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Strength In The Middle: From Digital Divide to Digital Equity

Stephanie Renee Davidson

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STRENGTH IN THE MIDDLE: FROM DIGITAL DIVIDE TO
DIGITAL EQUITY

By

Stephanie Renee' Davidson

A Dissertation
Submitted to the Faculty of
Mississippi State University
in Partial Fulfillment of the Requirements
for the Degree of Doctor of Philosophy
in Education
in the Department of Curriculum and Instruction

Mississippi State, Mississippi

May 2004

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2004

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DIGITAL EQUITY

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This study determined whether the measures implemented to address barriers to technology infusion changed the technology use patterns of teachers at a middle school. The research question was: Will middle school teachers infuse technology in teaching when the barriers of a lack of time, tools, training, and support are addressed?

Document analysis of lesson plans and educational technologist (ET) logs was conducted to analyze the change in the teachers' teaching practices. Interviews were conducted to gather information about the participant's perceptions of the project and their involvement in using technology in teaching. Observations were conducted to determine whether changes occurred in teaching practices and to confirm information provided by the teachers.

Data analysis revealed that the provision of resources did make a difference in teaching practices. Three of the five core teachers changed their teaching practices; two

teachers' teaching practices did not change because they faced second order as well as first order barriers to technology integration.

Recommendations for practice included (a) leaving the ET at Covington in his ET position and investing in the funding the ET position at the other schools in the district, (b) utilizing the expertise of the core teachers to provide technology training and support for teachers in the district, (c) selecting persons with a strong technology vision who are willing to practice their vision as well as translate their vision into teacher use of technology in instruction.

Recommendations for further research were that follow up studies be conducted that (a) determine whether there was a continuation in the integration of technology in teaching after the project no longer operates in the school setting, (b) determine whether the school continued with the model of providing time, tools, training, and support for teachers to integrate technology into their teaching, (c) determine whether the school district implements these measures in other schools, (d) seek to gain a more in-depth understanding of the reasons that teachers fail to integrate technology into teaching when the first order barriers to technology integration have been removed, and (e) address the issue of technology use for instructional purposes and its effects on students' willingness to participate in the learning process.

DEDICATION

This work is dedicated to the memory of my cousin, Leslie Ware Jr., who was not able to see his dreams to fruition. Additionally, I dedicate this work to the administration, faculty, staff, and student body who provide “Strength in the Middle”. Without you, this project would not be possible.

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The completion of this project was nothing more than a flight of the imagination for me about four years ago. Through the encouragement of many, the persistence of a few, and the determination of one, this project is now a reality and I owe my sincere gratitude to all who have showered me with their love and support.

First, I give praise to God who renewed my strength daily and provided me with the words that now lie upon these sheets of paper. A thank you is due to my long distance dissertation mentors who provided countless emails and calls to check on the progress of the project and to provide insight about to stay the course. Dr. Melissa Nail and Dr. Wanda Hutchinson, your support has been truly invaluable. To my on-site, just-in-time dissertation support coach, Dr. Margaret Pope, thank you for all of the timely suggestions, responses, answers, and snacks. There were many times that I wished that you were not so persistent and meticulous, but I thank you for remaining firm to your commitment to me. To my cheerleader, Dr. Kay Brocato, thank you for being one of my resident qualitative research experts.

A great deal of gratitude is due to the person who gave me my first teaching job, Mr. Robert Sims. It was your announcement, Mr. Sims, during the year end teacher's reception at Davis Elementary which initially pushed me toward this goal. Although I am quite sure that I clearly informed you that I would be pursuing an Educational Specialist

degree, you “accidentally on purpose” got the message crossed and announced to the entire community that I would be leaving to pursue a doctorate degree. Because I was a different person then than I am now, I felt that it would just be easier to live up to the words rather than continue to answer all of the questions. Boy, this was the most complex answer that I’ve ever had to conjure up!

