages of data collection. The three stages are described in more detail later in this article, but included administration of surveys to social studies preservice teachers while enrolled in methods classes and later, during the student teaching experience. Three preservice teachers were also selected, based on their EP evaluation, to participate in interviews and classroom observations during their semester of student teaching and their first year teaching experiences.

The qualitative approach used for the study is that which is described by Patton (1990) and Punch (1998) and included qualitative data collected during the survey administration, the interviews, and classroom observations. Each interview was analyzed and coded promptly after it took place. Data were triangulated across the data sources and analyzed for emerging patterns and trends using constant comparative analysis (Miles & Huberman, 1984). This analysis included coding transcripts and observation notes, careful reading and rereading of all data by the researchers (and two independently chosen graduate students), and noting recurring themes, all techniques used in qualitative

research to help ensure trustworthiness (Lincoln & Guba, 1985). Further, this ongoing analysis allowed the researchers to clarify issues and make necessary adjustments, as necessary, throughout this longitudinal study. All data results are reported anonymously and participants are given fictitious names.

Stage one

Stage one of the study occurred during the preservice teachers' social studies methods block. We used descriptive statistics of our data from pre-and post-surveys (Appendix A) administered to further inform our research for stages 2 and 3. In these pre-and post-surveys, we wanted to get a sense of the preservice teachers' perceptions of technology use and its importance in the classroom both at beginning of the semester (before EP development) and at the semester's end (upon EP completion). Pre- and post-responses were matched with the last four digits of each preservice teacher's student identification number. Additionally, in stage one, the electronic portfolios were rigorously evaluated based on rubric assessments (Appendix B). From these assessments, we randomly chose three preservice teachers for participation in stages two and three of our research. While all members of the methods block received Unsatisfactory, Satisfactory, and Superior scores on their EPs, we did want to ensure a representation. Three social studies preservice teachers agreed to participate in subsequent research; these three had scores of 1-Superior and 2-Satisfactory.

Stage Two

In stage two, we administered a researcher created survey (Appendix C) to the 11 social studies preservice teachers now student teaching. Also, in stage two, of the three who agreed to participate in our case study research, we conducted interviews using

guiding questions (Appendix D) based Berson's 1996 work. Additionally, both

researchers, on two separate occasions, conducted classroom observations in the three

student teacher's classrooms to observe how and when they were using technology.

In the survey, the 11 preservice teachers were queried on their uses of technology

in the classroom; specifically relating to skills/competencies (e.g. development of web

pages, use of online resources, PowerPoint, digital camera use) they were exposed to

during their methods courses and during their electronic portfolio development. The

survey also asked for the preservice teachers perceptions of the importance of technology

in the classroom and whether their cooperating teacher was supportive of technology

integration and if the teacher encouraged use of technology. The survey was sent via e-

mail to the preservice teachers during the last three weeks of their teaching internship.

Eight preservice teachers completed and returned the surveys.

Stage Three

In stage three of the study, our intent was to again interview and observe the three

preservice teachers involved in our case studies (Stake, 1995; Yin, 2003). We were

hoping to complete this stage while the three were in their first year of teaching.

However, of the three, only one had accepted a social studies teaching position and was

in his first year of teaching. The other two had decided to pursue graduate degrees, one

in a computer related field, and the other in special education. The researchers did

choose to interview them as we believed insight on how they were currently using the

technologies and skills they learned might further inform our current and future research.

The interview protocol was adjusted where deemed necessary and several questions were

added. For example, in this stage we queried the three teachers regarding their

perceptions of *what is reality* of using technology in the classroom (Appendix E).

Participants were queried on those barriers identified by Berson (1996) as well as

Whitworth and Berson (2003).

Data Analysis

Through the collection of these data, we hoped to examine the transfer of

technology skills and applications learned during the development of electronic portfolios

in the methods block into the student teaching experience and later in first year teaching

experiences. We were also interested in examining which factors might influence the

preservice teacher as he/she utilized (or did not utilize) technology integration during the

student teaching experience and beyond. Included in the survey administered to the social

studies students in phase two and the case study interviews conducted in phases two and

three of this research, we queried the participants on barriers to social studies teachers'

uses of technology (Berson, 1996; Whitworth and Berson, 2003) which included: (a)

insufficient training, (b) inadequate resources (e.g., software), (c) limited awareness, (d)

content coverage, and (e) preparation time.

