TEACHERS' CLINICAL EXPERIENCES AND ATTITUDES TOWARD TECHNOLOGY INCLUSION

by

ANDREA LYNCH PAGANELLI

A DISSERTATION

Submitted in partial fulfillment of the requirements
for the degree of Doctor of Philosophy
in the Department of Education
in the Graduate School of
The University of Alabama

TUSCALOOSA, ALABAMA

2010

ABSTRACT

The purpose of this qualitative multisite case study is to examine participants' attitudes toward technology, types of technology available for participant use, and the extent to which technology is used by preservice and mentor teachers during clinical experiences. Research supports the benefit of improved attitudes toward technology integration as a byproduct of the technology inclusive clinical experience (Dawson & Dana, 2007). Niederhauser and Lindstrom (2007) found that preservice teachers' technology use during teacher training and clinical placement will be a model of the teachers' future technology use in the classroom. Bullock's (2004) qualitative research noted the connection between mentor attitude and how mentor attitude affected the success of preservice teachers' implementing technology in the classroom, and further exploration of this relationship seems warranted.

This study contributes to the body of knowledge pertaining to how clinical experience affects attitude. Preservice teacher participants in this study clinical experiences affected their attitudes toward and usage of technology in the classroom. The participants underestimated the variety of technologies available and were pleasantly surprised to encounter several different types of technology. Participation by the preservice teachers in the clinical experience presented a greater level of timidity due to the disabling factors of technology availability, reliability and increased planning time. In the future the preservice teachers may be less likely to attempt the use of technology if disabling factors are present. The participants expected the use of technology to be simple and when confronted with the realities of technology use they came to the realization that incorporation of technology was not always as easy as it looks. The

preservice participants attained a greater awareness of technology inequity between placement sites. The expectation for clinical experiences in the past has been that the preservice teachers learn from the mentor teachers, but in the current study, the preservice teachers were able to provide their mentor teachers with new technology knowledge and skills, creating a more collaborative clinical experience.

DEDICATION

I would like to dedicate this Doctoral dissertation to my husband, Anthony Paganelli. Thank you for your continued love and support throughout this process.

ACKNOWLEDGMENTS

A great many people have contributed throughout the creation and completion of this dissertation. Countless members of The University of Alabama community have helped during my time on campus. Thank you all for your commitment to serving student needs with kindness and consideration.

I am extraordinarily thankful to my dissertation chair, Dr. Margaret Rice, whose encouragement, guidance, and support from the beginning to the conclusion of the dissertation process enabled me to cultivate a deeper understanding of the subject matter. Her patience and support helped me finish this dissertation.

I would like to thank Dr. Rose Newton for her insightful comments that brought the topic into clearer view. I am grateful to Dr. Richard Rice for giving valuable knowledge about the policy, expectations, and planning process. It is an honor for me to thank Dr. Angela Benson for incisive comments and introductions to members of the education department that were of help with my dissertation. I owe a gratitude to Dr. Elizabeth Fowler, thank you for making the long drive from the University of West Alabama to be a valued member of my dissertation committee. I am also indebted to the members of The Office of Clinical Experience at The University of Alabama, thank you for providing assistance. I would also like to thank my colleagues for listening and caring, especially Joan Baker and Shirley Pharr.

None of this would have been possible without the love and patience of my family. My immediate family has been a constant source of love, support, and strength through this process. My husband has been encouraging and supportive. To Sophia and Alex, thank you for being

patient while Mommy did her homework. I love you very much. My extended family has aided me through this endeavor. Mom and Dad, you have watched my educational journey from grade school to grad school and have supported me through every trial and triumph. Aunt Sue, thank you for help with my manuscript read-through. To my Grandmother, thank you for setting the table around which generations of educators have sat and talked. I have been privileged to be a part of a family that put high priority on education.

This dissertation is possible due to the cooperation of the schools, educators, and principals involved in this study. I sincerely enjoyed and appreciated being allowed into your schools and classrooms. Lastly, I offer my regards and thanks to all of those who have supported me in any aspect during the completion of the project.

CONTENTS

LIST OF TABLES

CHAPTER 1

INTRODUCTION

"In our schools, every classroom in America must be connected to the information super highway, with computers and good software, and well-trained teachers" (Clinton, 1996, p. 36). Since this quote was made in 1996, the state of connectedness to technology in the American classroom has improved. Albion and Gibson (2000) stated that "the foundations for the successful adoption and use of information technology, including a favorable policy environment, access to technology, and suitably skilled teachers, are rapidly becoming reality. Nevertheless, the impact of technology on schooling has been fairly limited" (p. 316). It has become apparent that the mere presence of a technology rich environment does not spontaneously create a more technology inclusive educator (Gomez, Gamoran, Griesdom, & Finn., 2008; Punya & Koehler, 2006). The question then becomes how do we help prepare technology-inclusive educators?

The prior, positive use of technology appeared to influence attitude and incorporation (Bullock, 2004). Clinical experience is a vital part of teacher preparation (Dexter & Riedel, 2003). Research has demonstrated the technology inclusive clinical experience can create improved attitudes toward technology integration (Dawson & Dana, 2007). Prior success or failure using technology in the classroom setting affects the incorporation of technology into the curriculum. "National agencies advocate the use of field experiences to help prepare teachers to integrate technology in their classrooms" (Dawson & Dana, 2007, p. 657). Beyerbach, Walsh,

and Vannatta (2001) declared that field experiences in technology rich classrooms were an important aspect of teacher education programs.

Statement of the Problem

Dexter, Doering, and Riedel (2006) affirmed that "the call to better prepare teachers to teach with technology has been repeated several times during the last decade" (p. 325). The goal of well-trained teachers leading the way to classroom and curriculum technology integration has not been accomplished. Although teachers have been given access, skills, support from administration, and the flexibility to adjust the curriculum, we are not seeing the integration of technology into the curriculum (Albion & Ertmer, 2002; Albion & Gibson, 2000; Ertmer, Conklin, & Lewandowski, 2003; NCES, 2000; Wang, Ertmer, & Newby, 2004).

The anticipated incorporation of technology into the classroom and curriculum has not happened (Bauer & Kenton, 2005; Betrus & Molenda, 2002; Flowers & Algozzine, 2000). Darling-Hammond (1995) acknowledged that "the invention of 21st century schools that can educate all children well rests, first and foremost, upon the development of a highly qualified and committed teaching force" (p. 9).

> If teachers are to be successful at integrating technology, it will not be sufficient for them to develop the capacity for confident personal use of computers. They will also require an understanding of how to adapt curriculum and pedagogy to incorporate technology. It is this dimension of technology use that presents the greater challenge to teacher education programs. (Albion & Gibson, 2000, p. 317)

One way that these challenges can be addressed is through clinical experiences. Niederhauser and Lindstrom (2007) stated that preservice teachers' technology use during teacher training and clinicals will be a model of the teachers' future technology use in the classroom. Examination of the complex relationships present between preservice teachers, attitude, and clinical placement are needed to explore the barriers that remain to curricular

inclusion of technology. Prior success or failure using technology in the classroom setting affects the incorporation of technology into the curriculum. The prior, positive use of technology appears to influence attitude and incorporation (Bullock, 2004).

Purpose of the Study

The purpose of this qualitative multisite case study is to examine participants' attitudes toward technology, types of technology available for participant use, and the extent to which technology is used by preservice and mentor teachers during clinical experiences.

Significance

The U.S. Secretary of Education, Arne Duncan (2009), reported that nearly half of the current veteran teaching work force are baby boomers and that by 2014, one million teaching positions will be filled with new teachers. Duncan called for dramatic changes in how colleges of education prepare preservice teachers for the work place. Duncan stated that "teacher preparation programs should ensure new teachers...will have well-supported field-based experiences embedded throughout their preparation programs" (p. 1), and many colleges of education are giving more notice to the quality of supervision received by preservice teachers during clinical placement.

The importance of clinical experience in teacher preparation is highlighted by the research of Niederhauser and Lindstrom (2007), which acknowledged that preservice teachers' technology use in clinical experience would be a template for future in-service technology usage. The effects that preservice teachers' clinical placement circumstances and mentor teachers' attitudes toward technology have on technology integration into the preservice teachers' clinical placement experiences are areas of interest.

A large amount of research has been devoted to the study of attitudes toward computers within the context of personal use (Compeau & Higgins, 1995; Karsten & Roth, 1998; Kinzie, Delcourt, & Powers, 1994; Milbrath & Kinzie, 2000; Torkzadeh, Koufteros, & Pflughoeft, 2003; Zhang & Espinoza, 1998). The more specialized area of technology integration into teaching as it pertains to attitude has had less exploration (Abbitt & Klett, 2007). This study seeks to determine if attitudes toward technology, types of technology available for clinical experiences, and the extent to which technology is used by preservice and mentor teachers during clinical placement are affected by perceived success or failure of interactions with mentor teachers during this process. The goal of this study is to provide insight into the relationship between clinical experience interactions with mentor teachers and preservice educators' attitudes toward technology. Obtaining a better understanding of the preservice teacher and mentor teacher relationship as it pertains to attitude and incorporation of technology into curriculum will help educators highlight the difficulties faced by preservice teachers when challenged to teach with technology. By examining the factors that are enablers or disablers for preservice teacher success while teaching with technology during clinical experience, educators can gain a broader knowledge of successful practice.

Research Questions

The interview protocols created for this case study consist of questions relating to the areas of policy, expectation, and planning; attitude toward technology; technology available for use and technology use by preservice and mentor teachers. The following principal research question guided this study: How does the clinical placement experience of preservice teachers affect their attitudes toward and the use of technology in the classroom?

Assumptions

1. The sample is representative of preservice teachers attending a southeastern university and in the university's clinical placement program.
2. The sample represents a broad range of preservice and mentor teachers from the study area within levels K-12.
3. Participants answered questions honestly within the context of their experience.
4. Study participation was voluntary, and participants were not under any persuasion when giving their responses.

Limitations

The known limitations of the case study that may restrict research findings are as follows:

1. The study depends on the honesty of the study participants. The participants might have been reluctant to share their true feelings for fear it could jeopardize internship and workplace goodwill.
2. The level to which the qualitative methods utilized capture the phenomenon.

The conditions that were beyond the control of the researcher were as follows:

1. Participant values and beliefs could have affected responses to the questions presented.

Operational Definition of Terms

Attitude. An attitude is a personal feeling toward a given topic, action, or thing (Knezek & Miyashita, 1993).

Technology. Technology entails equipment and processes related to all types of sophisticated computer systems and applications (*The American Heritage Dictionary,* 2000).

Technology Inclusion. This refers to the act of including technology, which is the equipment and processes related to all types of sophisticated computer systems and applications (*The American Heritage Dictionary,* 2000), and the incorporation of technology into the curriculum and classroom.

Curriculum. A course of study especially at a school or college (*Webster's Dictionary*, 1989).

Curriculum Integration/Inclusion of Technology. The infusion of technology over time within the curriculum to insure student needs are being met (Kreuger, Hansen, & Smaldino, 2000).

Clinical Experience/Placement. The preservice teachers' internship within the K-12 classroom.

Inservice Teachers. Educators currently holding teaching positions.

Preservice Teachers. Students enrolled in schools, colleges, and departments of education.

Summary

The following chapters include the review of literature, research methods, data analysis and results. The review of literature in this multisite qualitative case study gives the reader a base of knowledge about policy, attitude, clinical experience, and technology available. The methods section includes the research design, participants, data collection, and data analysis.

CHAPTER 2

REVIEW OF THE LITERATURE

This review of literature comprises the base of knowledge for this qualitative multisite case study. This chapter provides background on the historical perspective, policy and expectations, preservice and mentor teacher attitudes, clinical placement and technology availability.

Historical Perspective

Instructional technology within the teacher education program and the classroom is not a new phenomenon. The evolution to the current level of technology inclusiveness began in the 1900s (Betrus & Molenda, 2002). During the 1920s and 1930s, teacher education programs began to include visual instruction. This instruction was primarily directed toward teacher use of technology as instructional tools. Hands-on incorporation work with students was limited to areas such as the making of glass slides, taking pictures, and creating models. The 1940s to the 1960s was an era of change. During the 1940s, the use of technology expanded to include audio materials. In 1958, the landscape of American education changed due to the National Defense Education Act enacted in part as a reaction to the Sputnik launch in 1957. This spawned a movement toward technology emphasis. During the 1960s, instruction in educational technology became more cohesive. The general format within most teacher education programs included instruction in teacher uses of and the production of audiovisual materials for instruction. From the 1970s through the 1990s the microcomputer revitalized interest in technology use within education (Betrus & Molenda, 2002).

The revitalized interest in the technology within the education field brought new questions. How are technologies to be used? Are they to be used as instructional tools by teachers or as hands-on devices for students? If they should be used by students, how will that be encouraged by teacher education programs and implemented by teachers? How are we to insure that students get the most out of the technology available (Betrus & Molenda, 2002)?

These questions are still relevant and shaping the current state of teacher education programs. The current preservice teachers participating in teacher education programs are assumed to have basic computer skills that have been attained through years of technology exposure. Even with the advantage of technology exposure, preservice and new teachers are not using technology to any larger degree than their more experienced counterparts (Ertmer et al., 2003).

Expectations, Planning, and Policy

University

The University as an influence in technology usage during clinical experience is a force of debatable strength. Wright, Gordon, and Stallworth (2002) stated that "teacher preparation programs should not only integrate technology throughout the curriculum, but should also provide opportunities for the students to manage problems within the actual school setting as they integrate various tools of technology" (p. 353). The university seeks to deliver a pedagogically sound technology incorporation experience at the classroom level. "Preservice teachers often perceive the knowledge and practice of the school based teachers in their field experiences as more reliable to that of their teacher educators…and when discrepancies occur between the perspectives of the cooperating teacher and the university faculty, in many cases, the pedagogical knowledge of the university faculty is supplanted by that of the cooperating teacher"

(Wright et al., 2002, p. 354). The information found in the following sections was taken from the web site of the southeastern university that is participating in this study.

Goals. The College of Education, as a part of this southeastern university, is working to maintain teaching, research, and service that address the State's interests and local interests while maintaining a global perspective. The College of Education seeks to prepare educators who improve intellectual and social conditions for all members of society. The prepared educator understands the goals of education by engaging in reflective practice that is based in research and theoretically informed, while seeking social responsibility. To accomplish this goal, the College of Education will endeavor to provide research-based, professional educator preparation programs that foster basic and applied research related to current educational issues.

To further these goals, The Office of Clinical Experiences was established to coordinate the placement of students in required field placements and internships. Major relationships have been created with principals and instructional supervisors in local school systems in the area. Information in the following sections was found on the southeastern university's web site.

Internship Requirements. The College of Education places the following requirements prior to internship; a "C" or better in all education classes, overall GPA of 2.75, and be accepted into the college and program. The students accepted for internship will be placed at multiple internship locations with the number and locations based on student specialization. Elementary education students are designated as kindergarten to sixth-grade level. The elementary education students will receive two internship assignments: half of the internship in kindergarten, first, second, or third grades; and half of the internship in fourth, fifth, or sixth grades. Secondary education can be either sixth to twelfth or seventh to twelfth. Secondary education students with a comprehensive major may receive one or two internship assignments. Special Education

students will receive a split internship assignment: half in a severe and profound setting and half in a mild to moderate setting. This information was found on the southeastern university's website.

Clinical Master Teachers. Clinical Master Teachers are elementary, middle, and secondary school teachers selected to participate in an innovative student teacher supervisory program. The Clinical Master Teacher's role is to act as both mentor teacher and college supervisor. The Clinical Master Teachers work in teams of four to six members to cooperatively supervise interns. There is no college supervisor, so they must fulfill both the role of mentor teacher and college supervisor. The requirements of a Clinical Master Teacher are 5 years of teaching experience, one year of student teacher supervision with a university supervisor, an M.A. degree in a teaching field, teacher certification, and a willingness to commit the extra time and effort required.

Master Technology Teachers. Master Technology Teachers are part of an innovative program designed to use technology to enhance teaching and learning. A wide range of content areas are represented in the program. As a part of the program, students may check out technology to use in clinical placement. The technology checked out is used to bring technology to the clinical experience classroom. This partnership is designed to close the gap between the potential of technology and the reality of classroom availability and use. Work products have included digital stories, weblogs, interactive PowerPoint presentations, virtual field trips, online web builder student-created sites, and electronic scrapbooks (Wright et al., 2002).

Clinical Experience Handbook. The clinical experience handbook mentions the use of technology in lesson planning and unit work. The clinical experience handbook notes that students are required to submit lesson plans to the classroom teacher and college supervisor. The

lesson planning unit is required to include technology. This requirement is stated but no further description is provided. The level of incorporation is not specified.

State Report Card. The State Department of Education Teacher Preparation Performance Profile For 2008-2009 is the most recent performance profile for the southeastern university's education department and stated that "A's" were earned in all quality indicators.

County Schools Acting as Clinical Placements

County Policy. The information for the county schools used in the clinical placements was found on the county school system's web site. It states that the Board shall cooperate with accredited colleges and universities for the training of student teachers to the extent that such training will both enhance educational opportunities for the classroom students as well as provide a training opportunity for the student teacher. Guidelines shall be prepared by the Superintendent's office for the direction of staff members in handling the student teacher program.

School Report Cards. The county system average of computers per classroom is 4.0. The system average of computers with internet access per each classroom is 4.4. The southeastern state's overall average is 3.5 for computers and 3.6 for computers with internet access. The elementary school had 7.1 computers and 8.4 computers with internet access. This was the highest ratio present among the three schools. The middle school had 4.8 computers and 5.6 computers with internet access. The high school ratio was 4.0 computers to 4.0 computers with internet access.

Mentor Teacher Policy. The Board shall cooperate with accredited colleges and universities for the training of student teachers to the extent such training will both enhance educational opportunities for the classroom students as well as provide a training opportunity for

the student teacher. Guidelines shall be prepared by the Superintendent's office for the direction of staff members in handling the student teacher program.

City Schools Involved in Clinical Placements

City Policy. The information for the city schools discussed by the preservice teachers in clinical placements was found on the city school system's web site. It is the policy of the city schools to participate with universities, colleges, and other agencies in research and related studies. This participation shall be governed by specific criteria.

School Report Cards. The city system average of computers per classroom is 3.4. The system average of computers with internet access per each classroom is 3.4. The southeastern state's overall average is 3.5 for computers and 3.6 for computers with internet access.

Mentor Teacher Policy. The Board for the city schools requires that classroom or assembly program instructors who are not members of the student body, faculty, or administration of the school or school system have prior written approval of the school principal.

NCATE

Goals. The NCATE standards are focused on the goal of allowing all children to learn. This goal feeds the standards that guide accredited institutions' program design. The use of technology in the instruction process is noted as an indispensible part of the teacher preparation process. The conceptual framework of the education department should portray a commitment to the inclusion of educational technology (NCATE, 2008).

Technology Standards. The NCATE standards state that accredited institutions should "prepare candidates who can integrate technology into instruction to enhance student learning" (NCATE, 2008, p. 4). The following standards have an impact on the integration of technology into the teacher education program.

Standard 1: Candidate Knowledge, Skills and Professional Dispositions

Candidates preparing to work in schools demonstrate the content, pedagogical knowledge and skills to help all students learn.

Standard 3: Field Experiences and Clinical Practice

The college of education and its school partners create field experiences and clinical practice so teacher candidates and other school professionals develop and demonstrate the knowledge and professionalism necessary to help all students learn.

Standard 5: Faculty Qualifications, Performance, and Development

The faculty is qualified and model best practices. They also collaborate with colleagues in schools. The college of education systematically evaluates faculty performance and facilitates professional development.

Standard 6: Unit Governance and Resources

The college of education has the resources for the preparation of candidates to meet professional, state, and institutional standards (NCATE, 2008).

Technology as Related to NCATE. The Southeastern University further states that technology is integrated into all programs and courses, and candidates are required to demonstrate competence in technology through a variety of projects and experiences. Programs have been implemented to bridge the gaps of mentor and preservice teacher technology use and equipment access. For example, the Master Technology Teacher and Technology on Wheels have received enthusiastic support from all stakeholders. Additionally, the unit has a technology advisory committee that provides guidance and input. The College of Education provides well-maintained technology and support at the professional development schools.

State Certification

The State Department of Education certifies teachers as having completed all requirements for employment. The State Department of Education web site states that the certification process requires the following steps toward completion:

- The application for certification
- Official transcripts
- Applicants for certification must meet the requirements of the prospective teacher testing program
- Applicants must submit to a background check from State and Federal authorities

Planning

Planning for technology in the clinical experience is important to successful technology inclusion. Preservice and mentor teachers' attitude should be acknowledged as an integral part of the teachers' planning process. The teachers' planning is directly related to their attitudes and beliefs and ultimately affect implementation within their pedagogy (Albion, 2001). Mentors that engage preservice teachers in technology enhanced lessons and use technology in their own planning are enabling factors in clinical experience technology integration (Bullock, 2004).