To my family, thank you for your greatness. I marvel at each one of you as I think about how you, individually and collectively, have been my cheering section for so long. Momma and Leroy, thank you for all of the short but precise calls during this time. I also want to thank you for the times that you drove to Starkville to clean my apartment, as I always claimed that it needed to be organized so that I could think clearly. Although you knew that clothes would soon pile up on the floor and dishes would soon pile up in the sink, you came anyway. I love you. Jada, you have been more motivation than you will ever know. I received strength many days from your infinite, two-year-old wisdom. Thank you Jada, for reminding me lately that I need to always “act like a young lady”. To the rest of my family, I appreciate the daily briefings that you provided about the state of the family. Your constant patronage during my periods of being on a diet, off of a diet, on a budget, off of a budget, sane, and insane is a testament to the fact that we love each other in spite of it all. Much love to you all. Ronica, thank you for driving to Starkville countless weekends to be a part of our “work sessions” which frequently turned into “sleep and eat sessions.” You have been a source of strength and courage. Reginald, thank you for being a party to the late night phone calls as you escorted me out of the building many nights from your home in Memphis. How you remained understanding

and patient when I chose to succumb to my not so pleasant alter ego will forever be a mystery to me. You have been a great ally.

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TABLE OF CONTENTS

	Page
DEDICATION	ii
ACKNOWLEDGEMENTS	iii
CHAPTER	
I. INTRODUCTION AND LITERATURE REVIEW	1
Barriers to Technology Use	1
Time	3
Tools	5
Training.....	6
Support.....	9
CREATE for Mississippi	12
Statement of Purpose	15
Research Questions.....	15
Justification of the Study	16
Limitations of the Study.....	17
Definition of Terms.....	18
II. METHODOLOGY	20
Research Design.....	20
Selection of Participants	21
Instrumentation	22
The Researcher.....	23
The Role of the Researcher.....	26
Data Collection	30
Data Analysis.....	31
III. THE CASE.....	34
The Project.....	34
Technology Innovation Challenge Grant Program.....	34
Center for Educational Training and Technology	35
CREATE for Mississippi	35

CHAPTER	Page
Role of Project Participants	40
Administrator	40
Educational Technologist.....	41
Core Teachers	42
Techno team.....	42
Community Information	43
Mississippi Delta.....	43
History of Darton	45
Darton Today	46
School and School District Information	48
Jonesdale School District.....	48
Covington Middle School History	49
Covington Middle School Today.....	51
Technology at Covington.....	54
The Players.....	55
Administrator	56
ET.....	63
Techno team.....	66
Core Teachers	69
Ida	69
Lee.....	75
Jada	79
Marsha.....	82
Carmen.....	85
Impact at Covington Middle School.....	87
IV. SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS	90
Summary	90
Conclusions.....	97
Recommendations.....	101
REFERENCES	104
APPENDIX	
A. Vitae.....	107

CHAPTER I
INTRODUCTION AND LITERATURE REVIEW

Barriers to Technology Use

The presence of technology is becoming increasingly prevalent in classroom settings. Technological aids are available to broaden the spectrums of teaching and learning. As more technology becomes available in classrooms across the country, teachers are poised to locate more resources to enhance their lessons. Teachers and administrators realize that the use of technology in classrooms will benefit all. Although teachers might have the desire to provide the best possible instruction for their student through the use of technology, the successful integration of technology into instruction is often obstructed by barriers to technology use. Ertmer, Addison, Lane, Ross, and Woods (1999) identified barriers to technology integration that are considered first order-barriers. They asserted that “first-order barriers to technology integration are described as being extrinsic to teachers and include lack of access to computers and software, insufficient time to plan instruction, and inadequate technical and administrative support” (p. 54).

Because these barriers do exist and hamper the integration of technology into instruction, it is important that school administrators possess a vision for technology integration and take necessary measures to support technology integration by teachers.

According to the CEO Forum on Learning & Technology (2001), schools and districts must continue to make the commitment to professional development by providing the necessary support, resources and time for teachers to learn both how to use technology, and more importantly, how to integrate it into the curriculum to achieve educational objectives.

Meltzer and Sherman (1998) suggested guidelines for implementing the use of technology in education. One of the suggestions that they made for technology integration is to provide administrative support. They further suggested that the school administrator provide sufficient access to hardware and software, and provide sufficient training and time for teacher to hone their technology skills. Meltzer and Sherman also supported the notion of providing time to teachers to integrate technology into instruction. They asserted that teachers must be allowed time to talk about technology with other teachers and follow training sessions to become familiar with new ideas where technology is concerned. In the area of providing support for teachers' technology endeavors, Meltzer and Sherman pointed out that "principals and on-site coordinators who can provide both technological and pedagogical support can change a failure into a positive learning experience" (p. 10). They also believed that the role of the technology coordinator is to provide teachers with ongoing technology support and training. Meltzer and Sherman asserted that where access to technology is a factor, technology is a tool that requires practice in order for it to be used effectively. Additionally, they believed that technology should be located where the teachers are; not locked away.