<center>Results</center>

Surveys

Of the eight survey respondents during student teaching, three were male, five

female, and six were in the age range of 21-25. Each respondent was asked to rate his or

her computer expertise on a scale from low (1) to high (5). The average was a 4. As a

group, the respondents believed technology was *very* important in today's classroom.

The importance of technology in the classroom was also a theme in the preservice

teachers' answers to "worth" of technology during their pre/post survey in methods.

During methods, all the social studies preservice teachers had answered "yes" to technology's worth both at the beginning (pre-survey) and at the end (post survey) of methods. In order to delve into the preservice teachers' perceptions of *importance* and *worth* of technology, we also asked the preservice teachers to articulate their philosophy regarding the importance of technology integration on the methods' surveys. While the words changed, all of the preservice teachers had positive comments at both points in time except two. Common for the positive comments was what one preservice teacher wrote at pre-survey, "technology in the classroom should be used to broaden students' ability with education." At the post-survey, the same preservice teacher wrote, "technology needs to be incorporated into the classroom because there are far greater advantages to technology than anything else." The two preservice teachers who did not have positive comments at both pre and post-survey both articulated on the post survey concerns about the technology "not working", being "available", or technology receiving "too much attention." One preservice teacher wrote, "I feel that the teacher should be the focal point, not technology."

Applications and skills learned in methods. As noted previously, assignments and artifacts required in the electronic portfolios include multiple skills and examples of the preservice teachers' work (from PowerPoint presentations to digital photo galleries, WebQuests, and integrated lesson plans).

We queried the 11 preservice teachers on whether they were using the software/skills learned in methods in their student teaching experience, and would they use the skills learned in their future classroom. Of the eight preservice teachers who responded, five or more indicated positively for online resources, presentation software,

laptop and overhead projector use, and use of a digital camera. While only two indicated

they were using web page development, seven noted they would want to use such tools in

their own future classroom.

   Support at school. All eight preservice teachers indicated on the survey that their

classroom teacher encouraged them to use technology and only one respondent indicated

the classroom teacher *did not* encourage technology use. However, four respondents

indicated that technology access in the classroom was *inadequate*, while four also

indicated *adequate*. Seven indicated access to computers in their classroom, with

connectivity, and all eight respondents had access to productivity software. All

respondents had access to TV/VCR, with five indicating access to a data projector and six

to a classroom lab that could be used for instruction.

   Specific uses during student teaching internship. Overwhelmingly, PowerPoint

was the most popular software of choice and was used by the preservice teachers for

lectures, notes review, and visual aides. One noted: "I have made wonderful

PowerPoints. This is about all I have done. PowerPoints are wonderful, they enhance a

poor teacher, while giving an organization of information and pictures." All but one

respondent frequently used the Internet and some wrote they used the Internet for

inquiry-based projects, including WebQuests and activities with primary resources.

However, access was a problem with one preservice teacher:

   I was disappointed that I did not have sufficient access to the technology

   that I was trained to use last semester. If I had I would have done

   webquests and power point presentations with my students. We did go to

   the library for internet research one time.

Case Studies

Three of the preservice teachers were chosen, based on EP evaluations, for classroom observations and interviews with the researchers. The narrative, presented in the next sections, uses pseudonyms of Marie, Ken, and Seth. Data are presented in a case study style, per narrative, and summarizes data collected from interviews and observations during student and first year teaching.

Marie

Student teaching. Marie, an undergraduate student in the secondary social studies education program, was observed, as a student teacher, during two separate U.S. History classes. In both sessions, Marie began with warm-up activities and specific question prompts. Following this activity, Marie began her next lesson by passing out a study guide sheet. In one class, Marie showed a movie with a civil rights theme and in another used a PowerPoint presentation, with pictures and limited text depicting contributions and objectives of President Johnson's *Great Society.* The researcher who observed during the civil rights lesson noted the students were "off task and wandering around the room," whereas the researcher did not note lack of interest in the *Great Society* lesson. Text was limited on the PowerPoint slides of up to eight lines and those in the back of the room could easily read Marie's font selection. Pictures and clip art were used throughout the 10-slide presentation. Marie encouraged students to take notes and prompted the students on key words they should remember. This type of interaction, versus no interaction while watching a movie, could help explain why the students were more on task during the *Great Society* lesson.