Preservice and Mentor Teachers' Attitudes Toward Technology

Attitude

Attitude is a learned condition acquired through experience. These learned attitudes lead to actions directed toward a bias. Due to attitude being acquired through experiences, they can be changed in the same manner (Simonson & Maushak, 1996). Since technology availability and technology support is at a high point, it is now time to investigate the affect that teacher attitude has on technology incorporation (Albion & Ertmer, 2002). Laffey and Musser (1998) asserted

that we need to understand the attitudes that preservice teachers bring into schools, colleges and departments of education about technology and how it should be used in education.

Snider (2003) stated that recent research efforts have become committed to determining the extent to which attitude impacts future technology usage of preservice teachers. “Beliefs and attitudes of teachers have been shown to influence the uptake of technologies in their classrooms and studies of computer use during practicum have suggested that, despite possessing positive dispositions towards computer use, preservice teachers lacked confidence in their capacity to teach successfully with computers” (Albion, 2001, p. 323).

Bullock (2004) stated that anxiety toward technology use was not the main factor in technology avoidance, with the exception of technology equipment failure. Prior success or failure in the use of technology appeared to influence attitude and incorporation. Success or failure during the field placement, especially when paired with a technology inclusive mentor teacher, made the greatest impact (Bullock, 2004).

Milman and Molebash (2008) stated that a benefit is still present for the education body of knowledge to be gained from exploring quantitative data related to the study of technology and attitude. Delcourt and Kinzie (1993) stated “experience with computer technologies, either through a course or through frequent use, is a critical area for examination in the study of attitudes” (p. 40).

Preservice and Mentor Teacher Attitudes During Clinical Placement

“It is likely that teacher attitudes and efficacy are strongly influenced by their prior training” (Delcourt & Kinzie, 1993). Bullock (2004) and Wang et al. (2004) stated that having the aid and example of teachers that are competent and comfortable with computers will help preservice teachers increase personal success with technology integration. The use of example in

the context of the classroom is the optimum situation. This makes clinical experience the most advantageous avenue for exposure to the technology incorporated classroom. Unfortunately the examples that are encountered during clinical experience are not always good examples (Albion & Gibson, 2000). The attitude of the mentor teacher while participating in clinical placement can have an effect on the use of technology by the preservice teacher (Dexter & Riedel, 2003).

Prior success or failure in the use of technology appeared to influence attitude and incorporation especially when paired with a technology inclusive mentor teacher (Bullock, 2004; Laffey & Musser, 1998). Bullock commented on a student in his study, Nancy, who had expressed interest in using computers, but had not gained experience using technology during her clinical placement. Nancy stated the following during a group interview:

> At the beginning of the year we had intended to have some kind of technology lab or something each chapter that we go through in the book. And realized how far behind we were, and stuff, so we pretty much said, you know, we can't actually do that. So, in the beginning of the year I was assuming I would do something in my work sample with technology. But by the time I got around to planning it, I knew there wouldn't have been time. (Nancy, Group Interview, 3/23/02). (Bullock, 2004, p. 211)

In wondering what had prevented Nancy from gaining technology experience in teaching, Bullock (2004) recounted an earlier conversation with Nancy.

> Unfortunately, my teacher teaches a little bit differently than I anticipate teaching. Mine would be more of an activity-based approach where you could use the computer lab more often because you're not always following the book and doing lesson-by-lesson, page-by-page. For that's how hers works, and technology doesn't fit in as easily. (p. 211)

Based on this interview from Bullock, the differences between mentor and preservice teachers can have a negative impact on technology integration within the classroom setting during student clinical placement. This mentor teacher's view of technology as an "extra if time allows" restricted the use of technology in Nancy's clinical experience. This effectively ended her experience with technology integration in clinicals.

The mentor teacher's role in general within the process of technology integration during clinical placement is extremely important (Bullock, 2004). Bullock provided another example of a clinical placement student who worked with a mentor teacher who used technology.

> I come from kind of an environmentalist family who have always been very skeptical of technology. So when I found out I was in the tech cohort, I was pretty upset, but trying to be open. And then I got placed with Brianna, who's like tech guru of the world. Here she is this great tech guru…I use it almost daily, and I'll be in the computer lab all next week, and they're doing Publisher brochures. It's just fabulous. (p. 212)

This interview displays a situation where a positive impact on technology usage was felt due to mentor and preservice teacher interaction during clinical placement. Mentors that engage preservice teachers in technology enhanced lessons and use technology in their own planning are enabling factors in clinical experience technology integration. A mentor that does not use technology or encourage the use of technology in any capacity other than an extra if time is available is a disabling factor (Bullock, 2004). Bullock's qualitative research noted the connection between mentor attitude and the success of preservice teachers implementing technology in the classroom. Further exploration of this relationship seems warranted (Bullock, 2004).

Technology Use During Clinical Experiences

Clinical Experience

Gomez, Gamoran, Griesdom, and Finn (2008) affirmed that being technology literate would be a required skill of a 21st century educator. The influence of clinical experience in creating a skilled technology literate educator is strong (Laffey, 2004). Field experience involving children successfully learning to use technology is a critical influence on preservice teachers' attitudes. The positive effect of successful clinical experience leads preservice teachers

toward the belief that technology should be incorporated into teaching and the curriculum (Laffey, 2004).

Delcourt and Kinzie (1993) stated that "teacher experience with technologies could contribute to the formation of positive attitudes…influencing teacher adoption, use and modeling of technology" (p. 40). Clinical experience is a vital part of teacher preparation (Dexter & Riedel, 2003). It is considered common knowledge within the field of educational technology that preservice teachers should be practicing the incorporation of technology into their teaching and that this does not always happen (Dexter& Riedel, 2003). Research has supported that the benefit of improved attitudes toward technology integration is a byproduct of the technology inclusive clinical experience (Dawson & Dana, 2007).

Technology Inclusion

Many preservice teachers have technology skills but lack the knowledge to properly incorporate technology into the educational environment. Technology skills are important but not the only aspect of technology education that needs to be addressed; curriculum inclusion is critical (Ertmer et al., 2003; Kabadayi, 2006; Rizza, 2000; Strudler & Wetzel, 1999; Vannatta & Beyerbach, 2000). Albion and Gibson (2000) revealed that course work in personal computer use within education had little effect on future computer use, but classes that were curriculum inclusion driven had an effect on the future use of technology in the classroom (Albion & Ertmer, 2002). The "most direct and cost-effective way to educate teachers about technology is through the preservice education they receive in colleges of education" (Bullock 2004, p. 213). Curriculum-wide integration currently represents the most effective practice for combating the lack of technology use (Snider, 2003). Krueger, Hansen, and Smaldino (2000) declared that if technology is incorporated throughout the preservice teachers' methods courses, when they reach

the clinical experience portion of their education they will have had a diverse technology environment and be prepared to incorporate technology into the K-12 classroom and curriculum. The disposition of educators toward computer inclusion in the classroom is affected by the amount of training in technology integration. Educators who have received training in computer use and integration are more likely to have a positive attitude toward the use of computers in the classroom setting (Milbrath & Kinzie, 2000).

Technology Availability

"The foundations for the successful adoption and use of information technology, including a favorable policy environment, access to technology, and suitably skilled teachers, are rapidly becoming reality" (Albion & Gibson, 2000, p. 316). Regardless of the more favorable environment, a lack of technology-rich clinical experiences led by teachers who model curriculum integrated technology is a problem and will likely remain an issue due to the lack of control exerted into the classroom by schools, colleges, and departments of education (Bullock, 2004; Strudler & Wetzel, 1999). Many clinical placement sites have a large amount of technology with limited access due to time and scheduling constraints (Bullock, 2004). According to Dexter and Riedel (2003), student teachers reported more access to computers for personal use than for instructional use in teaching students.

Snider (2003) contended that many preservice teachers enter clinical experience to find a lack of technology use in school classrooms and a lack of faculty trained to use it if the technology is present. The preservice teachers are not exposed to any modeled use of technology and begin to question the emphasis that is present on technology curriculum inclusion in their education courses (Snider, 2003). Preservice teachers may feel that due to their area of specialization such as lower elementary grades, art, or band that they will not have a substantial

need to do computer work with students. This could make preservice teachers feel that technology is irrelevant to their area of study (Laffey & Musser, 1998). This being so, clinical experiences and placement sites deserve a more in-depth investigation.

Summary

Examination of the complex relationship present between preservice teachers, mentor teachers, attitude, and clinical placement are needed to explore the barriers that remain to curricular inclusion of technology. Research demonstrates that improved attitudes toward technology integration can be a result of a technology rich clinical experience (Dawson & Dana, 2007). Prior success or failure during clinicals in the use of technology appeared to influence attitude and incorporation (Bullock, 2004).

CHAPTER 3

RESEARCH METHODOLOGY

Introduction

The purpose of this qualitative multisite case study is to examine participants' attitudes toward technology, the types of technology available for participant use, and the extent to which technology is used by preservice and mentor teachers during clinical experiences.

The preservice and mentor teachers' knowledge of and attitudes toward technology as well as the technology available at the clinical placement site are all aspects of the clinical experience that should be monitored. Attitude is a phenomenon that is not directly observable, so a behavior must be chosen that can be used as a reflective measurement (Simonson & Maushak, 1996). A variety of data sources from multiple sites were chosen to reflect the attitudes of preservice and mentor teachers toward technology during clinical placement. Niederhauser and Lindstrom (2007) predicted that preservice teachers' technology use during teacher training and clinicals would be a model of the teachers' future technology use in the classroom.

Milman and Molebash (2008) noted that there is a benefit to the body of education knowledge from exploring data related to the study of technology and attitude. This chapter outlines the qualitative research methodology used in this study, including the research design, conceptual framework, overview of qualitative and case study research, researcher positionality, and verification procedures.

Research Design

Conceptual Framework

The purpose of this qualitative multisite case study is to examine participants' attitudes toward technology, the types of technology available for participant use, and the extent to which technology is used by preservice and mentor teachers during clinical experiences.

Snider (2003) confirmed that recent research efforts have become committed to determine how attitude impacts future technology usage of preservice teachers. Preservice and inservice teachers' attitudes should be acknowledged as an integral part of the teachers' planning process. Teachers' planning is directly related to their attitudes and beliefs and ultimately affect implementation within their pedagogy (Albion, 2001). Because attitude is not directly observable, a variety of data sources at multiple sites were used.

Research Question

The preservice (See Appendix A) and mentor (See Appendix B) teacher interview protocols created for this case study consist of questions relating to the areas of policy, planning and expectation, attitude toward technology, technology available for use, and technology use by preservice and mentor teachers. The following principal research question guided the study: How does the clinical placement experience of preservice teachers affect their attitudes toward and the use of technology in the classroom? The following subquestions guided the research, data collection and data analysis:

1. What types of policies affect clinical placement technology use?
2. What expectations affect clinical placement technology use?
3. What types of technology are available at the clinical placement site?

4. What type of attitude toward technology was displayed by the mentor and student teacher?
5. How did the mentor and student teacher use technology during clinical placement?
6. What if any influence is exerted over technology inclusion in the clinical placement setting by the teacher preparation program?

Overview of Qualitative Research

The purpose of this study is to assess the complex relationships between participants' attitudes toward technology, types of technology available for participant use, and the extent to which technology is used by preservice and mentor teachers during clinical experiences. Qualitative research is concerned with the exploration of "meanings which people have constructed, that is, how they make sense of their world and the experiences they have in the world. Qualitative research implies a direct concern with experience as it is lived or felt" (Merriam, 1998, p.6).

This complex relationship between attitude, technology, and clinical experience has two associated sets of needs: first-order and second-order. If the external or first-order needs such as computer access, administrative support and professional development time and opportunities are being met, why is the incorporation into curricula within schools not happening? The internal or second-order issues such as attitude toward technology inclusion into methodology and practice could be the culprit. The adjustment of second-order internal barriers is a more complicated matter, and if these issues are to be addressed, it will be a more delicate process than with the first-order needs (Park & Ertmer, 2008). The second-order needs are more complex and may need a more sensitive and intuitive instrument. Merriam (1998) found that "qualitative inquiry, which focuses on meaning in context, requires a data collection instrument that is

sensitive to underlying meaning when gathering and interpreting data" (p. 1). The instrument used in qualitative research is the personal interview.

Case Study. The case study design is used to gain detailed meaning from rich data obtained from a discrete single unit or bounded system (Merriam, 1998). This qualitative research study employed the case study method to obtain information-rich data from preservice and mentor teachers. A case study is defined by Yin (2003) as "an empirical inquiry that investigates a contemporary phenomenon within its real-life context, especially when the boundaries between phenomenon and context are not clearly evident" (p. 13). This study is explanatory and produced data highlighting cause-and-effect relationships present within the areas of attitude, technology availability, and clinical experiences.

This qualitative study can be more specifically described as a multisite case study (Merriam, 1998). The multisite case study allows for comparison and contrast within multiple locations. The sites for this study were selected for reasons of theoretical replication. The three sites for the mentor teachers were an elementary, middle, and high school, as this range will illuminate any differences present at the contrasting educational levels. The preservice teachers were located in three difference placements that are self triangulating.

Researcher Positionality

As I prepared to undertake the task of performing this study I have taken the time to reflect upon my journey through the educational and professional process. I am a school librarian, graduate teaching assistant, and student. I have one foot in the academic arena and one foot in the K-12 arena. This gives me an expanded view from which to observe the progress of technology implementation into the educational process. My personal interest in the field of technology has expanded as I have proceeded through my differing roles as teacher and student.

My interest in technology inclusion in the curriculum was spurred by seeing the world of academia and the world of practice differ within my own experience. The academic world seeks to influence students with best practices. The real world of practical education deals with making the best of what you have. As a result of my experiences in the two realms of technology inclusion I have the potential to possess a bias. This bias has been minimized using verification procedures.

Verification Procedures

The following verification procedures were used to ensure study validity. Triangulation was employed by choosing three sites for the study. The selection of three sites for the study created multiple sources of data for the mentor teachers. The preservice teachers have three placements in their final clinical experience. These three placements self triangulate. The lesson plans of preservice and mentor teachers were also examined for data checking purposes. Multiple sources of data help confirm study findings as credible (Creswell & Miller, 2000; Merriam, 1998).

Member checks are allowing one or more of the study participants to review the materials from the study. Member checks were used to discern validity by allowing all members of the study to review interview transcripts. This helped to maintain the study conclusions as reasonable (Creswell, 2000; Merriam, 1998).

Peer examination was also used. Peer examination is a process in which the researcher is questioned about the data collection and analysis. The peer reviewer is an individual familiar with the process and topic involved in the study. This process lends credibility to the study results (Creswell & Miller, 2000; Merriam, 1998).

Participants, Data Collection, and Analysis

Setting of Study

The setting of the study is varied and comprised of three potential clinical placement sites used by a southeastern university. Other sites used for the clinical placement of preservice teachers were mentioned within the study due to prior placement of preservice teacher participants at these locations. The schools chosen were an elementary, middle, and high school. Three selection strategies were used to determine the sites. First, the schools were in a southeastern state. Second, the schools were current placement locations for students in clinical placement. Third, the three locations allowed for mentor and preservice teachers to participate.

Participants and Study Sample

The sites for this study were three public schools in a southeastern state. The preservice teacher participants stationed at these three public school locations contributed information about past placement experiences. The sample was chosen using criterion-based selection procedures. They were chosen for maximum variation. The maximum variation criterion was an elementary, middle, and high school. This was a small sample with great diversity (Merriam, 1998). The goal sample numbers for mentor teachers consisted of 4 each from the elementary, middle, and high school levels. The goal sample numbers for the preservice teachers were 12 from the southeastern college's education program participating in clinical placement. The actual sample numbers of mentor teacher participants consisted of 3 from the elementary, 3 from the middle, and 2 from the high school level. The actual sample numbers for the preservice teachers were 3 from the southeastern college's education program participating in clinical placement. All participants were protected through an IRB process (See Appendixes C and D).

Data Collection

This qualitative multisite case study used multiple methods of data collection (Creswell & Miller, 2000; Merriam, 1998; Yin, 2003). The methods used to achieve construct validity were emails, individual interviews, and document examination. The process of data collection was conducted in four steps: email contact for the interview request; individual interview; study case documents; and create a summary of data for each case in the multisite study.

Step 1: E-Mail Request for Interviews. Step 1 was to send an email to the school system superintendent requesting permission to conduct the study in the selected school system. Once the study was approved by the superintendent, an email was sent to the principals of each school requesting permission to conduct the studies in their schools. Once permission was obtained from the principals, emails were sent to the selected preservice teachers and mentor teachers in each of the three schools requesting their participation. The school system website was used to identify the superintendent and principals for the study. The preservice teachers and mentor teachers at each school were identified at the beginning of the Spring 2010 semester. The email addresses were obtained from the southeast university's Office of Clinical Experience.

Members of both the mentor and preservice teaching community seemed hesitant to participate, and many did not respond to the emailed requests. The preservice teachers and mentors who responded were not interested in participating in focus groups, therefore, all interviews of preservice and mentor teachers were conducted individually. The individual interviews addressed the privacy concerns expressed by members of both preservice and mentor teachers who agreed to participate.

Step 2: Open-Ended Interviews. Step two consisted of conducting the individual interviews. These interviews were conducted by the researcher. The study intent was for two

focus groups to be held at each site: one with the preservice teachers from each school and one with the mentor teachers from each school. Individuals who did not wish to participate in a group interview were offered the option of an individual interview. None of the study participants wished to participate in the focus group. All of the study participants opted for the individual interview. Each of the interviews began with a general overview of the study. Then the interview protocols were followed for each of the preservice teachers and mentor teachers. The individual interviews were taped, handwritten notes were taken, and then the interviews were transcribed.

Step 3: In-Depth Study of Documents. Step three was the examination of documents related to the study. In this case the documents were the lesson plans of the preservice and mentor teachers. The purpose of this lesson plan review was to examine the level of technology inclusion. This review of documents can also be considered a fact check to reinforce validity.

Step 4: Within Case Report. The data collection process was ongoing. At the conclusion of the individual interviews at each of the multisite locations, a within-case report was completed. The within-case report was shared with all participants.

Data Analysis

Data collection and analysis were ongoing and simultaneous. The process of data analysis informed the data collection procedure. After reflection on data collection and data analysis, any emergent themes were addressed within future interviews.

The data analysis process began with the transcription of the interviews. The interview transcripts were then coded to ascertain the major themes. This within-case analysis was completed after interviews were finished at each site. In this way, one set of interviews could inform the interview protocol of the next set of site interviews (Merriam, 1998).

The validity of the data collection and analysis was corroborated by means of triangulation. The dependability of the data was ascertained by using data gathered from interviews and examination of lesson plans. In addition, multiple sites were used to validate data (Creswell & Miller, 2000; Merriam, 1998)

CHAPTER 4

WITHIN-CASE ANALYSIS

Introduction

Chapter 3 described and supported the framework for the qualitative research methodology used in this study. The sections included research design, conceptual framework, overview of qualitative case study research, researcher positionality, and verification procedures. Chapter 4 describes the analysis of the case studies as individual entities. The findings presented in this chapter are the result of in-depth interviews and available lesson plans from mentor and preservice teachers. The case studies (see Table 1) are presented independently and are to be viewed as representative of an individual experiment (Yin, 2003).

The within-case analysis presented in the chapter displays characteristics unique to each case and lends to comparisons and contrasts present in chapter 5's cross-case analysis. The analysis of individual case studies highlights differences according to grade level or location. This chapter is arranged in the following manner: within-case analysis for preservice teachers and within-case analysis for mentor teachers. Description of phenomena will be elaborated by using quoted materials from participants' interviews. These interviews sought to gain a greater understanding of (a) policies affecting clinical placement technology use, (b) expectations affecting clinical placement technology usage, (c) types and availability of technology at clinical placement site, (d) attitudes toward technology displayed by mentor and preservice teachers, (e) mentor and preservice teacher usage of technology during clinical placement, and (f) any

influence exerted over technology inclusion in clinical placement settings by the teacher preparation program.

Table 1

Participant Demographics and Document Analysis

Participant Name	Experience Level	School/Clincal Placement	Grade Level of Teaching	Subject Area	Technology in Lesson Planning
Dana	Preservice	Logan, Riveredge Place, Sparrow, and Colton all are Elementary level	K-4	All	Not present
Tammy	Preservice	Logan Elementary, Flagstaff Elementary, Hunter Middle, Summers Elementary, and Williams Elementary	K-8	All	Present, but not for hands-on use.
Carol	Preservice	Logan, River Edge Place, and Flagstaff all are Elementary level	K-4	All	Not present
Susanne	20	Elkmont High	9-12	Counselor	Not present
Judy	40	Elkmont High	9-12	Business/ Technology	Present, hands-on technology inclusion.
Laura	18	Logan Elementary	K-4	All	Not present
Linda	7	Logan Elementary	K-1	All	Not present
Karen	13	Logan Elementary	2	All	Not present
Jan	19	Valley View Middle	6	English	Present, with hands-on technology inclusion.
Ann	8	Valley View Middle	6	Math	Not present
Mary	7	Valley View Middle	5-8	Music	Not present

The within-case analysis of each case study begins with a profile of the clinical experience location. The clinical experience location for each mentor teacher is the site at which the mentor teacher is employed. Due to three clinical placement locations assigned by the college of education, preservice teachers' profiles of clinical experience locations will include general information about the city and county schools primarily used for clinical placements. The names of schools and study participants have been changed in the interest of confidentiality.