Technology integration is an intricate process that requires the satisfaction of many conditions. These conditions include the barriers of time, tools, training, and support. This study examines the changes that occurred over time when these barriers to technology integration were removed. The second section of this chapter will explore the problems encountered when these barriers are present and the proposed solutions to addressing the barriers to technology integration in instruction.

Time

As the tools of technology increase in availability and training sessions are provided, teacher time to experiment with new technology is still limited. Sheingold and Hadley (cited in Scheffler & Logan, 1999) expressed that “teachers are mostly self-taught and spend their own resources and time to expand their knowledge about technology” (p.308). Herzig (2004) pointed out that teachers need time outside of the regular school day to develop their technology skills. She also expressed that teachers become more competent and confident about translating their new skills into instructional infusions when they are provided time to transfer the information in a learning mode and speed with which they are comfortable.

Sandholtz, Ringstaff, and Dwyer (1997) found that one of the major obstacles to technology infusion in instruction experienced by teachers was the lack of time that was available. Sandholtz, et al. reported that teachers were provided technology training that they thought would be beneficial in their efforts to integrate technology into teaching. Problems arose when teachers realized that they did not have the necessary time available

for them to implement in the classroom those skills learned during the technology training session.

Recently, the National School Board Foundation (2002) conducted a survey to evaluate use of the Internet and barriers to Internet use by teachers and students. According to this survey, 16% of teachers reported that lack of time to train staff was a barrier that existed relative to use of the Internet. Eighty-two percent of teachers surveyed in the 1999 Fast Response Survey System reported that the lack of time to learn how to use technology acted as a barrier to their technology use (National Center for Education Statistics, 2000).

Meltzer and Sherman (1998) also suggested that time for training was a major impediment to technology infusion in teaching. They suggested that administrators use creative scheduling to allow teachers additional time to experiment with new technology. More specifically, they suggested that release time and district designated days would be ideal for teachers to discuss the use of technology with others and to implement technology for the facilitation of change in their instructional practices.

Lack of time is one of the main barriers to technology infusion in teaching. To increase the likelihood that technology infusion will occur in teaching, teachers need sufficient time to acclimate themselves to new hardware, software, and applications. Inadequate time to experiment with newly acquired skills also hinders teachers' ability and motivation to infuse technology into teaching. It has been clearly established that insufficient time is provided for teacher efforts to infuse technology in teaching.

Tools

Access to technology is a major concern for teachers when wanting to provide learning experiences that integrate technology. This problem encompasses issues of equipment purchase and availability as well as equipment location and availability. Meltzer and Sherman (1998) noted that because technology equipment is very expensive, administrators are inclined to lock the equipment up for safe keeping. Equipment that is not available for use by teachers cannot, in any way, produce the desired result of the infusion of technology into teaching.

Byrom (cited in Herzig, 2004) expressed that many teachers' technology infusion is limited by insufficient hardware and software. Byrom also pointed out that the technology available in the school is often located too far from the classroom, which discourages use by many teachers. Another interesting point that Byrom made about access is that the cost of the technology upgrades is often not included in planning. Over time, it is found that hardware is often too outdated to handle the applications of newer software packages.

The report of the National Center for Education Statistics (2000) expressed that if teachers had adequate access to technology, they would be more likely to infuse technology into their teaching. The findings of the report revealed that teachers who had access to more computers in their classrooms were more likely to use technology for teaching purposes than teachers without access to technology.

O'Neil (1995) reported that "computers and peripherals often are located in a computer lab, where teachers don't have access to them to support their use as an

everyday tool” (p.11). O’Neil also reported that 95% of the computers used for instructional purposes were located in computer labs in contrast to only 35% being located in teacher’s classrooms.

Lack of access to tools is another barrier to technology infusion in teaching. It is noted that tools that are available in the school building, but that are not readily available for teacher use, often go unused. Similarly, tools that are available to teachers but that do not have the capacity to handle the technology applications needed, are also viewed as useless. Access to appropriate tools is vital to teachers’ efforts to infuse technology in teaching.

Training

The digital divide has been viewed as the disparity related to access to technology in classrooms. Today, digital divide has a different meaning according to David T. Gordon (2001). Gordon asserted that the new digital divide is in technology professional development. According to Gordon, schools in 2000 spent less than 5% of their budget allotted for technology on technology training for teachers. Teachers received an average of four hours of technology training per year.