Interestingly, on-task behavior did not seem to be an observation or potential motivator for Marie to use technology. During her interview, she gave this credit to other preservice teachers during her methods block and her content faculty educator, as well as her cooperating teacher. Marie said her cooperating teacher was a "great mentor" when it came to using technology in the classroom and that her content faculty educator was "great." She referred to other preservice teachers' examples of electronic portfolios and noted that since her methods classroom experience was in a middle school, she "has benefited from others' ideas in her high school student teaching experience." Marie described her technology ability as average, but plans on continued use of PowerPoint, Internet activities, and WebQuests, all activities learned and implemented during her social studies methods block. Marie also commented on a technical barrier she had overcome. In her methods block, she had used a data projector, however, in her teacher's classroom, she was using a computer to television scan converter. The first time she had used this type of presentation system, Marie quickly found she needed to re-address presentation design to enhance readability.

Postgraduation. Marie was one of our preservice teachers who decided to pursue a Masters degree in Special Education. When we interviewed her, she was completing her first year in graduate school versus a first year of teaching. However, Marie was involved in a special education clinical at a local elementary school. When asked about her level of technology ability, Marie now ranked herself as *above average*. Throughout her masters program, she had created web sites and brochures as "parts of lesson plans." She still employed many of the technology skills she learned when creating her electronic portfolio and frequently

used websites she incorporated in her electronic database. Marie said special

educators use a lot of technology and she is encouraged by that and noted,

"technology has enhanced my lesson planning and teaching as well." When asked

what factors or barriers would discourage her from using technology, Marie was

concerned about teaching students how to find reliable information on the

Internet. She noted reliability issues with software programs too, stating "they are

just bought because they are cheaper and they just look better."

Ken

Student teaching. Ken, also an undergraduate social studies teacher

education major, was observed while student teaching an Advanced U.S. History

class focusing on newspaper publishing and during a Government/Law class, in

which he was presenting a unit on Supreme Court issues. In both classes, Ken

had reserved the computer lab for student activities.

In the U.S. history lesson, students worked in teams to create a 1990's newspaper,

complete with traditional sections. Students worked in teams on the computers, as well

as independently to search for graphics, write text, and design their newspapers. The

majority of problems during the lab session dealt with storage issues.

For the Supreme Court issues lesson, students were conducting research online

while developing a PowerPoint presentation they would present to the entire class in two

days. Ken had developed a rubric for the PowerPoint grade that included requirements of

a minimum of 12 slides, at least seven pictures or graphics, and at least seven builds and

transitions. Ken did not lecture during the computer lab session, but rather circulated

throughout the room answering specific questions ranging from how to find statistics on

the Internet to how to create a build. Ken noted that the students received a brief

introduction to PowerPoint the day before, but for the most part, the students knew how

to use PowerPoint and he just assisted in areas of need.

> Ken articulated his rationale for using technology in both lesson plans as:
>
> Learning to harness the power of technology to research relevant
>
> information is critical for students to develop the necessary skills to
>
> succeed in this ever-increasing technologically dependent world. In
>
> addition, there are many powerful ways to use technology to present your
>
> information.

Although Ken viewed technology use as important to his instruction, he noted some

concerns. Between student questions and help, Ken discussed with the researcher one

frustration he had with the computer lab. He was told the machines had a CD-RW, but

upon his first visit realized they did not, so he re-adjusted his storage plan and had to

ensure the students could save their work on a network drive. In his interview he also

noted that while the school he was placed in "has the technology, many don't." And even

at his school, he "needs to plan ahead" (at least 2 weeks) if he wants to use the computer

lab in order to reserve it for his class. He commented that while the library had a

projector that could be checked out, a teacher had to go through a "lot of red tape to get

it." Ken was not using a projector in either lesson and had he; perhaps, the number of

questions would have been reduced as a result of answering a question once instead of

many times.