Preservice Teacher Case Studies

General Profile of Case Study Location for Preservice Teachers

Preservice teachers were placed at several clinical placement locations by the college of education. Most clinical placements were in close proximity, within a city or a county system.

The southeastern university's policy states that clinical placement designations for preservice teachers will be made as follows: elementary education students are designated as kindergarten to sixth-grade level and will receive two internship assignments (half of the internship in kindergarten, first, second, or third grades; and half of the internship in fourth, fifth, or sixth grades); and secondary education can be either sixth to twelfth or seventh to twelfth grades. A comprehensive major may receive one or two internship assignments. Special education students will receive a split internship assignment. This information is found on the southeastern university's website.

County School System. During the 2008-2009 school year, the county school system had an average of 17,452 students. The system has 45% of students on free or reduced school lunches and a staff of 2,108 personnel in 34 different schools. The mission listed on the county school system's web site is "To meet the educational needs of all students in a safe learning environment." The county system is dedicated to the following beliefs:

- Learning must take place at home, in school, and in the community,
- All individuals should be treated with respect and dignity,
- Professional learning communities promote high expectations that lead to improved performance,
- Learning environments thrive on collaborative and cooperative relationships,
- Teaching all students to learn through a rigorous, relevant curriculum is essential, and
- Stakeholder involvement enhances student achievement.

City School System. The city school system had an average of 10,026 students during the 2008-2009 school year. The system has 65% of students on free or reduced school lunches and 1,334 personnel in 22 schools. The website of the city school states a mission to "create a learning environment that prepares students to meet successfully the challenges of life in the 21st century."

Preservice Case Study 1

This individual case was the interview of Dana, a preservice teacher in elementary education. In Dana's current position as an administrative assistant, multiple types of technology are used throughout the day. The four clinical placement sites during her preservice teaching experience were: Logan Elementary, Riveredge Place Elementary, Sparrow Elementary, and Colton Elementary. The following are the themes resulting from the data analysis: expectations, planning, and policy; preservice and mentor teacher attitudes toward technology; technology use during clinical experiences; technology availability; barriers to use; lack of technology availability; lack of organized support system for technology assistance within the school; lack of technology use; preservice teacher as embedded technology professional development; and preparing for a lesson with technology.

Expectations, Planning, and Policy. Dana commented on her expectations, planning, and the influence university policies had on her technology usage during clinical placements. She had high expectations for technology usage in the classroom during her clinical experience. She planned to use technology daily in clinical placement and anticipated incorporation being relatively easy. However, Dana used technology less than anticipated due to her placement in a reading classroom, which she perceived as being a subject that did not work well with technology.

Dana's planning for each lesson was approximately one hour, and the amount of planning time was increased when technology was included. She further stated that a backup plan would be in place in case issues arose with the technology. When technology lessons did not happen due to various reasons, she said, "It would be…disappointing. I had this idea of what I really wanted to do and everyone would have loved it. But, it just didn't fall into place." Even with this issue, Dana commented about using technology: "It was more work going in but in the long run it was easier to teach…it [technology] improved classroom management. When the kids are engaged it was easier to convey your message to them. They were more interested so they were listening and taking it all in."

The influence exerted by the teacher preparation program for the preservice teachers to use technology during the clinical placement was observation centered. Dana felt that the university encouraged use of technology during course work. She commented, "We definitely heard our methods teachers encouraging us to use it whenever we could. Use whatever you have around you, take advantage of whatever resources and use everything you possibly can to keep the kids interested."

Preservice and Mentor Teacher Attitudes Toward Technology. The attitude toward technology displayed by Dana was positive. She frequently used technology, and it kept her connected with the world and happy. The position held at the time of the interview was technology driven and required constant technology use. She observed great benefit in students' use of technology.

Dana indicated that the mentor teachers encountered during clinical internships were not opposed to the use of technology, but they were seemingly content with current practices. Dana commented, "The mentor teachers thought it was great when I used it [technology], but they wanted to continue on with whatever they had been doing and to leave it to me to spice things up whenever necessary."

Technology Use During Clinical Experiences. Dana and the mentor teachers' technology encounters during her clinical placements were location based. Dana commented that each location possessed different technologies and levels of incorporation:

> One [mentor] I had didn't use technology at all. Another I had, used it…frequently, whether it was the kids on the computer or using something as simple as the CD player. Also, I had another teacher at one point that frequently used BrainPOP with the overhead…so all the kids could see it. Right when I was leaving; we got a smart board, but I never got to see her use it.

Dana expressed that she used technology as often as possible in clinical placements, even when the circumstances were seen as prohibitive due to technology availability or subject matter. Dana noted that technology use increased student attention and lessened discipline issues.

Technology Availability. Types of technology available at Dana's clinical sites varied greatly. Of her placement locations in clinical experience, she considered Sparrow Elementary, a city school, to have the most technology available for use. She stated, "The schools were honestly so different. Of all the schools that I was in, the city schools by far had more technology

than any of the other schools. I don't know if that came from Title I funding. It was the opposite of what I had thought." Some of her placement sites had computer laboratories available. If technology was not available in the classroom she would have to check out the materials for use.

Dana's use of technology during clinical placement was affected by the types and amount of available resources. Dana noted, "At all but one placement, the technologies were not in my classroom. I didn't get a whole lot of hands-on with technology in my placements." Dana remarked that if technology had been available in the room, it would have been used more often by preservice and mentor teachers.

Barriers to Use. Dana had an optimistic view of technology usage in the classroom, believing in the daily use of technology. Dana's placement in a reading classroom highlighted the perception that subject matter could prohibit the use of technology incorporation. Her understanding was that the subject of reading would not lend itself as well to technology incorporation. She felt that certain subjects make the use of technology more challenging: "I used it as often as possible. The classroom I was in only did reading. So my kids didn't get to do a whole lot with technology because the teacher I had didn't use it very much. I used it a lot to keep them engaged and to keep them interested, and it was something new for them in reading."

Lack of Technology Availability. An issue that Dana believed added to the challenge of teaching with technology was school-wide shared technology. In order to use technology, time for use would need to be scheduled. Dana said, "I had to prepare a little bit more. I had to go the extra mile and prepare things the night before and arrange for the technology to be in the classroom because it was not always available." Dana reported that the lack of availability of technology was prohibitive. She commented, "In the most recent placement in the internship, I

had to go to the library and check it [technology] out if I wanted to use it. So if someone had the equipment for that day I had to make another plan."

Lack of Organized Support System for Technology Assistance within the School. There was a lack of an organized support system for assistance with technology at the clinical placements described by Dana. Dana would ask for help on technology from the technology lender or any available person. She stated, "I typically went to whoever had a free minute and said, 'Can you help me out with this?'" The methods of asking for help at Dana's clinical placements varied: "At Sparrow Elementary we had a tech specialist we went to, and then other than that I asked the library because that was typically where the technology was kept. They knew the most about it. Other than that, technology help was asked from whoever the technology was borrowed."

Lack of Technology Use. When speaking of mentor technology use in the classroom, Dana said, "So my kids didn't get to do a whole lot with technology because the teacher I had didn't use it very much." She felt the mentor teachers she encountered were ambivalent about the use of technology. They were content with teaching methods that did not include the use of technology. Dana commented that the teachers would have been more likely to use technology if it were more readily available in the classroom: "The teachers needed to put a little more thought into it [using technology], and most of the time [the teacher] just used the things that were already on hand in the classroom because they didn't have to go reserve anything."

Preservice Teacher as Embedded Technology Professional Development. During her time as a preservice teacher, Dana was asked for help with technology from one mentor teacher. Dana stated, "At one placement I had a specialist teacher come to me and ask me how to make a

PowerPoint so she could use one for her kids later." She was seen by this mentor teacher as a means to learn new and existing technologies.

Preparing for a Lesson with Technology. Dana's lesson planning without technology took approximately one hour. The amount of time it took to prepare for a lesson plan including technology was greatly increased. This was due in part to the additional time needed to create a supplemental plan in the event the technology rich lesson plan was not successful. Dana felt that technology inclusion was worth the effort and believed student learning and classroom management benefited.

Preservice Case Study 2

Participant number two, Tammy, was a middle school intern with a major in elementary education. Logan Elementary, Flagstaff Elementary, Hunter Middle, Summers Elementary, and Williams Elementary were all locations where Tammy was placed during clinical experience. Tammy's personal use of technology for entertainment as well as for school purposes was extensive: "A lot of my classes are online, or we submit online. In fact, everything I have done this year has been online except for two in-class tests. We email [for our university classes] all the time. I don't know how people function without a computer, and in college now you almost can't." The following are the themes that resulted from the data analysis: expectations, planning and policy; preservice and mentor teacher attitudes toward technology; technology use during clinical experiences; technology availability; lack of technology availability; lack of organized support system for technology assistance within the school; lack of technology use; preparing for a lesson with technology; and best use of technology.

Expectations, Planning, and Policy. Tammy commented on her expectations and planning and the influence the university had on her use of technology during clinical

experiences. Her clinical placement expectations of technology use in the classroom were limited: “I thought just PowerPoint is the only technology that I was going to be capable of using…. No, I didn’t plan out what I could do. I just tried to go in open-minded. I had never been there [in a clinical placement] a long time. After seeing a full day over and over again, then you learn about it.” She thought technology would be limited and tried to have no preconceived ideas of usage in the clinical placement classroom. Only after observation did she make further decisions regarding technology usage.

Tammy stated that every lesson executed took at least one hour of preparation time for the lesson to work as planned. It would take more time if the lesson had complicated parts. She stated, “The more detailed the lesson plans or anything using manipulatives, normally you have to spend a little bit longer than that.” Tammy was positive about the use of technology; however, she did encounter a difference in what was anticipated to happen and what actually happened with the use of technology in her clinical placement. The situation occurred at her clinical placement, Flagstaff Elementary school. “It was the first PowerPoint for Flagstaff Elementary. It was really long toward the end. I could see the kids getting tired of it. The next one I made I definitely shortened it,” Tammy admitted.

The teacher preparation program’s influence exerted over technology inclusion during Tammy’s clinical placement was perceived as a positive and a negative. Tammy positively noted that university classes informed on different types of technology used in teaching. However, she expressed frustration at technology requirements when the technology to complete the assignment was not present in the clinical placement classroom. One class within her major required members to present a PowerPoint, and this caused difficulties for preservice teachers without access to the needed technology.

Preservice and Mentor Teacher Attitudes Toward Technology. Tammy's relationship with technology was positive, and she frequently used technologies of all types. Having a strong connection with technology, Tammy believed that its use was beneficial to the students. During clinical placement Tammy used technology frequently and desired to use it "almost daily."

Tammy observed that mentor teachers, even ones who had a lot of technology, desired more. She commented, "As far as I am concerned, they all loved it and wished they had more of it. Even my mentor at Flagstaff, who has plenty [of technology], still in his mind he would like every child in the classroom to have a computer." She was quick to point out that even the teachers that didn't possess or use technology saw the value present for student learning.

Technology Use During Clinical Experiences. Use of technology for Tammy during clinical placement was different at each location in type and amount. Tammy noted that if the classrooms had possessed adequate technology the mentor teachers would encourage usage:

> It depends if the teacher has computers in their classroom for them to use. I mean look around this [classroom]. There is one [computer] for the teacher for her own use and for administrative purposes, but I am sure if they had 15 computers around the room she would allow the kids to go use them. She is not going to just let them sit there; she would incorporate them. If you don't have [the computers], you learn to live without them. The kids definitely learn without them, but if she had them, I think she would use them.

Technology Availability. The amount and types of technology available at clinical placement sites were a concern for Tammy. She noted the range of technology available from school to school was wide:

> An overhead projector and two classroom computers; one for the teacher and one for the kids to use. They did have a classroom camera and video camera; it was in the library and you could check it out. That was good, but as far as in the classroom, it wasn't overly present and wasn't something used on a daily basis…. Then I went to Summers Elementary. We had listening centers there with tape recorders…. They only have three computers, two computers for the kids and one for the teacher. And they had an overhead projector they use daily. They also had a TV and a VCR…. Then I went to Flagstaff Elementary School…. There was technology everywhere…on daily basis to do hands on kind of learning; they called it project based learning…. They did a lot of computer

> projects. And then I went to Logan Elementary; they pretty much only had one working computer in the classroom for the kids.

Lack of Technology Availability. Tammy went into the clinical placement experience unsure of available technology. The lack of preconceived ideas about technology affected expectations and planning. Tammy did not preplan lessons due to the differences in technology present in clinical placement locations. Tammy's use of technology during clinical experience was extensive, but dependent upon technology available. She used a wide range of technology from video to high-end interactive white boards. She wanted to use more technology in the clinical experience.

Tammy said that a lack of technology availability caused difficulty in completing university requirements:

> [At this school] there is not a lot of technology; it was very difficult for me to teach my technology lesson. I had to borrow [technology] from a teacher and then I could not get it to work. I then had to take it from another teacher that uses hers on a daily basis and so it was difficult. I felt like I was inconveniencing teachers to do my technology lesson.

Lack of Organized Support System for Technology Assistance within the School. Tammy would ask for help with technology problems from anyone who would help. She stated, "I would have talked to my teacher first and hoped they would know who to talk to fix it." If the mentor teacher was not available, Tammy would ask for help from the individual possessing the technology:

> People don't like to think things go wrong, but they definitely do, and you need to be prepared. But I never asked ahead of time; I have always just had to figure it out when it happens. I really only had an issue one time with the LCD Projector not working. We got it working, but I felt lost and very, very tense and felt on my own. I didn't feel like anyone was overly jumping to help me out.

She accepted responsibility for lack of planning but noted no system of help seemed to be in place within the school environment.

Lack of Technology Use. Tammy's experience with mentor teacher encouragement varied depending on the technology available. She commented regarding Flagstaff elementary school's mentor:

> He really made [technology] available for me and showed me what they were doing and demonstrated for me in the first couple of days (the hands on computer learning they do). He encouraged me a lot, demonstrated it, and modeled it…"

Tammy observed that other mentor teachers had less access to technology than a mentor at Flagstaff. She noted that the lack of technology could affect the amount of encouragement received at each clinical placement.

Preparing for a Lesson with Technology. Tammy explained that preparation for a lesson plan with the assistance of technology could be less difficult. She also indicated that inclusion of technology within the lesson plan further lessened planning difficulties:

> The preparation for lesson plans with technology was a little easier. You could sit down at the computer and make a PowerPoint and all the information was right there. The computer has the pictures, texts, words, everything available on the internet. If I didn't have access to technology I had to go to the library. I taught a lesson and I wanted to do civil rights leaders. At the Flagstaff school, I could have just sent them [students] to the computers [to] figure out who they wanted. [They could] print out a page of information and go back to their seat. [At this school], I had to go get over 38 books for them to have information and a picture of the person for them to do the lesson with. So on my time, I had to go to the library, look up all the things, get all the books and come back to class, do all that; whereas, if I had had computers here, they could have just gone to the computer. Go to the computer for 15 minutes, and fill out your sheet, and go back to your seat. Then they would have everything they would need to finish the assignment. I feel like without technology sometimes it can take more time.

Tammy expressed that the use of technology could make lesson planning easier, noting that technology tools could speed up the planning process.

Best Use of Technology. Tammy remarked that technology can be overused and it "is important not to fall into a routine." She pointed out that students need to experience other types of learning: "I feel like technology is good [but students] need to see other things. They need to

learn how to learn without [technology] too. It does not need to be a crutch or be routine to them to Google everything. Sometimes they need to sit down with a book and read or learn how to look up information in other ways besides Google." She suggested that students need not become "used to" or "bored" due to overuse of technology. Tammy contemplated the idea that some subjects would be better addressed by means other than technology.

Preservice Case Study 3

This individual case concerns Carol, an elementary education major placed at Logan Elementary, River Edge Place, and Flagstaff Elementary during her clinical process. Carol felt confident about technology, although she considered herself fairly new to its use. The following themes resulted from the data analysis: expectations, planning and policy; preservice and mentor teacher attitudes toward technology; technology use during clinical experiences; technology availability; lack of technology availability; lack of organized support system for technology assistance within the school; preservice teacher as embedded technology professional development; preparing for a lesson with technology; lack of technology use; and best use of technology.

Expectations, Planning, and Policy. Carol commented on expectations, planning, and how the university influenced her use of technology during her clinical experience. Carol's expectations of technology use in clinical placement were surpassed:

> I expected less than what I got to see because when I was growing up I didn't use technology, ever, besides PowerPoint in my college classes. I mean the university just got their Elmo's two years ago. I didn't even know that was going on. The technology use was more than what I expected. I actually got to use technology hands-on. I am prepared to use technology and even prepared to show other people how to use technology. So [technology usage] was better, it exceeded my expectations.

Carol executed limited planning for technology during the clinical experience. She made lesson plans that did not include technology. She would alter the lesson plans to include technology if it was available for use at the clinical placement site.

The influence exerted from the university level over technology inclusion in the clinical placement was seen by Carol as primarily assessment. She stated, "I know on our observation sheets our teachers used there is a spot for technology so it is almost like they are expecting us to use it now." She expressed that the university can have a negative impact on lesson planning. For example, a university class required the inclusion of a PowerPoint presentation in the clinical placement experience:

> We had to give a PowerPoint on something that was very forced. It didn't fit in anywhere. It was a required presentation on material not being covered at the time. I had never made a PowerPoint for my kids at that placement. For this one class, for this one assignment, I had to show [my students] a PowerPoint. It was very forced.

Preservice and Mentor Teacher Attitudes Toward Technology. Carol's attitude toward technology during clinical placement was overall positive. Her personal use of technology was for computer use and GPS. She further described her personal use: "I have a computer, get on the internet a lot. I am trying to keep up an online portfolio to get a job. That is about it." She enjoyed technology and believed it was great for the classroom. Carol remarked that the mentor teachers encountered had overall positive attitudes toward technology.

Technology Use During Clinical Experiences. According to Carol, although mentor and preservice teachers used technology during clinical placement, the amount of technology use was different depending on the placement. The mentor teachers who she encountered used different amounts depending on what was available. During clinical placement many types of technology were used daily, such as computers, internet, and LCD projector. Carol described one experience as follows: "We used technology here at Logan Elementary making PowerPoints. I have also

used the Discovery streaming with this and other classes." She stated the following about the technology that was available:

> Sometimes it [technology usage] was extra. But a lot of the times it could be added seamlessly. For example, with math, we were doing practice for testing and they needed to see how to bubble in something or see how to work right in this specific box. We could use the Elmo to show them: 'This is what you do, and here is how you use this.' And we had a book to go with it. So we read a book, worked some math problems, showed them how to do it through the Elmo, and gave the children the opportunity to come up and do it. And so they would bubble in. They could see themselves do it, and their friends could see them doing it. They saw what to do on the big screen; they saw themselves; they saw me do it and their peers do it; so everything fit together. I have had several lessons like that, that seems like it just all worked in.

The participant's opinion of mentor use of technology during clinical placement was positive. Carol believed that if mentors possessed the technology and knowledge of usage, the mentor would incorporate the resource into lesson planning:

> A lot of them used [technology] daily, too. And I think sometimes because we all get so busy and have so much to do, to think about, I feel like sometimes they passed up opportunities to use it. I am guilty of that myself because we just get so wrapped up and we just have to get stuff done. But sometimes if you take the time to add [technology] some of your students learn better that way; seeing it that way instead of through a work sheet or writing it on the board.

Technology Availability. Carol felt that the technology available depended on the clinical placement. She indicated that preservice teachers should take advantage of technology when available:

> My very first placement there was nothing, so it never even crossed my mind that I would have to make lesson plans and integrate technology. But, as I went to different schools and saw the [technologies] that were there, I thought I should take advantage of those things and use them because the kids need to see them…. I know that I had two placements before I got to use technology besides computers and of course the kids were allowed to use computers during stations. One school actually had computer time where [the students] had thirty minutes to go to the computer lab. Now I don't know what they did in the computer lab, but I do know that the kids got to spend that amount of time on the computer. And then when I went to one placement, they used the Elmo in my school and they also had a projector, but it wasn't in the classroom.

Carol thought the main influences affecting differences between planned lessons and actual teaching with technology were problems with classroom availability:

> At that same placement, with our screen in here, the computer in here, the projector in here, we can do whatever we want, whenever we want. We didn't know that our P. E. schedule would be changed. It just got changed. So at another school if we would have reserved the Elmo for something we would have had to revamp that whole lesson. So at this placement the Elmo is ours and we didn't have to change our lesson plans. We still had [the Elmo]."