According to Donlevy and Donlevy (1997), the presence of sophisticated technology does not, in and of itself, produce meaningful changes in the classroom. They stressed that teachers must be provided training to infuse these technologies into their teaching. Furthermore, they suggested that teachers be allowed professional time to gain

an understanding of the most current materials available and to expand their existing knowledge of technology equipment and techniques available.

Over 10 years ago, Hasselbring and Tulbert (1991) pointed out that a third of all teachers in grades K-12 received about 10 hours of technology training. They noted that the 10 hours of training that these teachers received were mostly spent learning about computers, not learning how to use the computer to teach. Hasselbring and Tulbert also suggested technology training for teachers should be conducted over years, not days, with continuous support for teacher while they apply the skills that they gained from the training. O'Neil (1995) agreed that training provided to teachers focuses on the mechanics of operating the technology tools instead of focusing on how technology can be helpful in studying specific subjects. He also stated that graduates of teacher education programs in the United States are not prepared to use technology as a teaching tool.

Herzig (2004) recognized that teacher training is a major barrier to using technology to enhance the quality of instruction. She believed as teachers become more competent in using technology their level of anxiety decreases. She also believed that teachers' perception of technology use for instructional purposes improves with hands-on courses.

Using technology to support teaching is not a novel idea, but how to achieve this effectively seems to be a challenge for many in the field of education. Solomon (2002) made it very clear that it takes more than equipment availability to effectively use technology as a teaching tool. She stated equipment makes little difference without the guidance of informed and experienced educators. According to Solomon, a study at the

University of California found that “effective use of educational technology depends most strongly on the human element; having teachers and support personnel who have not only technical skills in using computers but have practical pedagogical knowledge about designing challenging computer activities” (p. 10). Solomon also reported that a recent survey of members of the National Educational Association revealed that a great percentage of teachers are familiar with using computers and the Internet but these same teachers reported that they lack the necessary skills to infuse technology into their instructional delivery.

Teachers and administrators understand that it takes more than equipment to promote educational reform, but it is important that legislators make provisions to support more meaningful uses of technology for teaching purposes. In the article, *Teacher Training Seen as Key to School Technology* (1999), it was noted that Vermont Senator Jim Jeffords believed teachers “need support and meaning professional development to put this tool to its highest and best use” (p. 10). More specifically, Jeffords touted the importance of teachers knowing how to use technology for the integration into daily lessons to support the achievement of state standards.

Lack of technology training for teachers is a major impediment to teachers’ quests to infuse technology into teaching. To achieve successful technology infusion, teachers must be provided with continuous technology training in which they can make connections. As teachers begin to make connections between the technology training that they receive and their teaching goals, they become more likely to infuse technology into teaching. Additionally, technology training should be continuous to: (a) provide time for

application of the skills introduced, (b) to provide time for experimentation, and (c) to provide time for sharing ideas. It is established that technology training should be plentiful and meaningful in facilitating the process of technology infusion into teaching.

Support

When teachers are provided with opportunities to receive technology training, they often find themselves at a loss when they experiment with the technology on their own. Support for teacher use of technology is paramount to facilitate the goal of integration. In most cases, teachers find themselves alone facing the daunting task of remembering the logistics of the applications that they have learned and figuring out how to use the new technologies in their teaching. Herzig (2004) pointed out that technology training usually focuses on how to use equipment and neglects the aspect of planning to integrate the technology into teaching. According to Herzig, the makings of teacher support include giving teachers time to change their way of teaching, allowing teachers to make mistakes, and providing teachers with a support person to allow teachers to focus on teaching and not the technology.

Hasselbring and Tulburt (1991) asserted that teachers should be provided with continuous support for technology integration while they practice skills acquired in training sessions. Additionally, Hasselbring and Tulburt suggested that training sessions be conducted over a period of years instead of a period of days.

Addressing the barrier of lack of support for technology infusion, Meltzer and Sherman (1998) suggested that schools provide an on-site technology coordinator with

teaching experience. The role of the technology coordinator would be to provide ongoing teacher training and immediate support when needed. The support of a technology coordinator would turn negative technology experiences into positive learning experiences for teachers moving toward technology integration.

Many researchers suggest providing an on-site technologist to support teachers' endeavors to integrate technology. Teachers and students are also rich resources for supporting technology integration. Sandhotz, et al. (1997) found that teachers were more likely to seek assistance from their peers before seeking assistance from the technology support personnel provided by the school.