> Like Marie, Ken used a lot of pictures in his lessons and used PowerPoint "almost

daily" during his student teaching. Also, he said he used WebQuests and noted that

"prior to methods had never used one nor seen one." Ken commented that his perception

of technology integration was that "technology just becomes part of the class."

      Postgraduation. Ken was offered a position to teach in a middle school, an offer

he considered "poor". So, when a graduate assistantship opportunity was offered in the

area of Computers and Applied Technology, he chose to attend graduate school full-time

versus teaching his first year after graduation. Ken articulated he would like to work in

the schools in some sort of technology position, potentially teach computers, or "in the

very least, use awesome technology in my content, social studies." He rated himself as

slightly above average when asked about technology skills and also commented that he

only knew the basics when he had started the methods block as an undergraduate social

studies preservice teacher. He commented that now he was "not scared of anything" and

that teachers just need to "get in there and play with it" when it comes to integrating

technologies.

      With a follow-up question of *"If you do become a social studies teacher, how will*

you use technology you initially learned in methods in your future classroom?" was

asked, Ken answered, "I will probably drain my bank account." He sees "potential

purposes in every single one" referring to the skills and technologies he learned from

methods. When he started methods, he saw technology as "throwing a PowerPoint on the

screen" – now he realizes it is "so much more." Ken is encouraged to use technology as

he views technology as "immediate" and that it "enhances a lesson." Ken views price

and "technology glitches" as factors that might discourage his use of technology, but

added that he would attempt to "get the best and minimize the glitches." Ken noted the

importance of planning and that was one of the biggest lessons he had learned since his

student teaching experience of trying to book a lab. Ken said he would schedule the lab earlier and would do a "rough sketch—a time table—of what I would need throughout the semester." Reality to Ken is that technology is not widely used or "to its full potential in the classroom" and commented, "some teachers don't want to change." Barriers such as reliability, time to learn, and knowledge do not concern Ken. "To me, it's worth spending the time learning new technologies . . . it's an investment for the learning of the student."

Seth

  Student teaching. Seth returned to the university to enroll in the Alternative MA program. Previously, he had majored in criminal justice. Seth was observed during two World History classes. In both cases, he used the same sequence: warm-up activity, study time, and then quiz presentation via PowerPoint. Seth had created a separate slide for each of the quiz questions, with answers to select from on the same slide. He used white font over a blue, plain background. The text was easily read from the back of the room; however, the font size could have been larger. He used build animation to add answer choices to each slide. Seth had the students exchange papers for peer grading and he then used animation in PowerPoint to animate each correct answer. Seth had a monitor with scan converter connected to computer and he had tested the equipment to ensure everything worked prior to the students coming into the classroom. In one of the two classes, he did experience some technical difficulties during the lesson, but was able to fix the problem quickly.

  Seth said he was comfortable using technology and wanted to "stay on the cutting edge" as technology changes so quickly. While he indicated his cooperating teacher was

very supportive and was the "go to person" in the school for technology needs, Seth

described the administration at the school as "clueless." However, that didn't seem to

bother Seth. He commented: "The fact that lots of other teachers don't use it encourages

me to use it more." He sees technology as a "way to present content in a way more

relevant to students." He added that technology makes the material "relevant" and

"student centered."

  Postgraduation. Seth was the only case study participant who actually did

progress from spring student teaching to first year teaching the following fall. Seth

accepted a social studies teaching position at a small school, with a low SES population,

in a rural part of the state. Seth was immersed in first year teaching activities, which

included teaching history, government, and serving as head coach for the boys basketball

team. When asked to categorize his technology skills, Seth now said "it's adequate—

could be better." He indicated that once he "started teaching [he] got so busy" and

resources available to him were outdated. When he arrived at the school, he quickly

noted that technology was not being used and equated this to how it was affecting the

students. "Seniors did not know how to type a paper," he said, further describing a

school climate in which technology receives little support or interest from other teachers

and the administration. Seth kept showing concern for the students and said it was them

who suffered from this lack of knowledge and use and remarked it "really bothers me;

they (the students) are getting cheated." Despite this, Seth had brought in an old personal

computer, DVD, and television. With part of the $300 resource money he received upon

arrival, he bought a scan converter and now uses the complete set-up to present reviews

and quizzes via PowerPoint approximately three times a week.