Lack of Technology Availability. The amount of technology used during the clinical placement experience depended on the location. Carol took advantage of technology availability unaware of the amount and quality of resources at the next clinical placement. She commented that technology being present in the classroom daily was important. If technology needed to be checked out, it caused difficulties.

Carol anticipated changes in plans and what would actually happen. She remarked, "When I got to the school and realized they had technology, if I thought the lesson plan would be better taught using the technology, yes, I would go ahead and include the technology and there would not be a doubt in my mind." During her clinical experience, issues with technology availability were present.

Carol believed the amount of and funding for technology directly impacted the use during clinical placement process:

> It depends on your school. In all my other schools I saw great programs and children were learning but it wasn't always through technology. The Flagstaff School has the money and the Promethean boards, and every student has a lap top. It is easier. It depends on your school and how much money your school has to spend on the technology.

Lack of Organized Support System for Technology Assistance within the School. Lack of organized support system for technology assistance within the school environment was an issue for preservice teachers. Carol asked anyone available for help when technology was not working:

> For the most part, I tried to figure it out. There was never anyone for me to ask for help when things were not working. The majority of the time the teachers don't know how to fix technology so if something was broken it would just have to sit until someone could figure it out. At one school the librarian knew about it sometimes, and we could take it to her. But she was so busy that you know it would have to get fixed when she could get to it.

During clinical placement when Carol needed help using unfamiliar technology she would try to figure it out. She stated, "The only school that had a technology staff was Flagstaff Elementary School. There was a guy there to help…[all other assigned schools] if you know how to do it, good; if not, figure it out yourself."

Preservice Teacher as Embedded Professional Development. Carol stated that the mentor teachers encountered were encouraging of technology use, although some wanted her to teach them how to use it: "They did (encourage technology use), and that is what I noticed with a lot of them. They seemed to think that we know more than they do. They want us to learn and to help teach them…. They have all said once they get into their classroom it is like the new stuff they are learning about…they don't know how to use it."

Carol expressed that one mentor teacher wanted her to explore the classroom's new technologies: "At Riveredge when I used the Elmo, I had to figure that out myself. I kind of taught my teacher. I had no idea I would have to figure it out for both of us." Carol believed the mentor teacher wanted her to learn and teach the technology.

Preparing for a Lesson with Technology. Carol noted that lesson planning with technology was in-depth. She stated that the use of technology required additional planning:

> Yes, I mean every good teacher knows if this doesn't work we have to change it, and this is what we have to do. If it is not going well, or if the kids are not getting it, we can do this; or if for some reason this messes up, you know our screen projector won't come on, we can write it on the board. It is o.k. I think competent teachers would know to go ahead and think of other things to do just in case.

Carol remarked about flexibility in the use of technology. When Carol arrived at a placement and assessed available technology she could change plans. She stated, "I would teach the lesson one way, and then the teacher would say, 'We have this technology if you want to use it.' To use the technology, you would have to look at the lesson a different way." She stated, "When I got to the school and realized they had [the technology], if I thought the lesson plan would be better taught using the technology, yes, I would go ahead and write it in [lesson plans]."

Lack of Technology Use. Carol felt conflicting levels of mentor technology use were present in clinical placements. She thought funding for technology dictated the amount of technology available at clinical placements. If the clinical placement had a lot of technology, it was used. If the clinical placement had little technology, it was not used.

Carol felt able to do as much or as little with technology during her clinical placement as desired. She stated, "It was a free thing. If I knew how to do it, they loved for me to use it. If I could use it they said, 'Go ahead.' If I did not want to pull it out, that was OK. The mentor teachers let me do whatever we thought would help the children best."

Best Use of Technology. The "best" practices use of technology was addressed by Carol. She accepted that the use of technology can be a detractor from the educational process. It sometimes depended on the age of the students, as well as its novelty. If the students had not seen the technology, she noted it could be a distraction from the subject matter. She stated, "One class was going crazy. Students wanted to stick their hands in the LCD projector picture. But it is good for them to be introduced to it because they may not have it at home."

The university influence can be both a positive and a negative, Carol stated:

> It can go both ways. I think that a lot of times technology is given a big [negative] influence from the university. Like children with that PowerPoint. Sometimes I feel like you don't need technology. Sometimes it is just easier for the kids to learn it and take it in seeing it in the book or sitting on the rug; and going over it with them in whole group setting. We were forced to do certain things with technology. For me it was different, the PowerPoint was on democracy for fifth graders. It was ok, but for kindergarteners it is way over their heads. But, they had to show the PowerPoint. We could teach this in a much better way to five-year-olds. But the university is making us do it through this PowerPoint…that is the one thing that I can think of that we had to do. But other than that it has not been very stressful with technology. I guess because not everybody has it. So if you're placed in a placement that doesn't have it, the university can't really do anything about that.

Document Analysis of Lesson Plans

Document analysis of the lesson plans provided by the preservice teachers included different levels of technology usage (see Table 1). The lesson plan Dana presented for observation displayed no documented inclusion of technology in the clinical placement classroom. The lesson plan provided by Tammy included the technology use. A PowerPoint presentation was used by the preservice teacher to lead the students in the making of a project for grading. The use of technology was as a teacher tool, not for hands-on use with students. The lesson plan Carol displayed had a lack of technology usage.

Summary of Preservice Teacher Themes

The preservice teachers displayed positive attitudes toward technology. All felt that technology use was beneficial for students. Expectations among preservice teachers varied; one had high expectations, and two had a lack of expectations as it related to technology usage. Technology use for all preservice teachers varied according to clinical placement assignment. The availability of technology in the clinical placement classroom affected the amount and type of technology use.

The preservice teachers were also concerned with technology as it related to subject area, lesson planning, technology support system, and best use. Subject area was seen as a facilitating or prohibitive factor depending on the subject. Lesson planning with technology was viewed by one mentor as positive due to time saved, and the other mentors viewed it negatively due to the need for extra time spent. The preservice teachers commented that the clinical placements lacked an organized technology support system. The best use of technology was a concern as it related to instructional practice.

Mentor Teacher Case Studies

For the mentor teacher interviews, three teachers from the elementary and middle schools were interviewed, and two from the high school were interviewed. The interviews were conducted individually, within the participants' chosen time frame and location.

Elementary Mentor Teachers

The following case studies involved the teachers at the elementary school, which had an average of 802 students during the 2008-2009 school year. The school had 34% of students on free or reduced school lunches, and the school has 79 personnel. The elementary school website said its mission is "to build a foundation on which students can become life-long learners by providing a developmentally appropriate education in a child centered environment."

These individual case studies interviewed three teachers through individual interviews: Laura, Linda, and Karen. The elementary mentor teachers stated that they were not Master Technology Teachers.

Elementary Mentor Teacher Case Study 1. Laura is an elementary special education teacher in a special education classroom. She is positive in her attitude toward technology. Themes resulting from the data analysis were: expectations, planning and policy; preservice and

mentor teacher attitudes toward technology; technology use during clinical experiences; technology availability; lack of organized support system for technology assistance within the school; lack of technology use; preservice teacher as embedded technology professional development; and preparing for a lesson with technology.

Expectations, Planning, and Policy. The mentor teacher's expectations were met. Laura observed that she made no plans to include technology within lessons. Technology was to be used as time allowed. She stated, "Since I didn't really plan for the use of technology there wasn't a difference [in what was planned and what happened]." This was supported by Laura's provided lesson plan that included no observable technology.

The amount of preparation time afforded the mentor teachers varied. Laura stated, "Yes, I knew at the first of the semester." The elementary mentor teacher was comfortable with the amount of planning time she received. The mentor teacher opinion of preservice teacher preparation was they were prepared. Laura commented when asked if the preservice teachers were prepared, "Yes, they all have been." She observed that they were prepared but to different levels based on exposure to technology prior to entry into the university program.

Preservice and Mentor Teacher Attitudes Toward Technology. The attitudes toward technology displayed by the mentor teachers varied. Laura displayed cautious optimism toward technology. The mentor teacher saw technology as beneficial for students. Laura stated, "Student technology use is beneficial. A lot of times it is hard to work that into an everyday thing." The mentor teacher's relationship with technology was varied. Laura enjoyed technology but was sometimes hesitant with use. The mentor teacher's opinions of the preservice teachers' attitude toward technology was positive. The mentor teacher saw the preservice teachers' preparedness level upon entering internship as adequate. The mentor's opinions of preservice teachers' attitude

toward technology reflected thoughts on technology. Laura remarked, “Student teachers are excited when we use technology. They don’t put forth and say I would like to do something using the Elmo or the projector. They never initiate use. [But] they are excited when we use it.” Laura mentioned that the preservice teachers “were excited about technology but hesitant to push for its use.”

Technology Use During Clinical Experiences. Laura used technology daily in her classroom, including the use of computer programs for the students to work on individually. She stated, “All the children use the reading program and the discrete trial training every day. I do the lesson plans for the teachers to submit.” Laura described the frequency of technology use as daily. She stated, “Well so far as daily we use the computer and CD player. I do use some form of technology every day. You know even if it is as simple as a CD player.”

Technology Availability. The types and availability of technology at the clinical placement site have been recognized as affecting technology incorporation. Laura had several technologies available inside the classroom. They were predominately technologies relevant to the area of special education. Laura described the frequency of technology use as daily. The school, as a whole, had a mini-computer lab in the library, digital cameras, a school laptop, and televisions for check out. This year every classroom in the school had received an LCD projector and Elmo. Laura recognized that the classrooms shared similar technologies.

Lack of Organized Support System for Technology Assistance Within the School. Laura would primarily speak with other staff members to get help. She would talk with the librarian, reading coach, or any teacher seen as technology capable. She also noted that the county provided technology support. To initiate county-level technology support the teachers had to

write in the sign-in book in the library. The librarian would then fix any requests if she was capable and send the remainder to the county level.

Lack of Technology Use. Laura noted that each preservice teacher participant had different levels of proficiency. The preservice teacher preparation level was seen as a factor in the lack of technology use in the clinical placement classroom.

Preservice Teacher as Embedded Technology Professional Development. The use of preservice teachers as technology professional development was addressed by Laura. She stated concerning help from preservice teachers, "I always ask [preservice teachers] things and say 'Help, can you can fix this?'"

Preparing for a Lesson with Technology. Laura was asked about plans for use of technology during the clinical experience process. She remarked about using technology but not in a planned way. The lesson planning done by the mentor teacher was basically a daily outline. No specific plan was made for technology.

Elementary Mentor Teacher Case Study 2. Linda is an elementary teacher in a first-grade classroom. She is positive in her attitude toward the use of technology personally and professionally. Themes resulting from the data analysis were: expectations, planning and policy; preservice and mentor teacher attitudes toward technology; technology use during clinical experiences; technology availability; barriers to use; lack of organized support system for technology assistance within the school; lack of technology use; and preparing for a lesson with technology.

Expectations, Planning, and Policy. Linda's expectations were met. She commented, "the [university] gave you the information on the clinical experience. I kind of have my head wrapped around it within a week or so before they come, what they need to do and the time line they have

to do it in." In the context of planning, Linda only addressed technology as it related to university requirements. Linda stated that no official lesson plans were made and technology was included as an extra when time allowed. The amount of preparation time was seen as adequate. Linda commented, "We usually find out a week or 2 ahead of time." She felt that preservice teachers were ready to use technology in the clinical placement.

Preservice and Mentor Teacher Attitudes Toward Technology. Linda was confident and ready to use technology. She was noted by her peer teachers as using innovative technology in instruction. Linda was confident in her technology use and stated, "It's positive. I feel very comfortable using technology." Linda noted that the preservice teachers were eager to use technology and were ready to start the use of technology quickly. She stated, "They seemed eager to just go ahead and do it." Linda felt that the preservice teachers were prepared but exhibited reservations when dealing with technology. She stated, "I don't know if they were nervous about asking me to use technology because they were not familiar. You know because not all schools have the same things. They may not have experience with any of the tools that we have." Linda felt that the preservice teachers were "very confident and knew exactly what to do."

Technology Use During Clinical Experiences. Linda's use of technology was more extensive than other mentor teachers. She stated, "I use the computers every day. We have an LCD projector with screen. We just got the LCD projector in our classroom last year. It is used several times a week." Linda described the frequency of technology use as daily. She stated that she used technology, "Every day as a resource. The kids interacted with it at least once a week."

Technology Availability. The types and availability of technology at the clinical placement site have been recognized as affecting technology incorporation. Linda's classroom had computers, LCD projector with screen, radio, CD player, and an Elmo that were used

frequently. The school, as a whole, had a mini-computer lab in the library, digital cameras, a school laptop, and televisions for check out. This year every classroom in the school had received an LCD projector and Elmo.

Barriers to Use. Linda would have used technology more often if it were not for the barriers to inclusion: lack of technology, training, and funding. She noted that technology use increased with practice. She stated, "I think the more I use [technology], the better I use [technology], the more [technology] I will use." Linda remarked that given the opportunity to practice, as skills improved, she would use technology more.

Lack of Organized Support System for Technology Assistance Within the School. Linda asked for help with technology from other staff members. She would talk with the librarian, reading coach, or any teacher seen as capable of helping with technology. She also noted that technology support was provided by the county. The method of asking for help included placing a request with the librarian and then she would fix any within her expertise. The remaining requests would be sent to the county level.

Lack of Technology Use. Linda depicted preservice teachers as having less technology interaction. She stated, "They don't use much technology. They don't use it very much at all actually." She seemed to allow preservice teachers to initiate technology use. Linda stated that interns knew about technology but were using only the technologies with which they felt comfortable. Linda viewed preservice teachers' technology use as a part of the observation process, not included as part of the curriculum.

Preparing for a Lesson with Technology. Linda was asked about plans for use of technology during the clinical experience process. The lesson planning done by Linda was basically an outline. No written plan was made for technology use in the clinical placement.

Linda stated that not having any lesson plans related directly to technology. Linda expressed, "I usually start [technology use] and then hand it off [to preservice teachers] and let them use it some. But no, there is no formal plan for that."

Elementary Mentor Teacher Case Study 3. Karen is a veteran second-grade teacher and a Clinical Master Teacher. She is positive in her attitude toward technology personally and professionally. Themes resulting from the data analysis were: expectations, planning and policy; preservice and mentor teacher attitudes toward technology; technology use during clinical experiences; technology availability; barriers to use; lack of organized support system for technology assistance within the school; lack of technology use; preservice teacher as embedded technology professional development; and preparing for a lesson with technology.

Expectations, Planning, and Policy. Karen's expectations were met. She stated that she saw a difference in what was planned and what actually took place in the classroom with technology. The differences in planning and result were from technology availability and performance. The lesson plan analysis for Karen was not detailed, she made no official lesson plans and included technology when time allowed.

The amount of preparation time was seen as acceptable. Karen stated, "I found out I was going to get an intern 2 weeks prior." She was comfortable with the amount of planning time she received.

Karen noted that the preservice teacher evaluation process was affected by technology. She stated, "Our evaluation sheets have a place to mark if they used technology or if they didn't. If we don't see [the preservice teachers use technology] we just mark not applicable. There is a place for us to observe them using it if they choose to do so."

Preservice and Mentor Teacher Attitudes Toward Technology. The attitude toward technology displayed by Karen was cautious optimism. Karen stated, "I enjoy using technology…[but] the more you don't stay up with technology, the further behind you get. I think that is what scares us [veteran teachers] the most." Karen saw technology as beneficial for students. Karen commented, "Yes definitely. They [students] are a lot more at ease using technology than I think adults are."

Karen enjoyed technology but was sometimes hesitant with its use. Karen stated that her relationship with technology was "positive, because I want to learn more about technology. It is negative, because I don't currently know a lot." Her opinion of the preservice teachers' attitude toward technology was positive. She saw the preservice teachers' preparedness level upon entering internship as adequate. Karen noted that the preservice teachers she had in class were very competent with technology. She stated that preservice teachers were ready to use technology but on different levels. Her opinion of preservice teachers' attitude toward technology reflected her thoughts on technology.

Technology Use During Clinical Experiences. Karen indicated that she used technology during clinical experience. She commented on her use of technology in the following way: "Was there a plan for me personally to use technology? No. This time my intern was really good with technology. I just encouraged her to use technology." Karen's classroom use was LCD projector, internet, computer, software, and Elmo. Karen portrayed her technology use as daily.

Karen depicted her current preservice teacher as taking a proactive approach to technology: "The preservice teacher helped make the rainforest book. She would also go on the internet to show pictures and slide shows." Karen was able to learn from preservice teachers. She explained, "If they can help me, show me, I can do it the next day. My intern from the university

has been great. She has had all these great ideas that I don't know. She has shown me how to do more."

Technology Availability. The types and availability of technology at the clinical placement site have been recognized as affecting technology incorporation. Karen's classroom had an Elmo, LCD projector with screen, and computers. School-wide the placement possessed a mini-computer lab in the library, digital cameras, a school laptop, and televisions for check out. This year every classroom in the school had received an LCD projector and Elmo. Karen recognized that the classrooms shared similar technologies. She felt that technology use could be affected by situational issues: "[Technology] may not always be in the best working order. Sometimes the internet may be down."

Barriers to Use. Karen commented that the main barrier for lack of technology use was lack of technology availability. She said that "technology should be supported fiscally; technology is very expensive, and a plan is needed as a school to bring technology." Karen further explained that if these technologies were not continually supported financially, they would not be replaced when damaged. She elaborated, "You see it every day because schools can't afford [to replace technology]. That is going to be the biggest disadvantage to the teachers, just not having the money to replace damaged technology." Karen thought that if someone were available on-site to help with technology, her usage would increase. She stated, "I would use [technology] more often if I had someone show me exactly how to use [technology]."

Lack of Organized Support System for Technology Assistance Within the School. Karen would primarily speak with other staff members to get help. She would talk with the librarian, reading coach, or any teacher seen as technology capable. Karen also noted that the county provided technology support. Requesting help from the county technology support was a multi-

step process. Karen commented, “The short way is to go ask a teacher who is experienced with technology.”

Preservice Teacher as Embedded Technology Professional Development. Karen believed that “technology was, like second nature to most of the preservice teachers. It is something they can do really easy. I’ll say, ‘Can we do a PowerPoint on this?’ The preservice teacher will put it together.” She also commented, “Over the past 5 years I have seen technology grow, and now we are learning from them [preservice teachers]. In the past, interns came and soaked up what we had to offer, and now I see a reversal effect and we are learning from them too.”

Preparing for a Lesson with Technology. Karen was asked about plans for use of technology during the clinical experience process. She remarked about using technology but not in a planned way. The lesson planning done by Karen was basically a daily outline. No specific plan was made for technology.

Middle School Mentor Teachers

The middle school had an average of 733 students during the 2008-2009 school year, with 30% of students on free or reduced school lunches and 63 personnel. The mission on the website said the school was “dedicated to the goal of preparing all students in becoming responsible, respectful and resourceful citizens. We strive to develop skills in a safe, supportive, positive, and caring environment through collaboration of family, community, and school.”

Middle Mentor Teacher Case Study 1. Jan was a veteran middle school English teacher for sixth grade and Clinical Master Teacher. Jan’s description of technology use for educational purposes did not make a distinction between the personal and professional. She is positive in her attitude toward technology personally and professionally. Themes resulting from the data analysis were: expectations, planning and policy; preservice and mentor teacher attitudes toward

technology; technology use during clinical experiences; technology availability; barriers to use; lack of organized support system for technology assistance within the school; lack of technology use; preservice teacher as embedded technology professional development; preparing for a lesson with technology; and preservice teachers as embedded technology professional development.

Expectations, Planning, and Policy. The mentor teacher's expectations about technology use in the clinical placement were generally met. Jan stated, "Just kind of mapped in my mind how I would use it." Jan provided multiple lesson plans that contained technology use as a teacher instructional tool and for student hands-on use. The influence exerted over technology inclusion in the clinical placement setting by the teacher preparation program was seen primarily as observational. The time available for preparation was seen as adequate. The mentor teacher planning for technology inclusion in clinical placement was based on technology availability and scheduling.

Preservice and Mentor Teacher Attitudes Toward Technology. The attitude toward technology displayed by the mentor teacher during clinical placements was seen as positive and an asset. The mentor teacher felt that technology was beneficial to the students. Jan said, "Technology is where it is going, and that is going to be something that is second nature."

Technology Use During Clinical Experiences. The mentor and student teacher use of technology during clinical placement was largely based on availability. Jan was able to use "PowerPoint presentations." She further stated, "The preservice teacher has made some PowerPoint presentations for vocabulary words. Which is good, the kids love it." Jan expressed that preservice teachers learn the use of technology quickly for administrative purposes. She felt that for grade keeping software and word processing, the students were quick learners. Jan felt

that conversely their incorporation of technology into the curriculum took more training and effort.