Students, who are generally self-taught and more adventurous than teachers, can serve as technology support resources for teachers. The National School Board Foundation (2002) found 54% of the schools districts surveyed reported that students provided technical support for their systems. Assisting teachers was one of the categories included under providing technical support for the school districts.

The Generation [www.Y](#) mentoring model (Educational Technology Expert Panel, 2000) is an example of students support technology infusion efforts by teachers. The students who participated in this model were trained in the use of technology application, and in turn, trained groups of teachers in the use of those same applications. Generation [www.Y](#) also required the students to collaborate with the teachers on developing projects using existing lessons and methods but integrating technology into these lessons. This program proved to be very beneficial to the teachers involved. The results of the study of the model confirm that: (a) 95% of the teachers reported that the students were useful

resources in relation to technology integration in teaching, (b) 92% of the teachers reported that they would use the projects developed collaboratively by them and the students and they would expand the projects for future use, (c) 90% of the teachers reported that they were more adept technology users, and (d) 82% of the teachers reported changes in their instructional methods were due to their participation in this project.

Teachers' desires and efforts to infuse technology into teaching are often thwarted because lack of support for technology integration exists. Teachers benefit from the availability of a person whose major focus is to provide immediate feedback, resources, and assistance to them as they work through the process of infusing technology into their teaching. As teachers are likely to seek the assistance of a colleague before seeking the assistance of a technology coordinator, it is equally beneficial to provide time for teachers to share their findings related to technology infusion with their colleagues. It has been plainly demonstrated that teachers were more likely to infuse technology into teaching when support was available.

The most common barriers to technology integration in teaching are lack of time, tools, training, and support. Time is necessary for teachers to become proficient in the use of tools and applications for technology infusion. Tools have to be readily available for use as well as properly upgraded for the successful infusion of technology in teaching. Training has to be continuous and meaningful so that teachers can make a connection between technology and teaching. Finally, support makes the infusion process less exasperating for teachers by providing a human resource readily available for assistance.

The Challenging Regional Educators to Advance Technology in Education (CREATE) for Mississippi project addressed all of these existing barriers so that teachers could begin the process of technology integration in teaching. This study will examine if addressing these barriers to technology integration produced changes in the teaching methods of participating teachers.

CREATE for Mississippi

Ten years ago, the Mississippi Senate passed Senate Bill 3350 (Mississippi Technology Enhancement Act, 1994), designed to facilitate the individualization of computer-based technology instruction for all students. This bill contained Section 19 which called for the formation of a group named the Council for Educational Technology (CET). The task assigned to this group was to make it possible that every student in the state of Mississippi would have access to technology.

As the work of CET was underway, Mississippi classrooms were on their way to making major strides within the realm of the infusion of technology into instruction. During his governorship (2000-2004), former Mississippi Governor Ronnie Musgrove sought to continue the educational technology initiative. Governor Musgrove emphasized to the state's law makers that it was a high priority of the state's public school system to ensure that every classroom in the Mississippi public school system would have access to a computer. The governor's goal was met as every public school classroom in the state of Mississippi had access to a computer with Internet access by December 31, 2002 (CNN, 2002). This development was very important as it further supported the state's goal of

integrating technology and education and it made Mississippi the first state to have an online computer in each of its public school classrooms.

CREATE (Challenging Regional Educators to Advance Technology in Education) for Mississippi, a federally funded technology innovation grant, was borne out of the vision of Senate Bill 3350, CET, and Mississippi State University's Center for Educational and Training Technology (CREATE, 2004). The focus of the CREATE project was to expand on the developments of the CET by formulating innovative ways to not only provide technology access in Mississippi's school, but also to provide the vehicle for Mississippi's teachers to fully integrate the use of technology in their instructional practices.

CREATE's mission was to address the barriers to technology infusion in instruction through the implementation of the school mentor model (SMM). According to the project description (CREATE, 2004), the SMM was to "provide unifying and continuous technology professional development for administrators, and teachers, enabling them to train other teachers both within and outside of their respective school districts" (p. 5). The SMM was composed of five essential components: (a) core teachers, (b) educational technologist, (c) student techno teams, (d) school administrators and board members, (e) and instructional technology equipment.

The goal of CREATE was to specifically address technology integration in teaching at the middle school level. The project sought to address the barriers of lack of time, tools, training, and support in their effort to aid teacher in integrating technology in

teaching. CREATE's method of addressing the barriers to technology integration was the implementation of the SMM at each of the participating schools.