During classroom observations of two classes, Seth was using the presentation equipment to review for a test and in his government class, his students interacted with a multimedia presentation and played *who wants to be a millionaire*. Seth believes his students "appreciate" him using technology but admitted several factors kept him from using more. He has not been able to access the school's computer lab due to "not enough computers" and the administration's fear the students will "mess them up." When asked what he thought was the reason for this belief, he credited an incident in which a group of students accessed a pornography site, and since then, open domain computers (such as those in the library and lab) have been off limits. Even with barriers such as these, Seth is still using "as many of the skills" he learned while in methods that he can (including using his electronic portfolio during the interview process). During his methods block, he had received copies of all the social studies preservice teachers' databases of resources and he still uses those databases today. Additionally, when he discovered that the district technology office had digital video equipment, he was able to check out the camera and implemented a *turn of the century political video* assignment in his history class. His students acted and shot the videos and according to Seth, "loved it" and enjoyed doing something different. As with his utilizing PowerPoint and the databases, this concept of technology integration was used in his methods class.

<center>Discussion</center>

The results of this study indicate some success for the efforts made by teacher education faculty who promote technology integration. The data indicated that the preservice teachers intended to employ technologies and skills learned from their electronic portfolio experiences in their classrooms, and in most cases, did and felt

comfortable doing so (Barrett, 2000). The eight respondents to the written survey and the

three who participated in the observations and interviews overwhelmingly tended to use

the technologies (e.g. PowerPoint, WebQuests) they had been taught during the EP

development or those that had been modeled (Mason et al., 2000). Results indicate that

technology skills and processes learned were transferred through time; however,

expectations for teaching with technology and perceived challenges of doing so were

complex. Of the eight respondents to the written survey, all of the preservice teachers

had positive attitudes about the *worth* of using technology in the classroom and all but

one indicated having a supportive classroom teacher, which encouraged positive attitudes

toward using technology. The three social studies teachers in our case study research

also discussed how supportive and encouraging their cooperating teachers were in using

technology. However, half the survey respondents noted that during their student

teaching experience they did not have adequate technology access.

The results of the three case studies support the research literature (Berson, 1996;

Butler & Sellborn; Whitworth & Berson, 2003) which explores the barriers confronted by

educators who attempt to use technology. For instance, Ken experienced accessibility

issues and Seth encountered lack of resources and support in both his student teaching

and induction year experiences. Marie noted a disconnect between teacher education

faculty who do not model, promote, and support technology integration in the curriculum

(Mason et al., 2000). Lack of adequate resources was a common challenge (Berson, 1996

Whitworth & Berson, 2003) and in trying to meet that challenge, the preservice teachers

typically had other barriers to cross. For example, Marie used a computer to television

scan converter in lieu of a projection system and quickly found she needed to re-address

presentation design to enhance readability. Ken voiced frustration in the "red tape" it took to check out a projector. In the written surveys, several preservice teachers indicated they would have "done more" with technology had they had more access to the hardware and software they needed. Lack of adequate resources could have hampered the teachers' ability to think creatively outside what they had learned in methods. However, the preservice teachers *were* using the pedagogical and technological applications and skills they employed during electronic portfolio development in methods, therefore making "explicit links among their coursework, field experience, and their pedagogical beliefs to build effective understanding and use of portfolios" (Meyer & Tusin, 1999, p. 136). These practices by the preservice teachers seem to indicate that they believe technology does have *worth* and *importance* in the classroom.

Although the participants were using multiple skills and products they learned during electronic portfolio development, including PowerPoints, web design, and WebQuests, they did not appear to be adding new skills or technologies not learned in methods or during the EP development. Marie, Ken, and Seth were all using PowerPoint on a routine basis, Ken was using web page development, and all three indicated they had used WebQuests (with Ken specifically noting he did not know about WebQuests until methods). Overall, participants in the study were more likely to emulate what "they were taught" (Mason et al., 2000) versus applying individually, their own creative technology integration plans. They did appear eager and confident in using basic technologies acquired, such as those infused in methods and in portfolio development (Bielefeldt, 2001; Pope, Hare, & Howard, 2002). However, this does point to a need to enhance teacher educator programs to include diverse technology integration experiences,

perhaps, specific ways to "think outside the box" and to challenge preservice teachers to create innovative techniques to use hardware, software, and basic technological skills.