Technology Availability. The types of technology available in the middle school clinical placement varied based on classroom and subject area. Jan's classroom had an internet connected computer linked to an LCD projector, Elmo, television, and projector screen. These technologies were stationed in Jan's room. Jan stated, "The school had, [computers for] use with your students, so you have the capability of exposing them to technology." She clarified, "But we have a computer lab, and maybe out of 23, half of them work properly."

Lack of Organized Support System for Technology Assistance Within the School. Jan asked for help with technology from anyone available possessing the expertise. She stated, "I asked for help from the librarian or an English teacher. Someone can come in and handle it or my preservice teacher."

Lack of Technology Availability. The lack of technology available was discussed by Jan. Jan noted that technology was available school wide and could be checked out, but the technology available might not be enough for the whole class. Jan illustrated, "I could use [technology] with the students but I don't have enough resources to give them to use, technology-wise. We don't have hands on. I don't show them how to use something unless I know for sure that I can get everybody to a computer."

Preservice Teacher as Embedded Technology Professional Development. Jan used the technology skills of preservice teachers to learn about technology. She stated, "In fact she would help me sometimes; if I cannot find out how to get to something or how to attach something." Jan utilized her preservice teacher for technology skills learning.

Barriers to Use. University influence affected this mentor teacher during clinical experiences. Jan stated, “Other than when I do observations, one of the last things is technology…. They inquire to see how it is being used.” Jan further stated that no other particular emphasis is placed on technology.

Middle Mentor Teacher Case Study 2. Ann was a middle school math teacher in a sixth-grade classroom. Ann’s personal technology use was frequent and varied. She stated, “I turn on my laptop every morning and every night. I am checking my email. A lot of that is personal but [some is] school related at home.” She is positive in her attitude toward technology. Themes resulting from the data analysis were: expectations, planning and policy; preservice and mentor teacher attitudes toward technology; technology use during clinical experiences; technology availability; lack of organized support system for technology assistance within the school; lack of technology use; preservice teacher as embedded technology professional development and barriers to use.

Expectations, Planning, and Policy. The expectations about technology use in the clinical placement were generally met for the mentor teacher. Ann commented that whether or not expectations were met depended on the preservice teacher’s initiative. She explained, “[There is] not a big discrepancy in expectations and what actually happened. It was the personality of the intern. If they were going to go find things or just be average.” Ann did not provide a lesson plan but commented that technology use depended on what topic was being covered. The influence exerted over technology in the clinical placement by the teacher preparation program was seen as a positive and negative force by Ann. The time available for preparation varied depending on the placement. Ann did not complain about the time given for preparation. The mentor teacher plan for technology inclusion in clinical placement was flexible, based on technology availability and

scheduling. Jan stated, “I just knew I would incorporate it in some way. We have the interns. And each of the interns we have used the technology in some way. Whether it be the overhead projector or the Elmo. Some have not had the chance to use it with all students.”

Preservice and Mentor Teacher Attitudes Toward Technology. Ann’s attitude toward technology during clinical experience was seen as positive. She felt technology knowledge was an asset to the students. Ann stated, “I don’t do half as much [technology] as I would like to. I assume students know how to use basic word documents and they don’t. To some of them school is the only place they have access to technology.”

Technology Use During Clinical Experiences. The use of technology by preservice and mentor teachers during clinical placement was based greatly on availability. Ann’s preservice teachers come from elementary and secondary education. She believed that attitude was the main element of technology usage among her preservice teachers:

> Mostly, it depends on their personality, if they are going to jazz it up, or if they are just trying to get it done. I am thinking, in particular, of two student teachers that were so energetic, trying to find new things all the time. It wasn’t necessarily that they had been taught or were familiar. Then there were the ones that were like, “I taught the lesson and now I am done.”

Ann indicated that she liked to learn from preservice teachers about new technologies. She stated, “Whenever they have brought things in, it is usually really fun. I learn something myself. I have written on comment sheets, ‘I wish you would find something cool to use [in your teaching] in the library.’” She required preservice teachers to use PowerPoint at the beginning of the clinical placement as an introduction.

Ann experienced differences in the planned technology lesson and the actual outcome. Ann felt that one of the preservice teachers was resistant to the use of technology. She stated, “I was trying to get her to use a specific computer program. And she didn’t.”

Technology Availability. The types of technology available in the middle school clinical placement site were different depending on classroom and subject area. Ann had a laptop not connected to the internet, hooked to an LCD projector (borrowed from the library), projector screen, and television.

Lack of Organized Support System for Technology Assistance Within the School. The mentor teacher asked for help with technology from available personnel with expertise. Ann explained the following:

> I know in the past if our computers were broken we were supposed to fill in a sheet in the main office. Then that would go to the central office, but he is dealing with complaints from the whole entire county. They would begin to pile up or whatever and so people would just ask the librarian anyway because you might not hear back from the central office for a month or two. In all fairness to them the technology staff cannot meet the needs of all our schools.

Preservice Teacher as Embedded Technology Professional Development. The middle school mentor teacher utilized the technology skills of preservice teachers to learn more about technology. Ann stated, “My students were exposed to really cool math concepts that I was not familiar with. They brought in a lot of technology.” Ann expressed wanting the preservice teachers to bring in new technologies relating to math to keep current in the field.

Barriers to Use. University influence was a factor for Ann teachers during clinical experiences. Ann commented that some preservice teachers used technology improperly. She stated regarding one of the preservice teachers: “He had to have technology in the lesson plan, but I didn’t agree with [the software] he chose. It made the concept more confusing. I think there is a class they take. He was a secondary math teacher. There was a special program he was using and that he had to include. It was more confusing than using hands-on manipulatives.” Ann determined, “It depends on how much instruction it takes to use [technology]. Do you spend all your time teaching the technology or do you spend your time teaching the concept?” She thought

if learning to use the technology takes longer than learning the topic, think about proper time allocation.

Middle Mentor Teacher Case Study 3. Mary was a middle school music teacher certified for k-12. None of the middle school mentor teachers were Master Technology Teachers. Mary's technology use was self-described as "mostly communicative." She professes a positive attitude toward technology personally and professionally. Themes resulting from the data analysis were: expectations, planning and policy; preservice and mentor teacher attitudes toward technology; technology use during clinical experiences; technology availability; lack of organized support system for technology assistance within the school; lack of technology use; and barriers to use.

Expectations, Planning, and Policy. The mentor teacher expectations about technology use in the clinical placement were generally met. Mary stated, "The clinical experience, the preservice teacher being here? It was wonderful. It was like having a partner." Mary provided a lesson plan that included the use of a CD player, but no other observable technology. She felt the preparation time was adequate. Mary explained that students coming from the university were well trained in technology but lacking in classroom management skills. She described university influence in the following way, "Mainly university students have good training, and they are bringing it [to the clinical placement]…. My preservice teacher's technique and delivery was fantastic." The mentor teachers' plans for technology inclusion in clinical placement were different, but they were all flexible, based on technology availability and scheduling.

Preservice and Mentor Teacher Attitudes Toward Technology. The positive attitude toward technology displayed by Mary during clinical placement was seen as asset. She felt that technology was beneficial to the students. Mary depicted an experience in technology use when renewing a certificate:

> I took a technology-based class to renew my certificate…. I thought I was going to the class for an update [on technology]. Instead I was going to get a stamp of approval saying, "You can use your certificate," not the technology update I anticipated. In a way I was glad because I was overwhelmed [with the technology]. In another way I was disappointed because I needed someone to take me from where I was and take me higher.

She wished for greater understanding of technology but did not have an outlet for improvement:

> But I was such the exception. The teacher didn't have time. It was pretty much, "Just do what you can do." Which was great and at the same time it was a travesty. We really definitely need to take those of us who are lost and pull us from where we were. I am not found yet but I am better. Because once you are thrown into the fire you sink or swim.

Mary expressed technology frustration:

> Technology is escaping people like me. It is so far past us. I think that a lot of us are in middle age and have children who are so good at technology. I think in the classroom it needs to be a requirement. They have got some things that you can attend in the summer. But, who has a whole lot of time? If they would come into the schools and really teach us how to use the Elmo and all this, that and the other especially in an arts class like this. I think I would grab student attention twice as fast [with technology].

Mary also contemplated her technology skills:

> We are all at different levels. I have 65 kids. Some can't sing, some can't match pitch; and some have won awards. They are all at different levels. I am supposed to take them all where they are and take them where they can be. But with teachers we are supposed to be way up here but we are not. I would guess 20% of what the capabilities are because we have never been trained in it. But you know we have access to a lot more that we are trained to use. Not just as an individual teacher but as any county board employee. There is so much more we could use if they train us on it.

Mary's personal and professional use of technology blended together. The descriptions given of personal technology use included work-related activities.

Technology Use During Clinical Experiences. The availability of technology to the mentor and preservice teacher was a large factor in use during clinical placement. Mary had limited use of technology in a music classroom with a television, VCR, computer (for administrative use), and an electric piano. She expressed that instruction could be enhanced by the addition of technology. Mary had extensive use of technology in administrative ways, using

it for lesson planning and grade recording. Her technology use for instruction was more challenging. She stated, “Instructionally, we use the sound system. We use the electric keyboard. Video and digitally based things we use occasionally. If I had access to an LCD projector, I would love to use the overhead as far as the music theory.”

Mary also had a situation where the end result differed. She commented, while a preservice teacher was introducing a new piece of music to a group of students, “Like when she played the Mozart Alleluia. It was a laughing stock at first. They are not used to that operatic sound. So I am sure her plan was to get something new in their ear and she didn’t realize they would think that was comic. You know just surprises, lots of surprises.”

Technology Availability. The types of technology available in the middle school clinical placement varied based on classroom and subject area. Mary’s music classroom had an electric piano, television, and computer for administrative use. She stated the school as a whole possessed a math computer lab that could be accessed by members of the community.

Barriers to Use. Mary stated that subject area had a large impact on her experience with technology. She stated, “Music plus technology is…such an exclusive training. Instead of me going to the workshop on morale, if you were able to individualize the technology instruction a little bit more [to music]. In the arts we are separate but equal; I need to be able to do something specialized and it is overlooked.”

Lack of Organized Support System for Technology Assistance Within the School. Mary asked for help with technology from available personnel. She described, “You find a friend, another teacher, a younger person or the librarian.”

Lack of Technology Availability. The technology lacking at the clinical placement was discussed by Mary. She stated that if technology was not available or there was a lack of

training, use became more difficult. Mary elaborated on technology availability: “It’s just so helpful. It is helping me teach each and every day. On the other hand it is so frustrating. We don’t have the funding or staff to teach the faculty how to use [technology]. It is a lack of funding to get [technology] in the classroom. Then there is a lack of time and a lack of teachers to come in to teach us how to use it.”

Mary expressed concern over the fate of the children in her school. She noted, “Here at the middle school most of them have access at home to a computer, but they are not getting the training in the public school system to be able to manipulate it. [Students] get to college and they are in this sea, and you have the sharks and the minnows and where do they fit in? Technologically?”

High School Mentor Teachers

The high school had an average of 482 students during the 2008-2009 school year. The school has 66% of students on free or reduced school lunches. The high school system has 53 personnel members.

High Mentor Teacher Case Study 1. Judy is a high school Career Technology, Master Technology Teacher. She is positive in her attitude toward the use of technology in the classroom. Themes resulting from the data analysis were: expectations, planning and policy; preservice and mentor teacher attitudes toward technology; technology use during clinical experiences; technology availability; barriers to use; preservice teachers as embedded technology professional development; preparing for a lesson with technology; best use; and blended technology use.

Expectations, Planning, and Policy. Judy commented on expectations, planning, and university influence. She had high expectations for technology use in the clinical placement

experience. She spoke of the preparation time for a preservice teacher as being the same every semester. Judy stated, “We were told in advance.” The technology used during clinical placement was in place and available anytime that a preservice teacher was present. The process was ongoing, and no specific plans were made regarding the clinical placement in regard to technology.

The influence exerted over technology inclusion in the clinical placement setting by the teacher preparation program was present. Judy’s classroom had a large amount of university influence through the Master Technology Teacher program. She had regularly scheduled meetings within the program and had associated professional development.

Preservice and Mentor Teacher Attitudes Toward Technology. The attitude toward technology displayed by the mentor teacher toward technology was mixed, she was more positive toward her professional use of technology than personal. Judy stated regarding her personal technology use, “I think positive. I mean I love finding new technology for my students to come in and use. I am in with the Master Technology Teacher program.”

Judy stated that preservice teachers possessed positive attitudes toward technology. The preservice teachers were eager to share, “to bring it in…. Anything they learned at the university they wanted to bring in.” The mentor teacher also viewed the preservice teachers as well prepared. Judy expressed the belief that technology benefited students. Judy exclaimed, “Yes, I definitely think it is beneficial. No matter what job they go into they are going to have to know the technology.”

Technology Use During Clinical Experiences. The mentor teacher used technology during clinical placement. Judy had great comfort with technology and had all the most recent technologies available within her classroom. Judy indicated that technology was used daily in

each of her classes. She stated, “I don’t know what else you could do in here?” Judy noted using technology extensively with preservice teachers. She said that preservice teachers in her classroom were involved in technology instruction with students. It should be noted that this could be a function of area of instruction.

Technology Availability. The types of technology available at the school were described by Judy, who had all kinds of technology available, whereas others did not: “They don’t have a lab like I do. They can take a portable lab from the library and take it to the classroom and do [technology work]…. There is also a computer lab they can use.” Judy describes the technology in her classroom, “Besides the computers we have two very large laser printers, scanner, laptop, smart board, LCD projector, and flat screen television.” The amount of technology in Judy’s classroom appears extensive.

Barriers to Use. Judy noted that the use of technology could lessen discipline issues. Judy said, “A history class is harder to maintain discipline in than in a technology centered class. We have our problems that they don’t have, like having to make sure they are not on an internet site they are not supposed to be on. Things like that as far as keeping them interested and keeping them on task when they are hands-on.”

Preservice Teachers as Embedded Professional Development. Judy utilized preservice teachers for computer training. She stated, “The University had an Apple computer before we did and the [preservice teacher] had learned how to do the apple computer. She taught me and together we taught the students.” Judy suggested that the students from the university were well prepared to use technology.

Preparing for a Lesson with Technology. Judy said, “Some teachers who have been here a long time didn’t learn the technology in college. They don’t know how to plan [with

technology] and go online and do things [with technology]. They don't have to have all this equipment to bring technology into the classroom." According to Judy,

> Part of it is they are afraid. They don't know how to use technology….You have just got to get your hands on it and start to learn. I think if they did that they would explore more. There are things they can do. They don't have to check out the computer lab every day…. The more technology you use the more interesting for the students. These students are brought up in an age of technology. We were not brought up in an age of technology. They are very good teachers.

Blended Technology Use. Judy spoke of personal technology use. "Outside the school? I am…school oriented all the time. After a few years it just all blends in together." She further stated, "My computer at home I may not use it every day and when I do it is generally school work. The computer is the only technology I use at home except the TV."

High Mentor Teacher Case Study 2. Susanne, a high school counselor with interns, agreed to participate in the study. She is optimistic, but hesitant in her attitude toward the use of technology personally and professionally. Themes resulting from the data analysis were: expectations, planning and policy; preservice and mentor teacher attitudes toward technology; technology use during clinical experiences; technology availability; lack of organized support system for technology assistance within the school; and best use.

Expectations, Planning, and Policy. Susanne commented on expectations, planning, and university influence. She had minimal expectations for technology use. She spoke of her preparation time for a preservice teacher as being the same every semester. Susanne stated, "It is something we just expect." She did not make specific plans to use technology during the clinical placement experiences.

The influence exerted over technology inclusion in the clinical placement setting by the teacher preparation program was present. Susanne stated, "The counseling intern, it is specific to the incorporation of technology."

Preservice and Mentor Teacher Attitudes Toward Technology. The attitude toward technology displayed by the mentor teacher was conflicted. She wished to use more technology in her teaching but was hesitant due to past experiences. Susanne commented that her relationship was "overall positive. It sometimes lets you down. I have had some bad experiences." She stated of her personal use: "At home, I can sometimes go a day not even checking my email." The preservice teachers who Susanne encountered had positive attitudes toward technology. She stated, "Looking at the group that is in their 20s, it is ingrained in them. They are very technologically savvy." Susanne noted this group's eagerness to use technology during the clinical experience. Susanne stated, "They seemed very familiar with the computer and [were] quick learners." The mentor teacher believed technology benefited students. Susanne believed that technology was a great tool if used properly.

Technology Use During Clinical Experiences. Susanne expressed discomfort in using technology and had a technology availability issue. The frequency with which the mentor teacher used technology was erratic. Susanne stated the following about her use of technology: "When we have large groups… We do the seniors and juniors about the ACT's or college admissions. It is not an every other week thing."

The preservice teachers' use of technology in the clinical placement was primarily administrative. Susanne stated, "They have to be familiar with using [school record keeping software]. Sometimes the counseling student's actually video tape…some sessions with her students." The use of technology was not for instructional purposes.

Technology Availability. The technology available at the clinical placement was described by Susanne. She stated, "I have a computer. We have the Elmo in storage for people to use." Susanne expressed her wishes that the school "had more instant capability at our school,

more instant accessibility." The high school's technology was described by Susanne as "mainly a computer, internet, Elmo. There may be a smart board in one room but not in all rooms. We have a new IVC lab." She further describes the IVC lab: "It is the interactive video conferencing lab where one of the teachers is actually teaching a class, and one of the teachers is monitoring the other section." Most of the school's classrooms had a computer and an LCD projector.

Lack of Technology Availability. The high school had one department with extensive technology. The rest of the school was characterized as lacking in technology. Susanne stated, "If every student had a laptop, like they tried to implement in some school systems, it would be great." Susanne said if the technology were more available she would attempt to use it more often.

Lack of Organized Support System for Technology Assistance Within the School. Susanne asked for help by contacting local staff members and then the county board employees for technology support. According to Susanne:

> We have a technology team at the county board, so higher order needs go there. If it is something simple, we may call a friend. The librarian is a close friend of mine, our media specialist.... We have a teacher who does our business computer classes for our ninth and tenth grade. At one time he was our computer tech. Once you establish yourself in the building with the knowledge people still call on you.

Best Use. Susanne indicated that technology available to aid high school students in the transition to college was extensive. She felt that student use of this technology would be beneficial: "If the technology was used appropriately, they could find out about colleges, enroll in colleges, and compare careers like never before. If only they would [use technology for educational purposes] the students are so technology savvy with their phones and iPods."

Document Analysis of Lesson Plans

The preservice and mentor teacher planning for the use of technology during the clinical placement varied. The variance was not along the line of preservice and mentor teacher, but rather technology proficiency, school requirement and technology availability.

The preservice teachers Dana, Tammy and Carol had no true hands-on technology inclusion present. The lesson plan Dana presented for observation displayed no documented technology inclusion. The lesson plan provided by Tammy included the use of technology. A PowerPoint presentation was used by Tammy to instruct the students in the creation of a flipchart book. The use of technology was as a teacher tool, not hands-on for student use. The lesson plan Carol displayed contained no observable technology inclusion.

The technology inclusion for the mentor teachers was varied. The lesson plan analysis for the elementary mentor teachers was minimal due to a lack of traditional lesson plan requirements. Linda and Karen stated that they made no official lesson plans and included technology when time allowed. This was supported by Laura's provided lesson plan that included no observable technology.

The analysis of middle school mentor teacher lesson plans noted a variety of inclusion levels. Jan provided multiple lesson plans that contained technology use as a teacher instructional tool and for student hands-on use. Ann did not provide a lesson plan but commented that technology use depended on what topic was being covered. Mary provided a lesson plan that included the use of a CD player, but no other observable technology.

The lesson plan analysis for the high school mentor teachers differed. Susanne stated that she had no lesson plans available and her preservice teachers primarily used technology for administrative purposes. Judy provided a unit plan that included a variety of hands-on technology use for students. This difference could be attributed to area of specialty.

Summary of Mentor Teacher Themes

The mentor teachers all describe their attitudes toward technology as positive, but to differing degrees. All felt that technology use was beneficial for students. Expectations among mentor teachers varied as a result; in general, all of their expectations were met. Technology use for mentor teachers varied according to technology availability, training, and subject area. The availability of technology in the mentor teacher classroom affected the amount and type of technology use. Training was also discussed as a barrier to inclusion of technology.

The mentor teachers were also concerned with technology as it related to lesson planning, technology support system, and best use. Lesson planning with technology was done by two mentor teachers. The other mentor teachers did not include technology in lesson planning. The mentor teachers noted a lack of organized technology support, but were aware of a general list of individuals who could provide technology assistance. The best use of technology was a concern for some mentor teachers as it related to instructional practice.