Each of the components of the SMM had a key part to play in addressing the barriers to technology infusion in instruction. The educational technologist, student techno team, and school administrators were all vital in addressing the barrier of lack of technology support as these were the participants who possessed the vision and the expertise to support teacher's technology integration ventures. The provision of technology played the key role in addressing the barrier of lack of technology. The barrier of time was addressed by the school administrator as the schedule of the core teachers were rearranged or additional compensation was provided for the provision of release time. Again, the educational technologist and the student techno team played key roles as they served to address the barrier of lack of technology training. The educational technologist would train the core teachers as well as student techno team members on technology applications and they, in turn, trained teachers.

The core teacher played vital roles in addressing all of the aforementioned barriers to technology integration. They provided professional development sessions for other teachers in the school. The core teachers provided a platform for student technology use. They also provided training for other teachers in the school desiring help to integrate technology into their instructional practices. This team of teachers was provided release time to find technology resources, pilot lessons, receive training on technology equipment or software, and developed technology infused lesson plans. The core teachers

also frequently used the equipment provided through the project to deliver instruction, locate resources, and train other teachers in the school.

Statement of Purpose

The purpose of this study was to determine whether the measures implemented to address barriers to technology infusion changed the technology use patterns of core teachers at a middle school to enhance their instructional content and delivery. Specifically, this study was concerned with the changes that occurred in teachers' teaching practices when the barriers of a lack of time, tools, training, and support were addressed.

Research Questions

The question to be answered in this research is: Will middle grade teachers infuse technology in teaching when the barriers of technology access, training, time, and support are addressed? To fully answer the research question, these more specific research questions will be addressed:

1. Does the availability of a technology cart, wireless cart, and laptop remove the barrier of lack of tools for middle grade teachers to infuse technology in instruction?
2. Does the availability of technology training remove the barrier of lack of training for middle grade teachers to infuse technology in instruction?
3. Does the availability of support remove the barrier of lack of support for middle grade teachers to infuse technology in instruction?

4. Does the availability of release time remove the barrier of lack of time for middle grade teachers to infuse technology in instruction?

Justification of the Study

No Child Left Behind legislation (United States Department of Education, 2001) recognizes the importance of leveraging the powerful tool of technology to enhance all aspects of K-12 education. Part D of this piece of legislation, better known as the “Enhancing Education through Technology Act of 2001” has a primary goal of “improving student academic achievement through the use of technology in elementary schools and secondary schools” (p. 34). An additional goal is “to encourage the effective integration of technology resources and systems with teacher training and curriculum development to establish research-based instructional methods that can be widely implemented as best practices by State educational agencies and local educational agencies” (p.34).

Research indicates that there are several barriers to technology integration in the classroom setting. However, very few research studies have been found that indicate that barriers to technology integration are being addressed. Moreover, even fewer studies have been found that highlight the changes in instructional practices after the barriers to technology use have been addressed. This study is important because it documents the impact that addressing these barriers to technology infusion had on the actual goal of moving teachers to infusing technology into their instructional practice.

Limitations of the Study

The study was conducted within a relatively short time frame, given the nature of the phenomena studied. Teacher technology infusion is an evolutionary process. According to Banks (n.d.) technology infusion in teaching is a five stage process, including the stages of: (a) entry, (b) adoption, (c) adaptation, (d) appropriation, and (e) invention. At the entry phase, teachers are still involved in traditional instruction and discussion is still teacher directed. The adoption phase is characterized by teachers beginning to show concern about how technology can be integrated into teaching. The adaptation phase is characterized by the teacher implementing a more student-directed approach in instruction. At this stage, teachers also use technology in the classroom about 30% - 40% of the school day. Appropriation is based on teachers finding the right technology hardware and software considered by them to be beneficial in their specific endeavor to infuse technology into teaching. Finally, the invention stage is characterized by teachers and students inventing their own technology based assignments and resources. This process of change usually starts to take place about three to five years after initiation. This study focuses on a time period of the school's two years of participation in the project.

Definition of Terms

Core Teacher – Teacher at one of the participating schools who was either chosen by the administrator or volunteered to support the mission of CREATE for Mississippi by receiving training, writing lesson plans, and integrating these of technology into lesson delivery.

Educational Technologist – Support person hired by the school district but funded by the CREATE project whose main purpose was to provide technical and educational support in support of the desired outcome of technology integration in lesson delivery.

Just-in-time support – On-site support provided by the educational technologist to the core teachers and students.