Despite some small successes, there are many things that teacher educators should consider in regard to the results of this study. Perhaps, as Pierson and Cozart (2004-2005) suggested, we are "painting too optimistic a picture" of technology's use in the classroom. Teacher educators should concentrate more on building "focused experiences" to help enable preservice teachers to be more prepared to "accommodate less-than-ideal conditions in order to work effectively with technology" (p. 61) when they graduate and become teachers themselves. Seth's experiences point to the need for mentor teachers and support during the induction year. Perhaps a mentor could have served as scaffold to help Seth move beyond what he had learned in the university classroom.

We believe results from this study have implications for teacher education as we continue to seek ways and methods to implement technology integration across the curriculum and to fulfill preservice teachers' beliefs such as what Ken articulated in that technology becomes "part of the class." The challenge to teacher educators is to ensure preservice teachers learn technology skills, have multiple opportunities to enhance their attitudes about technology's benefits (Abbott & Faris, 2001), see a need and benefit in using technology (Zhao & Cziko, 2001) in the classroom, and can demonstrate creative technology integration strategies to promote social studies teaching and learning (Wilson, 2003).

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Appendix A

METHODS BLOCK TECHNOLOGY SURVEY

(Please complete **each** item; your responses will remain anonymous)

1.   Last four digits of student number _____

2.   On a scale of 1 - 3, please rate your current level of technology knowledge:
      (circle response)

      1=limited
      2=fairly knowledgeable
      3=very knowledgeable

3.   Based on the technology you used in this Methods block, rate your comfort level:
      (circle response)

      1=not comfortable at all
      2=fairly comfortable
      3=very comfortable

4.   In your opinion, do you believe the additional technology elements incorporated
      into your Methods block were worth doing? (circle response)

      No
      Yes

To the following demographic questions, please circle your response

5.   *Gender:*   Male   Female

6.   *Age:*   18-21   22-25   26-30   31-40   41 +

7.   **COMPLETE THE FOLLOWING SENTENCE:**
Compared to traditional assessment methods (i.e. examinations, writing a paper, etc.)
electronic portfolio assessment

_____

8.   Briefly state your philosophy regarding technology use in YOUR future
classroom: (you may use the back of this sheet for your response if needed)

_____

Appendix B

Electronic Portfolio
Scoring Rubric

<u>**Superior**</u>

1. Clearly, concisely, and consistently **communicates** process in becoming a
    teacher/professional.
    A. Writing consistently adheres to high standards of written and oral
        communication.
    B. Major ideas are developed through a variety of well integrated media (Text,
        graphics, video, and sound).
    C. Mediated style is appropriate and appealing to an audience of faculty, peers,
        school personnel, and other professionals.

2. **Organization** of portfolio is thematic, functional, and fluid.
    A. A master index directs the readers' entry into the site.
    B. Themes are consistently used throughout the site (e.g., using of a simile or
        metaphor, consistent backgrounds, fonts, colors).
    C. Links allow the reader to navigate the site easily and all links work.

3. **Content** includes a variety of artifacts relevant to professional development.
    A. Homepage provides links that guide the reader to site "pages" and their
        contents.
    B. An attractive, yet professionally designed resume, "teaching autobiography"
        or other summary of personal data, education, and experience is provided.
    C. An organized database of professional resources is provided with clear
        descriptions, bibliography information, and all links are current and work.
    D. A working power point presentation provides the reader with an
        understandable and clear metaphor for education. All slides are
        professionally developed with grammatically correct text and appropriate
        graphics.
    E. A photo album recording the author's clinical experiences is presented in a
        creative and well-organized method. Care has been taken to protect student
        interests (no names appear in the album and permission has been acquired
        from the parents of all visible students).
    F. Other professionally completed assignments as required by individual
        instructors.

4. **Technology** portfolio demonstrates good ability to publish a web-based presentation
    on a CD-ROM and website.
    A. E-portfolio demonstrates ability to electronically access, generate and
        manipulate data from a variety of sources (scanners, digital cameras, 3.5 -
        inch disks, zip disks, internet, CD-ROMs, video).
    B. E-portfolio demonstrates ability to integrate a variety of software

applications and learning tools (e.g., Inspiration, ACCESS, word-processing software, photo editing software, video-editing software).