CHAPTER 5

CROSS-CASE ANALYSIS

This qualitative case study was analyzed in a two-step process: a within-case analysis and a cross-case analysis. The within-case analysis presented in chapter 4 provided insight into individuals' opinions of the clinical experience from both the preservice teacher and the mentor teacher perspective. This chapter endeavors to enhance the understanding of the clinical experience by providing additional information from the comparison across cases. Approaches suggested by Merriam (1998) have been used to complete this analysis, as described in chapter 3.

Expectations, Planning, and Policy

All of the participants in this study are affected by expectations, planning, and policy. This section addresses how expectations, planning, and policies affect clinical placement technology usage among all participants. The discussion in this section is supported by participants' comments, lesson plans, and policy information when applicable.

The preservice and mentor teachers' experiences with expectations, planning, and policy varied. It is of interest to note that the southeastern university's policies regarding preservice teachers during the clinical experience mention the use of technology. However, the southeastern university's policies regarding mentor teachers do not mention the use of technology.

Expectations

The preservice teachers generally had positive expectations pertaining to technology use during clinical placement. Dana, the first participant, stated that when considering the use of technology in the classroom, she had high expectations due to frequent and positive use of

technology in personal life, but stated, “I learned that through trying it, it is not always as easy as it looks.” Tammy and Carol had few expectations of technology usage beyond PowerPoint. This lack of expectation increased satisfaction with technology experience during the clinical experience process. Tammy stated, “I planned on PowerPoints, and that is pretty much it. I did not know all the other things you could do…. PowerPoint was the only thing I really thought I was going to be capable of using.”

The elementary mentor teachers had expected the status quo within the clinical experience process to be maintained. The mentors felt expectations were met. Laura stated, “Since I didn’t really plan that much there wasn’t a difference.”

The middle school mentor teachers’ expectations about technology used in the clinical placement were generally met. Jan noted that she had a general idea of how she would use technology but nothing concretely written down. Ann stated that technology use in the clinical placement depended on what was being covered in her class at the time of the placement. Mary observed that the technology used in the clinical placement matched technology availability. These factors affected the middle school teachers’ expectations of technology in the clinical experience.

The high school mentor teachers had differing experiences with expectations during the clinical experience process. Susanne had a lack of comfort with technology and minimal expectations for its use in the clinical experience process. She had minimal access to technology and chose to use technology only when necessary in large group settings. Judy claimed a positive relationship with technology. She used technology daily with her classes and was in the Master Technology Teacher program at a southeastern university.

The expectations of technology within the clinical experience were either matched or met in most instances for preservice and mentor teachers. This meeting of expectations is primarily due to a lack of expectations by the preservice teachers. The mentor teachers' expectations were for technology interactions during the process to continue as they had in previous clinical experiences. These expectations were met.

Planning

During the planning process for the clinical experience, technology was an afterthought. The preservice teachers stated that they would wait on planning until viewing available technology. The mentor teachers did little planning for the clinical placement and no planning as it related to technology prior to the clinical placement.

The mentor teachers' plans for technology inclusion in the clinical placement were all different. The plans were all capable of change based on the technology availability and scheduling. Jan expressed "I would incorporate [technology] in some way. We have the interns. And each of the interns we have had to use the technology in some way."

The preservice teachers stated that every lesson presented took at least an hour of preparation time. The more complicated the lesson plan, the more time would need to be devoted to preparation. Tammy felt that inclusion of technology made lesson planning faster and she felt confident in her use of technology. Dana and Carol noted that the inclusion of technology made lesson planning take longer. The positive use of technology was present with both participants, but the planning process would take longer due to extensive backup planning to ensure success.

The lesson plan analysis for preservice and mentor teachers had varied results. The preservice teachers' lesson plans for Dana and Carol noted no technology inclusion. Tammy's lesson plan included technology for teacher instructional purposes. The lesson plan contained no

hands-on use for students. The elementary mentor teachers' lesson plans contained no technology use. Middle school mentor teachers' lesson planning analysis showed that Mary had a lack of technology inclusion, whereas Jan had technology use for teacher instructional purposes and student hands-on usage. Ann did not present lesson plans but stated that technology was included according to topic covered. The high school mentor teacher lesson plans for Judy displayed a large amount of technology usage; conversely Susanne's did not.

The elementary mentor teachers had expected the status quo within the clinical experience process to be maintained. The mentors felt expectations were met. Laura stated, "Since I didn't really plan that much there wasn't a difference."

The amount of preparation time afforded the mentor teachers varied. They usually found out in advance. However, in the process, special circumstances can arise. Karen stated, "This last time they had to move one of the interns to place her in my room because of a situation she was in that she needed to get out of, so I only knew a day in advance. I was able to help out in that situation. I was very comfortable." All three elementary mentor teachers felt comfortable with the amount of planning time they received.

The mentor teachers' opinions of preservice teacher preparation were similar. All of the elementary mentor teachers felt that the preservice teachers were well prepared to use technology in the classroom but to different levels, based on the history of exposure prior to the university program.

Policy

The preservice teachers expressed that the university had influence in the clinical placement experience. Preservice teachers noted that the main area of influence was in the observation process, which decided if the teacher was a success or failure in the clinical

experience. The preservice teachers also commented on the inclusion of a slide show by a university class. The slide show was shown at all K-12 placements regardless of the grade level of students or technology available. Tammy commented on the 47-slide PowerPoint in the following way: “I consolidated that the best I could. They said we could bring that to grade level. So I deleted over half the slides. There were some slides that were just pics and some slides that were just one word. I deleted intro slides; they were just a waste of time. I deleted tons and tons and then would go on and delete some pics.”

The preservice teachers’ use of the slide show was stressful for students who did not have the technology available at their clinical placement. The inclusion of technology was required in the teaching observation. Tammy stated the following:

> Students were required to teach one lesson a semester with technology. That is why I was teaching the lesson with technology at this placement. They make you do it. So I had to do it. But where am I supposed to get it from? Like I said I felt like I severely inconvenienced the teachers. I had to borrow from the teachers. I am taking this from this one and it is used daily. She ended up writing the three slides on the board that day so I could use it. So I don’t think it should be enforced if the technology is not there. It’s not really fair to the preservice teachers that don’t have anything.

The preservice teachers stated that technology requirements for the clinical placement experience were not always supported by technology availability at the location.

The influence exerted over technology inclusion in the clinical placement setting by the teacher preparation program was seen differently by each mentor. The time available for preparation for each teacher was different. Mary stated that she did have preparation time. She described the process as follows: “We had some meetings. I got the rules and regulations. Then we met before it started. There was a good introductory program.”

The mentor teachers were aware that they would have preservice teachers on a rotation. Susanne stated, “We are in our third or fourth year, for two consecutive semesters at a time. We

have two weeks of prior notice. It is something we just expect." Judy stated that "we were told in advance." The mentor teachers were comfortable with the amount of time given to prepare for clinical placement.

The influence exerted over technology inclusion in the clinical placement setting by the teacher preparation program was present. All participants expressed that technology included in the clinical experience was monitored by the university through the observation process. The mentor teachers stated that no specific plan to use technology during the clinical placement experience was created.

Preservice and Mentor Teacher Attitudes Toward Technology

The preservice and mentor teachers' attitudes toward technology were all influenced by circumstances within the clinical experience process. The attitudes toward technology displayed by the preservice teachers' were generally positive. The preservice teachers frequently used technology in their personal lives. The attitudes toward technology that were displayed by the mentor teachers varied. Some of the mentor teachers were cautiously optimistic toward technology. Others felt confident and ready to use technology. The mentor teachers experienced various levels of comfort when using technology. Preservice and mentor teachers believed that the use of technology was beneficial for students.

The preservice teachers viewed mentor teachers as not being against the use of technology, but also as not being proactive in its usage. The mentor teachers encountered by the preservice teachers, in general, possessed positive attitudes toward technology. The preservice teachers stated that mentors would like to have and use more technology. The mentor teachers encountered allowed preservice teachers to choose the amount and frequency of technology use within the clinical placement experience.

The mentor teachers' opinions of the preservice teachers' attitudes toward technology were positive. They felt that the preservice teachers were usually competent and eager to use technology. The negative experiences related to preservice teacher technology usage were lack of initiative to incorporate or follow instructions in the usage of technology. Some of the mentor teachers relied on preservice teachers for technology assistance and instruction.

The mentor teachers noted that the preservice teachers' preparedness level when entering internship was adequate. The mentors stated that the preservice teachers were ready to use technology but functioned on different levels. The differing levels of competence were attributed to varying socioeconomic backgrounds prior to entering the education program.

The attitudes of preservice and mentor teachers toward technology during the clinical experience were similar. The preservice teachers were depending on the mentor teachers to direct them in the use of technology during their clinical experience. Similarly, the mentor teachers were waiting for the preservice teachers to initiate the use of technology. As a result, both groups would have used technology more often during the clinical experience process if they had taken the initiative.

The preservice and mentor teachers use of technology in personal and professional lives differed in description. The preservice teachers were able to make distinctions between personal and professional lives as it related to technology. The use of technology outside the classroom was more extensive. The mentor teachers were not able to separate personal and professional use. Laura characterized her technology use as communicative with preservice teachers. Linda said she used her computer daily. Then she blended the personal and professional use by stating, "I use the computers every day. We have a projector with screen that we actually just got in our class room last year and we use that several times a week. There are other tools I use more often

than that…. I use Word a lot. Obviously, the internet I use a lot. I make PowerPoint presentations at home and at school that we use." Karen also blended her personal technology use: "Whether it is in my vehicle or in my classroom or especially when we are in school because we use it every day. We are on the computer using email. Something that I am having to do with the computer daily." Judy stated personal technology use: "Outside the school? I am so school oriented all the time. After a few years it just all blends in together."

The preservice teachers easily made the delineation between technology use in personal and private lives. Use outside of professional lives was extensive. The mentor teachers' use of technology in personal lives was less extensive and when asked to describe personal use of technology, they blended the professional and private. This may be a function of having a greater use of technology in the classroom than outside. It could also be a function of a greater establishment of professional identity.

Technology Use During Clinical Experiences

The preservice teachers and the mentor teachers' use of technology during clinical placement was location based. Technology was used on an average of two to three times each week by preservice and mentor teachers. The preservice teachers believed technology was used as often as possible in all of the placements even when the circumstances were seen as prohibitive. The mentor teachers used technology during the clinical experience process. The mentor teachers made no changes in amount or type of usage for the clinical experience process. The mentor and preservice teachers' use of technology during clinical placement was largely built on availability and training.

The preservice teachers believed that the use of technology was not overly encouraged by mentor teachers, but Dana stated that technology usage was not discouraged and that she was

given every opportunity to use technology at her discretion. The preservice teachers expressed that the overall consensus among mentor teachers was to let the preservice teachers guide their own technology use. The availability and use of technology for the preservice teachers during clinical placement was different at each clinical experience location. Most of the time technology use was worked in as an extra. This group of preservice teachers agreed that the only frequent hands-on technology incorporation was seen at Flagstaff Elementary.

A trend was present among the mentor teachers to take advantage of the preservice teachers' technology knowledge. Many mentor teachers stated that they were able to learn from preservice teachers about technology. Karen was assigned a preservice teacher from the university that had great ideas and knowledge of technology. She would observe technology skills performed by the preservice teacher and repeat the skill. Karen relished the preservice teacher's help. The mentor teachers felt that the preservice teachers caught on fast in the use of technology for administrative purposes. The mentors noted that the preservice teachers were technically proficient but were lacking in classroom management and incorporation skills.

The preservice and mentor teachers used technology during clinical placement, but all would have used technology more often in clinical experiences if possible. Some of the mentor and preservice teachers expressed concerns about the proper use of technology and that best practices should be observed. They felt that technology should be properly integrated and not become a distraction to the true lesson.

Technology Availability

The types and amount of technology available at the clinical placements varied greatly. The preservice teachers believed that if technology had been available in the classrooms, technology would have been used more often. The amount and types of technology available at

clinical placement sites were big concerns for the preservice teachers. Tammy commented that the inequity of technology access was not fair. Carol felt that the technology available depended on clinical placement. She felt that advantage should be taken of the opportunity to use technology. Carol said, “I really do think the only main difference is who owns the technology and how easy it is to access. At my main placement in this classroom we can use it anytime we want to.”

The types and how much technology is available at the clinical placement sites have been recognized by mentor teachers as affecting technology incorporation. The typical class at the elementary school had an LCD projector, computer, and internet access. Many of the elementary classrooms were in the process of receiving Elmos. The typical middle school classroom would have an LCD projector and a computer connected to the internet. The amount and type of technology available in the middle school classroom depended on the subject being taught. The typical high school classroom had an LCD projector and a computer connected to the internet. The amount of technology available at the high school was dependent on the subject taught. All three of the schools had material for checkout from the library.

The city schools were seen as having superior technology over the county schools. Dana stated that she was placed in three county schools and then a city school, with the city school being much better equipped with technology. Some of the placement sites had computer laboratories available.

The technology available affected the amount of technology incorporated. If the technology available was stationed in the classroom it would be used more often than if it had to be checked out. Checking out or borrowing the materials from others caused issues with dependability and scheduling conflicts for both mentor and preservice teachers. If issues

developed with technology a backup plan was needed. The use of a backup plan allows for seamless instruction when technology does not work properly.

Barriers to Use

Subject area, age, and novelty are seen as prohibitive forces of technology usage in the clinical experience classroom. Preservice teachers viewed subject area as a factor that could be positive or negative. The preservice teachers viewed the use of technology in the classroom as easier with certain subjects and more challenging with others. Dana, a preservice teacher, had an optimistic view of technology use in the classroom. She felt that she would be able to use technology daily. This was questioned after her clinical placement: “I was only teaching reading. I realized it would be a little bit more difficult than it would be with science or social studies.” The perception is that the subject of reading would not lend itself as well to technology incorporation.

Carol, a preservice teacher, felt that technology was beneficial for students but it sometimes depended on the age of the students, the subject, and the novelty of the technology. If the students had not seen the technology she felt it could be a distraction from the subject matter. Carol felt that preparation time also depended greatly on the subject matter and age group that was being addressed. She stated, “It depends on the subject…. It depended on grade level but also the more I got used to making the lesson plans and the more I got used to using the equipment or anything that was available it took less time anywhere I went.”

The preservice teachers had comments about the subject area, but the mentor teachers did not. This could be due in part to the more global view of preservice teachers. The preservice teachers are seeing multiple subjects being taught. The mentor teachers are stationed in one classroom and are primarily concerned with the subject area and grade level they are teaching.

Lack of Technology Availability

The lack of technology available was recognized by all participants in the study as a discouraging factor in the use of technology in the clinical placement classroom. Preservice and mentor teachers believed that technology usage was driven by the technologies available and the technology on which the teachers are trained. Tammy, a preservice teacher, stated, "I didn't have a plan. I didn't know what technology was there until I walked in the first day and saw what they had." The preservice teachers would not preplan lessons with technology due to the differences in technology present from one clinical placement to another. The preservice teachers' use of technology during clinical experience was extensive, but dependent on clinical placement location and technology available. Carol stated the following:

> I took advantage of technology and the opportunity to use it because you never know what is going to be there. My first placement was at Thomas Elementary, and there was no technology. It never crossed my mind I would have to make lesson plans and integrate technology. But as I went to different schools and saw things that were there, I took advantage of those things and used them because the kids needed to see them.

The preservice teachers were willing to use technology in teaching as technology availability allowed.

The mentor teachers generally viewed the use of technology within the clinical placement in terms of satisfying university requirements. Laura, a mentor teacher, commented that technology was assessed on the observation form for the preservice teachers. She felt that the technology needed was not present in the classroom, so when observations were done the amount of technology was "stretched." Laura stated,

> I know on their observation there is a place for technology. I mark whether they use technology or not. The stretch is, yes, they used the CD player or something very simplistic, but they did use technology…Because a lot of them are saying I am not going to get the technology. The preservice teachers are really using technology, they just aren't thinking about a CD player as technology. You are just not thinking about it, so we stretch it.

The preservice and mentor teachers felt that the technology being shared school wide was a disabling factor toward the use of technology in the clinical placement classroom. In order to teach a technology lesson for an observation, Tammy had to find technology from outside her clinical placement classroom. She stated, “There is not a lot of technology here. It was very difficult for me to teach my technology lesson having to borrow it from one teacher and then could not get it to work so I had to take it from another teacher that uses hers on a daily basis and so it was difficult. I felt like I was inconveniencing some teachers to do it.”

An issue that adds to the challenge of sharing available technology is setting a time for use. Carol remarked, “I had to prepare a little bit more. Rather than making copies that morning. I had to go the extra mile and prepare things the night before and arrange for the technology to be in the classroom because it was not always available.” Carol further commented that technology being present in the classroom was important. If technology needed to be checked out it caused difficulty when schedule changes were needed. Dana thought that technology availability may have been a disabling factor in the use of technology. She commented, “As for the teachers, they used the technology that was available in the classroom because they didn’t have to go reserve anything or anything like that.” Due to the technology availability issue, preservice teachers had doubts when planning with technology. The preservice teachers would anticipate changes in what would be planned and what would actually happen. During clinical experiences the preservice teachers noted that issues with technology availability were present.

The preservice and mentor teachers believed that school funding played an important role in technology inclusion. If the school’s funding was adequate, the technology would be as well. If the school had poor funding, the technology present and the technology used would be diminished as well. The preservice teachers further commented that they could not understand

the lack of technology equity between schools. This issue was brought out by the preservice teachers and the mentors.

The mentor teachers were asked if they would use technology more if they could. The answer was "yes." All of the mentor teachers would have used technology more often. The pertinent issue noted by elementary mentor teachers was the lack of available technology funding to support technology acquisition and training. Karen also commented that technology needs to be supported fiscally:

> Technology is very expensive, and you have to have a really good plan as a school to bring these things in. With all of the things we are going through now (proration), it will platform out and plateau and [there will] just not be a lot of technology brought in because of the money. You see it every day because schools can't afford it. That is going to be the biggest disadvantage to the teachers; just not having the money.

The preservice teachers felt that technology availability should be equitable between schools. They noted from school to school that the amount of technology varied greatly. This perplexed them and left them questioning how this was possible. Carol felt that the amount of technology and funding for technology directly impacted the amount of technology used during the clinical placement process. Carol stated, "It depends on your school. I saw great programs and children were learning but it wasn't always through technology, but at the Flagstaff school the money is available. There are Promethean boards, and every student has a lap top. It is easier. It depends on your school and how much money your school has to spend on the technology."

The mentor teachers observed that the lack of training was a disabling factor in the clinical placement classroom. Karen thought that if she had someone to help her learn how to use technologies she would use them more often. She stated, "I would use [technology] more often if I had someone show me exactly how to use it." Linda addressed the funding issue by stating, "I think all the teachers are getting Elmos and screens. That is unheard of and especially with the

cut that is just something that our principal feels strongly about." Susanne said that if the technology were more available, she would attempt to use it more often. She mentioned, "Not every room has the same technology. I am trying to incorporate more. That is one of the things we are encouraged to do."

Lack of Organized Support System for Technology Assistance Within the School

The preservice and mentor teachers experienced anxiety when using technologies. They felt that if things went wrong they needed a backup plan. The method by which they would ask for help within the local school environment was not policy based but an understood method developed by the community over time. The preservice and mentor teachers involved in the clinical placement experience recognized a lack of organized internal technology assistance.

The preservice teachers would typically ask for help from whoever was available when the help was needed. Dana stated, "I typically had to go to whoever had a free minute and say, 'Hey, can you help me out with this?'" The methods of asking for help and whom to ask at Dana's clinical placement varied. She stated, "At Sparrow Elementary we had a tech specialist we went to, and then other than that I asked the librarian because that was typically where the technology was kept. They knew the most about it." Other than that, technology help was asked for from whomever the technology was borrowed from or from someone who had time to help. Carol stated, "For the most part I would try to figure it out. There was never anyone for me to go to when things were not working. All the teachers that I was with didn't know how to do it…the librarian knew about it sometimes and we could take it to her." Tammy would start the process of asking for help with the mentor teacher. If the mentor teacher could not help, she went to the person from whom she borrowed the technology.

The mentor teachers asked for help with technology in similar ways. Laura would primarily speak with other staff members to get help. Linda also asked for help from a fellow staff member. She said, “We have kind of a technology guru as we have tagged her. She is one of our reading specialists. And that is who we go to when we have trouble, either her or the media specialist.” Karen would contact other staff members when needed, stating, “Our librarian sometimes knows how to fix the problem.” She added, “Anybody that knows how to do it. I am not afraid to ask. I will ask parents, my interns, just anybody, if they have any idea how to use it. We feed off each other really well here. The teachers; we work together so this is what I do in my class. This is what you can do and help each other out.” Susanne stated, “If it is something really simple we may call a friend. The librarian is a close friend of mine, our media specialist.”

None of the schools involved in the study had a staff member exclusively for technology support. None of the schools had a formal plan for internal technology support and training. The consensus was that needed help came from whoever was available. The preservice and mentor teachers mentioned the librarian as part of the informal support system.