Tools – The technology procured by the school district from the CREATE project for their participation. This equipment was used primarily by the core teachers, educational technologist, and student techno team for the purpose of infusing technology into lesson delivery. The tools referred to in this study are a laptop computer, a technology support cart, and a mobile laptop lab.

Release Time – Time within or outside of the school day used by the core teachers to prepare lesson plans, meet with the educational technologist, or find technology resources for the purpose of preparing technology rich lessons. Core teachers were granted either an extra planning period during the school day or monetary compensation outside of the school. The amount of \$25 per hour was allocated for teachers' release time compensation. This amount was multiplied times the number of days and then the number of weeks to determine teachers' monthly release time pay.

Training – Professional development sessions aimed at increasing teachers' familiarity with technology tools and how to teach with these tools. Training also included the introduction of teachers to educational software and websites designed to aid in the goal of technology infusion in teaching.

Student techno team – Middle school students chosen by the school administrator or the educational technologist to receive technology training in both maintenance and instructional aspects of technology. These students were also trained to provide technology training and technical assistance to teachers at the participating school.

CHAPTER II

METHODOLOGY

Research Design

The research design was case study. Case study design is used to answer questions of how and why in research. The case study design was appropriate for this study because the researcher was interested in questions of how and why in the context of infusion of technology into instruction. Yin (2003) defines case study 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. According to Marshall and Rossman (1999), studies focusing on society and culture, whether a group, a program, or an organization, typically espouse some form of case study as an overall strategy. This study is devoted to the study of the group of persons involved in the CREATE for Mississippi program and the development of their use of technology throughout their participation. Individuals and places involved in this study have been provided pseudonyms. Privacy and confidentiality of all concerned have been addressed.

Selection of Participants

In the selection of participants for this study, purposeful sampling was used. Bogdan and Biklen (1982) asserted that subjects are chosen in purposeful sampling because they are believed to facilitate the expansion of the developing theory. Miles and Huberman (cited in Marshall & Rossman, 1999) pointed out that purposeful sampling serves to illustrate subgroups and facilitate comparison. The primary participants in this study were four teachers chosen from each core subject area. These teachers were chosen by the school level administrator for their participation in CREATE for Mississippi. Other participants in this study include the district level administrators, school level administrator, and the educational technologist.

The site chosen for examination in this study was Covington Middle School. Covington was one of the four participating schools assigned to the researcher. This site was chosen because the researcher was interested in observing the changes related to instructional technology that would take place in a school. The small size of Covington, (the student enrollment is 150 and the teacher population is 12) provided a setting in which the entire school was available for study. The researcher was also interested in how and why teachers' technology integration into teaching would change over time in response to having access to technology equipment, release time, technology training, and technology support, none of which were available at Covington before the inception of CREATE.

Instrumentation

The instrument used in this study was the researcher. According to Merriam (1988), the researcher is the primary instrument in case study research for data collection and analysis. Case study research requires the researcher to become a part of the world of the participant and see the world from the participant's perspective. Marshall and Rossman (1999) explained that case study research entails immersion in the setting and rests both the researcher's and the participants' worldviews. As the researcher spends an extensive amount of time living in the lives of the participants, no statistical technique or questionnaire could provide the full scope and sequence of the story that the researcher seeks to tell. Guba and Lincoln (cited in Merriam, 1988) asserted that:

the researcher as an instrument is responsive to the context; he or she can adapt techniques to the circumstances; the total context can be considered; what is known about the situation can be expanded through sensitivity to nonverbal aspects; the human instrument can process data immediately, can clarify and summarize as the study evolves, and can explore anomalous responses. (p.19)

Marshall and Rossman (1999) explained that the researcher is the instrument and that the researcher's presence with the participants is fundamental to the paradigm. According to Locke, Spriduso, and Silverman (cited in Marshall & Rossman, 1999) this brings a range of strategic, ethical, and personal issues that do not attend quantitative approaches.

Merriam (1988) asserted that the importance of the researcher in qualitative case study cannot be overemphasized in that the researcher is the primary instrument for data collection and analysis. I served on the evaluation team for CREATE for Mississippi for three years. During my three years as evaluator, I was responsible for collecting data for the purpose of evaluating the goals, outcomes, and effectiveness of the CREATE project. As I collected data, I used the techniques of observation, interviewing, document analysis, and participant observation. My evaluation duties lead me to a school building, classroom, or administrative office at least one a week. During these three years, I was responsible for the evaluation of four participating schools. Of the four schools, Covington Middle School was the site chosen for this study.