5. Electronic portfolio demonstrates intellectual, technical, visual **creativity** and professionalism.
    A. Portfolio is attractively formatted/packaged.
    B. Creativity is evidenced in the portfolio contents and production.
    C. Use of color, texture, graphics and text on individual pages is attractive and well- balanced.

Satisfactory

1. Adequately **communicates** progress in becoming a teacher/professional.
    A. Writing is grammatically sound and uses appropriate vocabulary.
    B. Graphics, video and sound, where used, have limited value in communicating major ideas.
    C. Style is lacking or is more suited to a lay audience.

2. **Organization** is functional and attractive throughout.
    A. A homepage is used in introduce the site.
    B. Some thematic agreement is seen through use of simile, metaphors, backgrounds, fonts, and/or colors.
    C. Links are present and all work.

3. **Content** includes a variety of artifacts relevant to your professional development.
    A. A homepage provides links to guide the reader to the site "pages" and their contents.
    B. A resume, "teaching autobiography," or other summary of personal data, education, and experience is provided.
    C. A database of professional resources is present.
    D. A working power point presentation provides the reader with a metaphor for education.
    E. A photo album recording clinical experiences is presented. Care has been taken to protect student interests (no names appear in the album and permission has been acquired from the parents of all visible students).
    F. Other completed assignments as required by individual instructors.

4. **Technology** portfolio demonstrates ability to publish a web-based presentation on a CD-ROM and website.
    A. E-portfolio demonstrates attempt to electronically access, generate and manipulate data from a variety of sources (scanners, digital cameras, 3.5 - inch disks, zip drives, internet, CD-ROMS, and video).
    B. E-portfolio demonstrates ability to integrate a variety of software applications and learning tools (e.g., Inspiration, ACCESS, word-processing software, photo editing software, video-editing software).

5. Electronic portfolio demonstrates intellectual, technical, visual **creativity** and professionalism
> A.   Portfolio is attractively formatted/ packaged.
> B.   Creativity is evidenced in the portfolio contents.
> C.   Use of colors and texture creates an attractive presentation.

Unsatisfactory

1. Progress in becoming a teacher/professional is inadequately **communicated**.
> A.   Ideas are ill-defined.
> B.   Writing and presentation lack organization and style.
> C.   Errors exist in mechanics and usage.

2. **Organization** of the site is inconsistent and lacks functionality.
> A.   Little or no pattern is evident in the organization of the site contents on the "homepage" or "index".
> B.   Some links do not work.
> C.   Thematic agreement is not evident.

3. Portfolio contains minimal **content** relevant to your professional development as a teacher/professional.
> A.   An index or homepage is not used in an effective manner.
> B.   Includes some, but not all, of the required elements (resume, database, power point metaphor, photo album, and other assignments as required by individual instructors).

4. **Technology** Portfolio demonstrates limited ability to publish a web-based presentation on a CD-ROM or website.
> A.   E- portfolio demonstrates limited ability to electronically access, generate and manipulate data from a variety of sources (scanners, digital cameras, 3.5 -inch disks, zip disks, internet, CD-ROMs, video).
> B.   E- portfolio demonstrates limited ability to integrate a variety of software applications and learning tools (e.g. Inspiration, ACCESS, word-processing software, photo editing software, video-editing software).

5. Electronic portfolio demonstrates little **creativity** and professionalism.
> A.   Little attention is paid to formatting and integrating the various parts of the portfolio.
> B.   Little creativity is evidenced in the production and selection of media.
> C.   Color and texture are randomly selected.
> D.   Contents contribute little to the readers' understanding.

Appendix C

Survey to Assess the Impact of Electronic Portfolio Skills Learned
in Social Studies Education

Name (optional) _____

School Placement (optional) _____

This survey s eeks information concerning your perceptions of technology integration during your teaching
internship. Please choose the answers that best reflect your opinions concerning the integration of
technology during your student teaching experience. The information obtained from this survey will be
used to learn more about the needs that exist for integrating technology during student teaching. Your
participation in this survey is voluntary and survey answers will remain confidential. Questions may be
referred to Dr. Vivian H. Wright (vwright@bamaed.ua.edu) or Dr. Elizabeth Wilson
(ewilson@bama.ua.edu)

The following lists skills/software/hardware you used while in your Methods Block. We are interested in
which of these you are currently using – or plan to use — and *how you have used/planned to use,*, in your
current teaching internship placement. We have also provided a column for any additional comments you
would like to make. Please answer honestly.