Lack of Technology Use

Lack of technology use in the classroom was addressed by preservice as well as mentor teachers. The preservice teachers indicated that the mentor teachers’ minimal use is due to lack of technology available and lack of technology training available. The preservice teachers agreed that most of the technology that was in place was not used to the fullest. The preservice teachers had differing thoughts on why that could be. Dana felt that the mentor teachers were open to preservice use but not interested in expanding their own use. She thought the mentor teachers encountered were not against the use of technology. She stated, “They thought it was great when I used it…. But they just kind of seemed like they wanted to continue on with whatever they had

been doing and to leave it to me to spice things up whenever necessary." Dana indicated that technology use was accepted, "given every opportunity possible. The mentor teachers said I could use it whenever I wanted to; it was at my discretion." Other preservice teachers felt that the mentors' lack of technology use centered around lack of available technology.

The mentor teachers believed that the preservice teachers were skilled in technology use but timid in technology use for instructional purposes. The mentor teachers suggested that the preservice teachers had less interaction with technology. Linda stated, "They don't use [technology] much. They don't use it very much at all actually. I haven't had any so far." She seemed to allow the preservice teachers to initiate technology use. Linda further addressed the preservice teachers' use of technology in the following statement: "Student teachers, they are really excited when we use [technology]. The preservice teachers don't put forth an effort and say 'I would like to do something using the Elmo.'"

Preservice Teacher as Embedded Technology Professional Development

Preservice and mentor teachers in this study recognized the role of preservice teachers in the professional development of classroom embedded technology. Many mentor teachers recognized and utilized the technology expertise of preservice teachers. Mentor teachers Karen, Laura, and Judy commented on the preservice teachers' role in technology professional development. Karen felt that "technology was second nature to most [preservice teachers]. It is something they can do really easy." She also stated, "Over the past 5 years I have seen technology grow so much that we are learning from them. In the past all interns came and all they did was soak up what we had and now I see [clinical experience technology instruction] doing a reversal effect and we are learning from them, too." Regarding preservice teacher technology assistance, Laura stated, "I always ask them things and say 'Help' maybe you can fix

this. I get stuck and say do you know how to do this?" Judy stated, "[My preservice teacher] pretty much taught me and together we taught the students." The mentor teachers see the situation as advantageous.

The preservice teachers seemed to feel pride in their ability to help. During time as preservice teachers, Dana and Carol were asked for help with technology from mentor teachers. Dana stated, "At one placement I had a teacher, one teacher at the school that came to me and asked me how to make a PowerPoint so that she could use one for her kids later on." Dana was seen by mentor teachers as a means to learn new and existing technologies.

Preservice teachers also expressed that mentor teachers allow preservice teachers to initiate their own use of technology. Carol stated the following regarding the mentor teachers: "They want us to learn and to help teach them, because they get into their classroom and don't see a lot of the new stuff and they don't know how to use it." Carol said that the mentor teacher wanted her to explore the classrooms' new technologies and then teach the mentor. She continued, "That is how it was when I used the Elmo, I had to figure that out myself. I kind of taught my teacher; I mean I had no idea I would have to figure it out for both of us." Carol felt that the mentor teacher wanted to be kept up-to-date on technology. If a preservice teacher is hesitant in the usage of technology during clinical placement it could restrict the amount of technology used. This attitude could create a situation where technology is underused due to lack of mentor or preservice teacher initiative.

Preparing for a Lesson with Technology

The process of preparing a lesson plan that included technology was different for the preservice and mentor teachers involved in the clinical experience. The difference is not

experience in lesson planning but comfort in technology use. The more technological knowledge and training, the more technology will be included in lesson plans.

Two of the preservice teachers indicated that the inclusion of technology in a lesson plan created more work and took more time. Carol stated that a major issue when lesson planning with technology was the availability of technology in the classroom. She stated, “I really do think the only main difference is who owns the technology and how easy it is to access.” Carol further stated that additional planning for the use of technology was required. The use of technology required that a backup plan be in place. Carol commented on the idea of flexibility in the use of technology. She felt that when you arrived at a placement and assessed what was available you could change your plans. She stated, “I would go ahead and write it in; there would not be a doubt in my mind.” Dana’s planning of a lesson was generally one hour. The amount of time it took to prepare for a lesson plan including technology was greatly increased, due to the necessity of having a backup plan that did not require the use of technology.

One preservice teacher participant expressed that planning a lesson with technology was faster. Tammy believed that lesson planning including technology was less labor intensive. She said that the preparation for lesson plans including technology was easier. She noted that technology tools could speed up the planning process and using technology in the lesson plan could make planning faster.

The mentor teachers, with the exception of one, did not make special plans for the use of technology during the clinical experience process. The lesson planning done by mentor teachers included general headings. It was not specific as to instruction or technology inclusion. The exception to this was Judy, the high school master technology teacher.

Linda stated that her lesson plans did not relate directly to technology. She did not put technology in lesson plans specifically but did incorporate technology when possible. She tried to help the preservice teacher by using various technologies in the classroom. She started the lesson and then usually the preservice teacher took over to get practice. Judy's lesson planning was heavy in technology, her teaching subject area.

Best Use of Technology

The concept of "best" use of technology was different for each participant. The mentor teachers were concerned with the appropriate use of technology. Ann stated that certain concepts were better addressed by means other than technology. The preservice teacher technology use was viewed by the mentor teachers as part of the observation process. It was seen as compartmentalized, not included as part of the curriculum. With this attitude, technology was only a supplementary teaching tool during the clinical placement process. Karen felt the best use of technology could be affected by situational issues. The disrepair or unavailability of technology can cause the technology to be used as a supplement and not as true curriculum incorporation. Karen stated, "We use it for extra anyway." She then commented her use of technology was "as a review."

Tammy, a preservice teacher known for her technology expertise approached the subject of technology fatigue and the appropriate use of technology. She felt that technology use in the classroom was important but not all encompassing. Tammy cautioned against falling into a routine:

> You don't need to do a PowerPoint everyday or all the time. Like these huge projects where they work on them in class. Those can be more meaningful, and they can learn more from them because they are literally building history themselves. So I don't know. I feel like technology is good; they need to see other things, they need to learn how to learn without it too. It does not need to be a crutch or be routine to them to Google everything.

> Sometimes they need to sit down with a book and read or learn how to look up information in other ways besides Google.

She felt that students should not become "used to" or bored due to overuse of technology. Tammy also mentioned that some subjects would be better addressed by means other than technology.

Summary

The preservice teacher participants in this study had clinical experiences that affected their attitudes toward and usage of technology in the classroom. The preservice teachers possessed a positive attitude toward technology use in the classroom. They expected to encounter basic computer application and internet usage within the clinical placement setting. The participants underestimated the variety of technology available in the clinical placement classroom. They were pleasantly surprised to encounter several different types of technology.

Participation in the clinical experience brought a greater level of caution when using technology due to technology availability, reliability and increased planning time. The disabling factors lead to an increased level of timidity when attempting to use technology. Future inclusion of technology by the preservice teachers may be less likely if disabling factors are present. The participants expected the use of technology to be simple. Confronted with the realities of technology use they came to the realization that the incorporation of technology was not always as easy as it looks.

The preservice participants attained a heightened sense of awareness pertaining to technology availability inequities present across placement sites. They attempted to postulate reasons for this inequity and stated their future use of technology in the classroom would be dependent upon what was available where they were hired.

The clinical placement experience in the past was a more one way experience, where mentor teachers provided preservice teachers with knowledge. The current preservice teachers are able to add technology knowledge to clinical experience process. This has created a two way learning experience where both mentor and preservice teachers can contribute. Preservice teachers have pride in their contribution and the mentor teachers relish the embedded technology professional development.

CHAPTER 6

DISCUSSION, IMPLICATIONS, RECOMMENDATIONS, AND CONCLUSIONS

Discussion

Two of the educational priorities for 2010 from the International Society for Technology in Education (ISTE) emphasize the need for technology in the k-12 classroom and in preservice teacher programs:

2. Leverage education technology as a gateway for college and career readiness. Last year, President Obama established a national goal of producing the highest percentage of college graduates in the world by the year 2020.
5. Teacher preparation is one of the most important aspects of a world-class 21st Century system of education and learning. A federal investment in a new, technology-savvy generation of teachers is critical. To ensure their success in the classroom, preservice teachers must be prepared to use technology and integrate it into the curricula before their first day as a teacher of record (ISTE, 2010).

Because of this, it is essential that technology inclusion in clinical placements continues to be a priority.

Strides are being made to address the barriers to technology incorporation: lack of access, professional development, and administrative support (Albion & Ertmer, 2002; Albion & Gibson, 2000; Ertmer et al., 2003; NCES, 2000; Wang et al., 2004). The research reveals that our classrooms are not incorporating technology into the curriculum (Bauer & Kenton, 2005; Betrus

& Molenda, 2002; Flowers & Algozzine, 2000). Because of the contradiction between effort and result, technology access, professional development, and administrative support should receive emphasis.

The principal research question directing this study was the following: How does the clinical placement experience of preservice teachers affect their attitudes toward and the use of technology in the classroom? This question was subdivided into four areas of interest: expectations, planning and policy; preservice and mentor teachers' attitudes toward technology; technology use during clinical experiences; and technology availability.

Expectations, Planning, and Policy

The preservice and mentor teachers' experiences with expectations, planning, and policy varied. Expectations in the clinical experience process were generally met for preservice and mentor teachers. This was due to lack of preservice teacher expectation and a mentor expectation of the technology usage in the clinical experience remaining the same. Planning for technology in the clinical experience was not a priority. The university as an influence toward technology usage during clinical experience is a force of debatable strength. Wright, Gordon, and Stallworth (2002) stated that teacher preparation programs should include technology in the curriculum but should also provide opportunities for the students to learn in the classroom setting. Preservice and mentor teachers' attitude should be seen as an essential part of the teachers' planning process. The mentor and preservice teachers' lesson plans had differing levels of technology inclusion. Judy and Jan were the only participants that planned for hands-on technology inclusion. Bauer and Kenton (2005) stated that one of the main barriers to technology inclusion was the extra planning time needed for creating technology inclusive lesson plans.

The main goal of preservice and mentor teachers was to meet university requirements. A southeastern university policy regarding preservice teachers during the clinical experience included the use of technology, however the policies were vague. The policy for mentor teachers did not mention the use of technology, although part of the preservice teacher evaluation did include it. The cross-case analysis for this study revealed that preservice and mentor teachers' use of technology during the clinical placement process was at the discretion of the mentor teacher. Without mentor policies aimed at the inclusion of technology, the preservice teachers' experiences with technology in clinical placement will continue to be erratic.

Preservice and Mentor Teachers' Attitudes Toward Technology

Bullock (2004) stated that prior success or failure in the use of technology appeared to influence attitude and incorporation. Success or failure during the field placement, especially when the preservice teacher was paired with a mentor teacher who included technology, made the greatest impact. The manner in which the mentor teachers addressed preservice teachers' technology use in clinical experiences related to the mentors' attitudes toward technology, which were generally positive. The mentors believed that technology was beneficial for students and wanted more training for themselves with technology. Fowler (2007) stated, "Teachers with the highest rate of technology inclusion have had 30 hours of technology related professional development" (p. 74). The mentor teachers' personal and professional use of technology blended together. The descriptions given of personal technology use included work-related activities.

Laffey and Musser (1998) asserted that we need to understand the attitudes that preservice teachers bring into schools. A greater understanding of preservice attitude and how it relates to inclusion within the clinical experience would be beneficial. The preservice teachers all claimed positive attitudes toward technology. The preservice teachers all contended that

technology use by students was positive. Snider (2003) stated that recent research efforts have become committed to determining the extent to which attitude impacts future technology usage of preservice teachers.

This multisite case study revealed that preservice and mentor teachers' attitudes toward technology during the clinical placement experience included reluctance to take charge of the classrooms' technology. The attitude of preservice and mentor teachers toward technology during the clinical experience was tentative. Albion (2001) stated, "Beliefs and attitudes of teachers have been shown to influence the uptake of technologies in their classrooms and studies of computer use during practicum have suggested that, despite possessing positive dispositions toward computer use, preservice teachers lacked confidence in their capacity to teach successfully with computers" (p. 323). The preservice teachers were expecting mentor teachers to initiate technology use during their clinical experience. The mentor teachers were waiting on the preservice teachers to initiate the use of technology. The reluctance to take charge of usage by participants may be related to the lack of confidence due to lack of training. It may also be due in part to technology availability, lack of a technology support system within schools, time constraints when planning with technology, and policy vagueness.

Preservice and mentor teachers' attitude should be acknowledged as an integral part of the teachers' planning process. The teachers' planning is directly related to their attitudes and beliefs and ultimately affect implementation within their pedagogy (Albion, 2001).

Use of Technology in Clinical Experience

Snider (2003) contended that many preservice teachers enter clinical experience to find a lack of technology use in school classrooms and a lack of faculty trained to use them if it is present. Laura, another mentor, noted that the preservice teachers copied the mentors' lead. She

stated, “I was practically the model. If I would get on the computer she would get on the computer.” Preservice teachers continue to follow the examples given by mentor teachers. The use of example in the context of the classroom is the optimum situation. This makes clinical experience the most advantageous avenue for exposure to the technology incorporated classroom. Unfortunately the examples that are encountered during clinical experience are not always good examples (Albion & Gibson, 2000). The use of technology in the clinical experience can leave a lasting impression on preservice teachers. Mentor teacher Susanne told of an experience with technology during her clinical placement, “I think over time I will gradually become more comfortable. But I have had to, I think, I go back to a long time ago student teaching. We are doing a reel to reel. Things are going wild. Kids are cracking up during my teaching internship. It just kind of sets the precedent. It is not like you have a quiet patient audience in front of you, ever.” She stated further:

> If you have a really bad experience, you can’t live as though you have not had it…. So I am trying to overcome and realize [that is just one bad experience]. Along with old age and maturity comes, you know, you are going to have problems. It is not going to be perfect. I am reluctant to incorporate [technology] in all that I do. I try to use it in large group settings. The room wasn’t even set up for [technology]. I thought they had a screen. It is always something.

It is probable that teacher attitudes are strongly influenced by their prior training (Delcourt & Kinzie, 1993). The preservice teachers had varied experiences with technology in the clinical experience, but their attitudes toward technology were positive at the conclusion of the clinical experience. The constant was that they were all concerned with what technology would be present.

Shared technology created difficulty for preservice and mentor teachers. If the technology was not stationed in the classroom, issues with scheduling and proper function arose. This was a disabling factor that would lessen the amount of technology use in the clinical placement classroom.

Technology Availability

The lack of technology-rich clinical experiences led by teachers who model curriculum integrated technology is a problem (Bullock, 2004; Strudler & Wetzel, 1999). The participants in this study viewed technology availability as the main barrier to a technology-rich clinical experience. The technology needed to be available and convenient. If the materials were available but shared, it reduced the mentor and preservice teachers' willingness to use technology. The shared technology caused issues with scheduling and reliability. These variables required increased planning and questionable results. The study participants expressed inadequate availability of technology as a disabling factor. Many clinical placement sites have a large amount of technology with limited access due to time and scheduling constraints (Bullock, 2004). Tammy, a preservice participant, stated that the inequities of technology among placements had prepared her for future teaching. Tammy stated that if she gets a job teaching next year she has a solid idea of how to use technology, depending on the availability.

Barriers to Use

Forces that could have a negative impact on technology usage in the clinical experience classroom were subject area, novelty of the technology, university influence, discipline issues and classroom availability of technology. All of these issues were barriers discussed.

Best Use of Technology

The concept of "best" use of technology was different for each participant. The mentor teachers were concerned with the appropriate use of technology. The preservice teacher technology use was viewed by the mentor teachers as part of the observation process. A mentor that does not use technology or encourage the use of technology in any capacity other than an extra if time is available is a disabling factor (Bullock, 2004). With this attitude, technology was only a supplementary teaching tool during the clinical placement process. The disrepair or unavailability of technology can cause the technology to be used as a supplement and not as true curriculum incorporation.

Lack of Organized Support System for Technology Assistance within the School

The teachers experienced anxiety when using technologies. They felt that if things go wrong they need a backup plan. The preservice and mentor teachers would typically ask for help from whoever was available when the help was needed. The method by which they would ask for help within the local school environment was not policy based but an understood method developed by the community over time. The preservice and mentor teachers involved in the clinical placement experience recognized a lack of organized internal technology assistance. The consensus was that needed help came from whoever was available. The preservice and mentor teachers mentioned the librarian as part of the informal support system.

Lack of Technology Availability

The lack of technology available was a factor in the use of technology in the clinical placement classroom. All participants believed that technology usage was driven by the technologies available and the technology on which the teachers were trained. The preservice and mentor teachers felt that the technology not being stationed in the classroom was a disabling

factor toward the use of technology in the clinical placement classroom. Many clinical placement sites have a large amount of technology with limited access due to time and scheduling constraints (Bullock, 2004). All participants believed that school funding of technology and professional development are important for technology inclusion. The mentor and preservice teachers observed that the lack of training was a disabling factor in the clinical placement classroom.

Lack of Technology Use

The preservice and mentor teachers both addressed the lack of technology use. The disposition of educators toward computer inclusion in the classroom was affected by the amount of training in technology integration. Educators who have received training in computer use and integration are more likely to have a positive attitude toward the use of computers in the classroom setting (Milbrath & Kinzie, 2000). The preservice teachers indicated that the mentor teachers' minimal use was due to lack of technology available and lack of technology training available. The preservice teachers agreed that most placement technology was not used to the fullest levels. The mentor teachers believed that the preservice teachers were skilled in technology use but timid in technology use for instructional use. The mentor teachers suggested that the preservice teachers had less technology interaction.

Preservice Teacher as Embedded Technology Professional Development

The preservice and mentor teacher participants recognized the role of preservice teachers in classroom embedded technology professional development. Many mentor teachers recognized and utilized the technology expertise of preservice teachers. The mentor teachers allowed the preservice teachers to set their own technology agenda. If a preservice teacher was hesitant to use

technology during the clinical placement, less technology was used. This attitude could create a situation where technology is underused due to lack of mentor or preservice initiative.

Preparing for a Lesson with Technology

The teachers' planning is directly related to their attitudes and beliefs and ultimately affect implementation within their pedagogy (Albion, 2001). Lesson plan preparation with technology for the participants involved in the clinical experience process was different. The difference was in comfort of technology use. The more technological knowledge and training the more technology is used in lesson planning. The amount of time it took to prepare for a lesson plan including technology was greatly increased, due to the addition of planning for a backup plan that did not require the use of technology.

Implications for Practice

Using the study's findings as a foundation, the following implications for practice were developed:

1. The addition and clarification of policies related to technology requirements for mentor teachers participating in the clinical experience process would provide a greater awareness to mentor teachers of the importance of technology in the clinical experience.

2. The attitudes of preservice and mentor teachers toward technology in the clinical experience process could be aided by the further delineation of the preservice and mentor teacher roles as related to technology. This could be accomplished in the initial meeting of the preservice and mentor teachers before the initiation of the clinical experience.

3. Giving preservice teachers advance knowledge of available technologies for each placement site would allow them to better prepare lesson plans ahead of time.

4. The local school environment would benefit from the creation of an in-house technology assistance procedure. This would allow preservice and mentor teachers to have greater confidence in the use of available technology.

Recommendations for Further Research

There are a number of recommendations for further research based on limitations, comparisons, and conclusions. One recommendation would be to separate the selection of participants. Choose the preservice and mentor teacher participants from differing locations. This should increase participation and openness to the process. No direct data comparison of preservice and mentor teacher was intended, but the connotation was inferred by the participants. Separating the tie to location could end this issue, increasing the validity of the study findings.

The policies governing the use of technology in clinical placement experiences warrant further research. The preservice teachers have a vague requirement of technology use in the clinical placement. The requirement found on the southeastern university's website is the following: "Teacher interns are expected to plan and teach one or more units during the internship. The unit MUST include the use of technology." This requirement is enforced by one lesson observation requiring technology. The mentors have no requirements of technology use from the university or from the employing school system. Further exploration of the policies would be of interest.

Taking a closer look at the dynamic present between preservice and mentor teacher initiation of technology use could be beneficial. The attitude of preservice and mentor teachers toward technology during the clinical experience was tentative. The preservice teachers were expecting mentor teachers to initiate technology use during their clinical experience. The mentor

teachers were waiting on the preservice teachers to initiate the use of technology. The factors involved in this "good guest, good host" paradox would be of interest.

A quantitative exploration of technology that is included in clinical experiences would be warranted. The use of technology in the clinical experience placement is not usually hands-on technology inclusion. The use of a quantitative methodology over a large group of participants would perhaps provide additional data for more generalizable results.

An exploration of the effect of school shared materials in the use of technology would be of interest. The preservice teachers noted the presence of school shared technology was not an indicator of use. The preservice teachers noted that shared technology had disadvantages that could discourage use.

The librarian's role in the school technology support system warrants exploration. Every research participant mentioned the librarian as technology support. This statement was prevalent at every school that did not have a designated technology staff member.

Conclusions

There is no question that the proper inclusion of technology into curricula is a challenge facing educators today. It is considered common knowledge within the field of educational technology that preservice teachers should be practicing the incorporation of technology into their teaching, and that this does not always happen (Dexter & Riedel, 2003). Nationally and locally, funding is being spent to insure the presence of technology. The mentor and preservice teacher participants desired more technology to include in teaching.

The technology available at the three case study locations was used primarily as a supplementary teaching tool and not incorporated into the curriculum. The true incorporation of hands-on technology was present at one school described in the study. This school was

recognized by preservice teachers as possessing the largest amount of technology of any clinical placement.

The influence of policy on mentor and student teacher use of technology during clinical placements was largely based on availability and training. The mentor teachers observed that the preservice teachers quickly learned the use of technology for administrative purposes. The mentors noted that the preservice teachers were technically proficient but lacked in classroom management and incorporation skills. Some of the mentor and preservice teachers expressed concerns about the proper use of technology. The mentor and preservice teachers who expressed concern thought that best practices should be observed. They commented that technology should be properly integrated and not become a distraction to the true lesson.

This study endeavored to provide insight into the relationship between clinical experience interactions with mentor teachers and preservice educators' attitudes toward technology. The attitudes of preservice and mentor teachers toward technology during the clinical experience were similar. The preservice teachers were waiting on the mentor teachers' direction with technology usage within the clinical experience. The mentor teachers were waiting on the preservice teachers to initiate the use of technology. As a result of these interactions, both the mentor and the preservice teachers wished they had used technology more often during the clinical experience process.

The extent to which technology was used in the clinical placement by preservice teachers was affected by the perceived success or failure of interactions with technology and mentor teachers during this process. The preservice teachers had placements within both technology-rich and technology-poor environments. The experience of the preservice teachers mirrored the mentor use of technology at that particular placement. Mentor use was a function of availability,

ease of use, and training. The preservice teachers observed that all schools were different and future technology use would be guided by job placement. The preservice teachers noted that the different mentor teacher interactions prepared them for different levels of technology use in future job placement. Tammy stated the following about Flagstaff as opposed to other clinical placements:

> I got an unrealistic view of how it is. Because realistically, I don't know that I will ever see a school that has that much technology again. So having an internship here, I have learned from this placement how to teach class without technology. At Flagstaff school, that was amazing; but if you don't have that technology, you are not going to be able to teach like they teach. With the hands on here, you go to the computers, make the PowerPoint on this topic, and use the internet to look it up. I would love for every school to have that kind of technology to use with the kids, but it is not realistic. So at my other placements, yes, they gave me a realistic view of how to use technology in the classroom and how they use it is probably how I would use it.

The type of technology available at each internship location was important. If the technology was not available in the classroom, usage lessened. The preservice teachers spoke of a need for extra planning, issues with technology not working properly, and scheduling difficulties. These issues were diminished by the technology being stationed in the classroom. Technology stationed in the classroom with an adequately trained mentor teacher will be the most influential means to create a more technologically inclusive classroom.

The overall question was how clinical experiences of preservice teachers affect their attitudes toward and the use of technology in the classroom. The preservice teachers possessed positive attitudes toward technology use in the classroom, but participation in the clinical experience presented a greater level of timidity from the preservice teachers due to technology availability and reliability and increased planning time. The participants expected the use of technology to be simple, but when confronted with the realities of technology use, they came to the realization that the incorporation of technology was not always as easy as it looks. The

preservice participants also attained a greater awareness of technology inequity among placement sites. The mentor teachers did not provide much guidance for the use of technology, and while the preservice teachers expected the mentor teachers to take the lead, the mentor teachers expected the preservice teachers to take the lead. This led to the preservice teachers not using technology as much as they might have if the mentor teachers had modeled and encouraged use. Preservice teachers may be less likely to attempt the use of technology if disabling factors are present during clinical experiences and they do not gain the experience they need to use technology in their classrooms in the future. The expectation for clinical experiences in the past has been that the preservice teachers learn from the mentor teachers, but in the current study, the preservice teachers were able to provide their mentor teachers with new technology knowledge and skills, creating a more collaborative clinical experience.

REFERENCES

Abbitt, J., & Klett, M. (2007). Identifying influences on attitudes and self-efficacy beliefs towards technology integration among pre-service educators [Electronic version]. *Electronic Journal for the Integration of Technology in Education, 6*, 28-42.

Albion, P. (2001). Some factors in the development of self-efficacy beliefs for computer use among teacher education students. *Journal of Technology and Teacher Education, 9*(3), 321-347.

Albion, P., & Ertmer, P. (2002). Beyond the foundations: The role of vision and belief in teachers' preparation for intergration of technology. *TechTrends, 46*(5), 34-38.

Albion, P., & Gibson, I. (2000). Problem-based learning as a multimedia design framework in teacher education. *Journal of Technology and Teacher Education, 8*(4), 315-347.

The American Heritage Dictionary of the English Language. (2000). Boston: Houghton Mifflin.

Bauer, J., & Kenton, J. (2005). Toward technology integration in the schools: Why it isn't happening [Electronic Version]. *Journl of Technology and Teacher Education, 13*(4), 519-546.

Betrus, A., & Molenda, M. (2002). Historical evolution of technology in instructional technology in teacher education programs. *TechTrends, 46*(5), 18-33.

Beyerbach, B., Walsh, C., & Vannatta, R. (2001). From teaching technology to using technology to enhance student learning: Preservice teachers' changing perceptions of technology infusion. *Journal of Technology and Teacher Education, 9*(1), 105-127.

Bullock, D. (2004). Moving from theory to practice: An examination of the factors that preservice teachers encounter as they attempt to gain experience teaching with technology during field placement experiences. *Journal of Technology and Teacher Education, 12*(2), 211-237.

Clinton, W. (1996). Jan. 23 State of the Union Address (Speech). U.S. Capital. Retrieved June 5, 2008, from http://clinton2.nara.gov/WH/New/other/sotu.html

Compeau, D., & Higgins, C. (1995). Computer self-efficacy: Development of a measure and an initial test. *MIS Quarterly, 19*(2), 189-211.

Creswell, J., & Miller, D. (2000). Determining validity in qualitative inquiry. *Theory Into Practice, 39*(3), 124-130.

Darling-Hammond, L. (1995). Changing conceptions of teaching and teacher development. *Teacher Educatioin Quarterly, 22*(4), 9-26.

Dawson, K., & Dana, N. (2007). When curriculum-based, technology-enhanced field experiences and teacher inquiry coalesce: An opportunity for conceptual change. *British Journal of Educational Technology, 38*(4), 656-667.

Delcourt, M., & Kinzie, M. (1993). Computer technologies in teacher education: The measurement of attitudes and self-efficacy. *Journal of Research and Development in Education, 27*(1), 35-41.

Dexter, S., Doering, A., & Riedel, E. (2006). Content area specific technology integration: A model for educating teachers. *Journal of Technology and Teacher Education, 14*(2), 325-345. Retrieved July 14, 2008, from Eric database.

Dexter, S., & Riedel, E. (2003). Why improving preservice teacher educational technology preparation must go beyond the college's walls. *Journal of Teacher Education, 54*(4), 334-346. Retrieved July 14, 2008, from http://jte.sagepub.com/cgi/content/ refs/54/4/334

Duncan, A. (2009). October 22 remarks to Teachers College, Columbia University (Speech). New York, NY. Retrieved October 22, 2009, from http://www.ed.gov/news/speeches/ 2009/10/10222009.html

Ertmer, P., Conklin, D., & Lewandowski, J. (2003). Increasing preservice teachers' capacity for technology integration through use of electronic models. *Teacher Education Quarterly*, Winter, 95-112.

Flowers, P., & Algozzine, R. (2000). Development and validation of scores on the basic technology competencies for educators inventory [Electronic version]. *Educational and Psychological Measurement, 60*(3). 411-418.

Fowler, E. (2007). *Teacher use and integration of technology in Alabama K-12 public school classrooms: Influences and barriers.* The University of alabama/ProQuest ATT 3270491.

Gomez, L., Gamoran, S., Griesdom, J., & Finn, L. (2008). Creating social relationships: The role of technology in preservice teacher preparation. *Jounal of Teacher Education, 59*(2), 117-131.

International Society for Technology in Education. (2010). Top Ten in '10: ISTE's education technology priorities for 2010. Retrieved July 14, 2010, from http://www.iste.org/ Content/NavigationMenu/Advocacy/Top_Ten_in_10.htm

Kabadayi, A. (2006, October). *Analyzing pre-school student teachers' and their cooperating teachers' attitudes towards the use of educational technology.* Retrieved October 6, 2008, from The Turkish Online Journal of Educational Technology: http://www.tojet.net/ articles/541.htm

Karsten, R., & Roth, R. (1998). Computer self-efficacy: A practical indicator of student computer competency in introductory IS courses. *Informing Science, 1*(3), 61-68.

Kinzie, M., Delcourt, M., & Powers, S. (1994). Computer technologies: Attitudes and self-efficacy across undergraduate disciplines. *Research in Education, 35*(6), 745-768.

Knezek, G., & Miyashita, K. (1993). Handbook for the young children's computer inventory. Denton, TX: Texas Center for Educational Technology.

Krueger, K., Hansen, L., & Smaldino, S. (2000). Preservice teacher technology competencies. *TechTrends, 44*(3), 47-50.

Laffey, J. (2004). Appropriation, mastery and resistance to technology in early childhood preservice teacher education. *Journal of Research on Technology in Education, 36*(4), 361-382.

Laffey, J., & Musser, D. (1998). Attitudes of preservice teachers about using technology in teaching. *Journal of Technology and Teacher Education, 6*, 223-241.

Merriam, S. B. (1998). *Qualitative research and case study applications in education.* San Francisco: Jossey-Bass.

Milbrath, Y-C. L., & Kinzie, M. B. (2000). Computer technology training for prospective teachers: Computer attitudes and perceived self-efficacy. *Journal of Technology and Teacher Education, 8*(4), 373-396.

Milman, N., & Molebash, P. (2008). A longitudinal assessment of teacher education students' confidence toward using technology. *Journal of Educational Computing Research, 38*(2), 183-200.

National Center for Educational Statistics. (2000). *Teachers tools for the 21st century.* U.S. Department of Education. Office of Research and Improvement [Online]. http://nces.ed .hov/pubsearch/pubsinfo.as?pubid=2000102

National Council for Accreditation of Teacher Education. (2008). *Professional standards for the accreditation of schools, colleges, and departments of Education.* Washington, DC: Author.

Niederhauser, D. S., & Lindstrom, D. L. (2007). Evidence of the NETS*S in K-12 classrooms: Implications for teacher education. *Journal of Technology and Teacher Education , 15*, 483-512.

Park, S. H., & Ertmer, P. A. (2008). Impact of problem-based learning (PBL) on teachers' beliefs regarding technology use. *Journal of Research on Technology in Education* , 247-267.

Punya, M., & Koehler, M. J. (2006). Technological pedagogical content knowledge: A framework for teacher knowledge. *Teachers College Record, 108,* 1017-1054.

Rizza, M. (2000). Perspectives on preservice teachers' attitudes toward technology. *The Teacher Educator, 32*(2), *132-147.*

Simonson, M., & Maushak, N. (1996). Instructional technology and attitude change. In M. Simonson, & N. Maushak (Eds.), *Instructional strategies research* (pp. 984-1016). Ames: Iowa State Univeristy.

Snider, S. (2003). Exploring technology integration in a field-based teacher education program: Implementation efforts and findings. *Journal of Research on Technology in Education, 34*, 230-249.

Strudler, N., & Wetzel, K. (1999). Lessons from exemplary colleges of education: Factors affecting technology integration in preservice programs. *Educational Technology Research and Development, 47*(4), 63-81.

Torkzadeh, G., Koufteros, X., & Pflughoeft, K.(2003). Confirmatory analysis of a computer self-efficacy instrument. *Structural Equation Modeling, 10*(2), 263-275.

Vannatta, R., & Beyerbach, B. (2000). Facilitating a constructivist vision of technology integration among education faculty and preservice teachers. *Journal of Research on Computing in Education, 33,* 132-148.

Wang, L., Ertmer, P. A., & Newby, T. (2004). Increasing preservice teachers' self-efficacy beliefs for technology integration. *Journal of Research on Technology in Education, 36*(3), 231-250.

Webster's Dictionary. (1989). New York: Lexicon.

Wright, V., Gordon, W., & Stallworth, J. (2002). Master technology teacher: A partnership between preservice and inservice teachers and teacher educators. *Contemporary Issues in Technology and Teacher Education, 2*, 353-362.

Yin, R. K. (2003). *Case study research, design, and methods* (3rd ed.). Newbury Park: Sage.

Zhang, Y., & Espinoza, S. (1998). Relationships among computer self-efficacy, attitudes toward computers, and desirability of learning computing skills. *Journal of Research on Technology in Education, 30*(4), 420-436.

APPENDIX A

INTERVIEW PROTOCOL FOR PRESERVICE TEACHERS

Interview Protocol for Preservice Teachers

What do you think about technology? Do you enjoy using it? Do you think it is beneficial for students?

How do you use technology in your daily life?

How often do you use technology in your daily life?

Describe your relationship with technology.

What types of technology were available during your clinical placement?

Who did you ask for help with technology when things were not working?

Who did you ask for help with technology if you didn't know how to use some technologies?

How did you use technology in your teaching during clinical placement?

How often did you use technology in your teaching during clinical placement?

Did your mentor teacher encourage the use of technology during your clinical placement?

What was your mentor teachers' attitude toward technology during clinical placement?

What kinds of opportunities did your mentor teacher offer for using technology?

Would you have used technology more often if you could have during your clinical placement?

Describe how your mentor teacher used technology during your clinical placement. How often, what types of lessons (rote learning or higher level thinking skills), etc.

Are there any other comments concerning the use of technology in your clinical placement?

What if any influence is exerted over technology inclusion in the clinical placement setting by the teacher preparation program?

How did your experience meet expectations?

How much technology did you plan to use in your clinical placement?

How much time did you have to prepare for your lessons?

Did you have a plan to use technology?

Was there a difference between what was planned and what took place?

If so, why was there a difference between what was planned and what took place?

APPENDIX B

INTERVIEW PROTOCOL FOR MENTOR TEACHERS

Interview Protocol for Mentor Teacher

What do you think about technology? Do you enjoy using it? Do you think it is beneficial for students?

How do you use technology in your daily life?

How often do you use technology in your daily life?

Describe your relationship with technology.

What types of technology are available in your classroom?

What types of technology are available in your school?

Who do you ask for help with technology when things are not working?

Who do you ask for help with technology when you don't know how to use some technologies?

Describe how you ask for help with technology when it is needed.

How do you use technology in your teaching?

How often do you use technology in your teaching?

Would you use technology more often if you could?

How did your student teacher(s) use technology during his/her clinical placement?

What was your student teacher(s) attitude toward using technology during his/her clinical placement? Were they hesitant or eager?

Did your student teacher(s) seem prepared to use technology during his/her clinical placement?

What if any influence is exerted over technology inclusion in the clinical placement setting by the teacher preparation program?

Was there a plan for the clinical placement as it relates to technology?

What kind of preparation time did you have for the clinical placement?

Was there a difference between what was planned and what took place?

How did experience meet expectations?

Are you in the Master Technology Teacher program?

APPENDIX C

INFORMED CONSENT FORM

Informed Consent for a Non-Medical Study

Study title: Preservice Teachers' Clinical Experiences and Attitudes Toward Technology Inclusion

You are being asked to take part in a research study. This study is called "Preservice Teachers'

Clinical Experiences and Attitudes Toward Technology".

What is this study about? What is the investigator trying to learn?
This study is being done to find out how preservice teachers' clinical experiences impact their attitude toward using technology in the classroom. The study will examine the following; how much technology is available for use, how much technology is used by preservice teachers during their clinical experience and how much technology is used by mentor teachers while supervising clinical placement. The method used to determine the amount of technology used will be focus group interviews. In the focus group interview you will be asked to give answers to a series of questions that relate to your personal experiences with technology. The study will be trying to learn what factors encourage or discourage the use of technology during clinical experiences.

Why is this study important or useful?
This knowledge is useful because it will help highlight the issues that are involved with using technology during clinical experience. The results of this study could help future participants involved in clinical placement with knowledge of successful practice.

How many people will be in this study?
About 24 other people will be in this study.

What will I be asked to do in this study?

You will be asked to participate in a focus group interview. If you agree to the focus group interview Andrea Paganelli will interview you at your school or placement. The interviewer would like to digitally record audio of the interview to be sure all answers are recorded accurately. If you do not wish to be recorded, handwritten notes of the focus group interviews will be taken.

How much time will I spend being in this study?
The interview should take between 45 minutes to 60 minutes, depending on the amount of information shared by the group.

Will being in this study cost me anything?
The only cost to you from this study is your time.

Will I be compensated for being in this study?
You will not be compensated for being in this study.

What are the risks (dangers or harms) to me if I am in this study?
Your participation in this study poses no foreseeable risks to you.

What are the benefits (good things) that may happen if I am in this study?
There are no direct benefits to you unless you find it pleasant or helpful to describe your experiences with using technology in your teaching. You may also feel good about knowing that you may have helped future educators as they attempt to teach with technology.

What are the benefits to science or society?
This study will help educators through learning more about successful practice when teaching with technology. This knowledge about teaching with technology may be helpful to future educators trying to incorporate technology into teaching.

How will my privacy be protected?
Your privacy will be protected by the focus group interview being held in an area that is private to keep the discussion from being overheard. If being interviewed with a group makes you feel uncomfortable an individual interview option is available.

How will my confidentiality be protected?
The only places where your name will appear is on this informed consent document and the email requesting your participation. The consent forms will be kept in Ms. Paganelli's private office locked in filing cabinet. This office will be locked when Ms. Paganelli is not present. The informed consent forms will not be linked to the focus group interviews. When the digital audio recording of the interview is made, we will not use your name. No one outside of the focus group will know who you are on the digital audio recording. Ms. Paganelli will be typing out the interview. The digital audio recordings will be kept on a password protected computer within Ms. Paganelli's office that will be locked when she is not present. At the conclusion of the study the digital audio recordings will be deleted. This should occur within 3 months of the interview. Any written materials from the interviews will not identify you directly, but participants will be identified only as "preservice and mentor teachers". No one outside of the focus group will be able to recognize you. The resulting typed interviews will only be viewed by Ms. Paganelli and the other members of the focus group. A request will be made that all members of the focus group keep the discussion confidential.

What are the alternatives to being in this study? Do I have other choices?
The alternative to being in this study is not to participate.

What are my rights as a participant in this study?
Taking part in this study is voluntary. It is your free choice. You can refuse to be in it at all. If you start the study, you can stop at any time.

The University Institutional Review Board ("the IRB") is the committee that protects the rights of people in research studies. The IRB may review study records from time to time to be sure

that people in research studies are being treated fairly and that the study is being carried out as planned.

I have read this consent form. I have had a chance to ask questions. I agree to take part in it. I will receive a copy of this consent form to keep.

_____

Signature of Research Participant Date

_____

Signature of Investigator Date

APPENDIX D

IRB APPROVAL

Office for Research

Institutional Review Board for the
Protection of Human Subjects

THE UNIVERSITY OF
ALABAMA
RESEARCH

February 15, 2010

Andrea Pagnelli
Department of ELPTS
College of Education
Box 870302

Re: IRB#: 10-OR-045 "Preservice Teachers' Clinical Experiences and Attitudes Toward Technology Inclusion"

Dear Ms. Pagnelli:

The University of Alabama Institutional Review Board has granted approval for your proposed research.

Your application has been given expedited approval according to 45 CFR part 46. Approval has been given under expedited review category 7 as outlined below:

(7) Research on individual or group characteristics or behavior (including, but not limited to, research on perception, cognition, motivation, identity, language, communication, cultural beliefs or practices, and social behavior) or research employing survey, interview, oral history, focus group, program evaluation, human factors evaluation, or quality assurance methodologies

Your application will expire on February 12, 2011. If your research will continue beyond this date, complete the relevant portions of Continuing Review and Closure Form. If you wish to modify the application, complete the Modification of an Approved Protocol. Changes in this study cannot be initiated without IRB approval, except when necessary to eliminate apparent immediate hazards to participants. When the study closes, complete the appropriate portions of the Continuing Review and Closure Form.

Please use reproductions of the IRB approved stamped consent form to obtain consent from your participants.

Should you need to submit any further correspondence regarding this proposal, please include the above application number.

Good luck with your research.

Sincerely,

Carpantato T. Myles, MSM, CIM
Director & Research Compliance Officer
Office of Research Compliance
The University of Alabama

152 Rose Administration Building
Box 870117
Tuscaloosa, Alabama 35487-0117
(205) 348-5152
FAX (205) 348-8882