Skill/Software/Hardware	Currently Using	Plan to use during student teaching	Plan to use in future classroom
Development of online web pages (html editing)			
Online Resources (such as MarcoPolo, Rubistar, WebQuests, AVL, and other online resources introduced in Methods			
Database of resources (using Microsoft Access or other database software)			
Excel Spreadsheet			

Skill/Software/Hardware	Currently Using	Plan to use during student teaching	Plan to use in future classroom
PowerPoint			
Laptop (can include use of Technology on Wheels—TOW--bundle)			
Overhead Projector or Projector Included in TOW bundle			
Digital Camera			
CSE 489 Web Portal -- instructions and tutorials			

1.   **Rate your computer expertise.**

____ low

____ below average

____ average

____ above average

____ high

2.   **In your opinion how important is technology to today's classroom?**

____ not at all

____ slightly

____ moderately

____ very

____ extremely

3. GENDER

_____Male

_____Female

4. Age:

_____21 - 25

_____26 - 30

_____31+

5.   Is your classroom teacher supportive of you using technology?

_____no

_____yes

6.   Does your classroom teacher encourage you to use technology?

_____no

_____yes

7.   Do you believe technology access in your classroom is

_____inadequate

_____adequate

_____more than adequate

Access: Please indicate those technologies that are available to you during your student teaching

internship:

9.	_____ yes	_____ no	Overhead projector
10.	_____ yes	_____ no	TV/VCR
11.	_____ yes	_____ no	One computer **without** Internet Access
12.	_____ yes	_____ no	One computer **with** Internet Access
13.	_____ yes	_____ no	More than 1 computer in my classroom
14.	_____ yes	_____ no	Computer lab available in school for instruction
15.	_____ yes	_____ no	Basic productivity software packages such as Office (Microsoft Word and PowerPoint)

USE: In one to five sentences, please indicate how you have used technology during your student

teaching internship experience (be as specific as possible) :

_____

Appendix D

Interview Guiding Questions
Based on Berson's 1996 and Whitworth and Berson's (2003) Research

1. How would you categorize your level of technology ability?

2. What technology resources are available to you during your student teaching experiences?

3. How often have you used technology in your social studies student teaching this semester? Give some examples of your use.

4. Are there factors that encourage your use of technology? How?

5. Are there factors that discourage your use of technology? How?

6. How does technology integration permit you to address social studies content?

7. Do you employ technology skills you used in your portfolio development? How?

8. When you are teaching in your own classroom, will you address technology integration any differently than you have this semester? Why?

Appendix E

Interview Guiding Questions – *1ˢᵗ year Teaching*
Based on Berson's 1996 and Whitworth and Berson's (2003) Research

1. How would you categorize your level of technology ability?

2. What technology resources are available to you during your first year teaching experiences?

3. How often have you used technology in your social studies teaching this semester? Give some examples of your use.

4. Are there factors that encourage your use of technology? How?

5. Are there factors that discourage your use of technology? How?

6. How does technology integration permit you to address social studies content?

7. Do you employ technology skills similar to those you used in your electronic portfolio development? What? And How?

8. Now that you are teaching in your own classroom, are you addressing technology integration any differently than you did in your internship? Why?

Potential later questions or when guided:

1. Compare and contrast those differences (as articulated in #8 answer)

2. As compared to your student teaching experience, have you had to employ creative solutions to technological problems/challenges in your current position?

3. What do you see as reality when it comes to using technology . . .
   a. in your current classroom?
   b. other teachers' potential perceptions/use in your school?
   c. as compared to your student teaching experience?

4. Are students driving technology use?

5. Potential follow-up to question 5 above, as related to barriers (Butler & Selborn)?
   a. Reliability
   b. Time to Learn
   c. Knowing how to use
   d. Concern that technology is not critical for learning
   e. Perception of inadequate institutional support