The Researcher

One of the major differences between qualitative and quantitative research is the type of instrument used to interpret data. The researcher is to qualitative research as a standardized instrument is to quantitative research. Qualitative research is concerned with interpreting the behaviors of individuals through perception and, as this is so, no standardized instrument would be feasible because standardized instruments cannot interpret how people think, feel, and respond, and cannot relate individuals to the context of the phenomena being studied. An understanding of the background of the researcher, in qualitative research, is important because the information serves to establish the validity of the instrument. In an effort to establish the validity of the instrument used in

this study, this section of the study will provide an introduction of the researcher highlighting her experiences and qualifications.

I am my mother's first born child and my father's second born child. A single parent for many years, my mother was a teacher's assistant at a local school in our county school district. This experience served as my introduction to the classroom and the world of teachers. I found myself helping out in her classroom and volunteering in other classrooms in the school building.

I am a native of Greenwood, Mississippi, which is located in the Mississippi Delta. The Mississippi Delta is characterized by flat land, cotton fields, mosquitoes, factories, blues music, and racially segregated communities. I was raised in the Browning community, a rural racially segregated community on the outskirts of the city. The Browning community is a very close-knit community made up primarily of four families which are the Moore's, the Brown's, the McCaskill's, and the Ware's – my family. This group of families formed a tight circle which ultimately formed one community family.

I am a graduate of Amanda Elzy High School. Amanda Elzy is one of two high schools in the Leflore County School District. At the time of my attendance, the population of Amanda Elzy High School was comprised of about 400 black students. The students who attended Elzy were all from rural communities that held similar beliefs of family as community as the Browning Community did. Although Amanda Elzy High School was rich in morals and values at the time, the school was poor when it came to matters of educational resources. Certified teachers were hard to find, textbooks were scarce, and technology was nonexistent.

In 1993, I graduated from Amanda Elzy High School and began college at Tougaloo College. Tougaloo College (2004) is a private HBCU founded on the beliefs of the Methodist church and the student population was 99% black. After spending a year at Tougaloo College, I returned to the Delta to attend Mississippi Valley State University (MVSU). MVSU (2004) is a small HBCU in the middle of the Delta. MVSU was opened in 1950 as Mississippi Vocational College with an enrollment of 305 students. The major focus of the university was to train black teachers to teach children in the surrounding areas. Today, MVSU boasts an enrollment of over 4,000 students with 12 disciplines granting undergraduate degrees and five disciplines granting graduate degrees.

Upon earning a bachelor's degree in Elementary Education from Valley, I matriculated into their master's program in education. During this time, I also began my teaching career as a second grade teacher at Davis Primary School in my hometown. I spent two years at Davis as a second and third grade teacher. At the end of my second year of teaching, I completed the requirements of my master's program and moved to Starkville, Mississippi to continue my career and education. My experience in Starkville was unlike anything that I had ever been involved with before. I taught for a year at Henderson Intermediate School which had a very culturally and economically diverse student population. I also began my educational specialist program at Mississippi State University (MSU). MSU had a student enrollment that far exceeded the enrollment at MVSU. MSU, at that time, had a student enrollment of over 15,000 students. In addition to the enrollment difference, the student population was very culturally diverse. My

second year at Mississippi State University afforded me the opportunity to receive a graduate assistantship; this was my introduction to the CREATE for Mississippi project.

Most recently I have taught courses on the community college and university level. I taught a course in essential college skills on the community college level. I have also had the experience of teaching courses in the areas of elementary education, early childhood education, and educational foundations on the college level.

The Role of the Researcher

In this case study, I served as a member of the evaluation team for the CREATE for Mississippi project. Stake (1995) outlined several roles that the researcher plays in case study research. These roles are (a) teacher, (b) advocate, (c) evaluator, (d) biographer, and (e) interpreter. Stake also recognized that the role of interpreter is the role that is central to the researcher in case study research. The centrality of this role is based on the researcher's duty to construct meaning. Through the execution of all of the roles outlined by Stake, the researcher must strive to construct or extrapolate meaning through them all.

As a teacher, I find it necessary to provide the proper atmosphere for learning and a sequence of learning activities that will lead the student to the desired goal. According to Stake (1995), the researcher has an obligation to arrange opportunities for the learner to follow a natural human inclination to become educated. This author also explains that providing information, arranging access to information regularly, is a major part of teaching, but two prior considerations are the selection of information and/or experiences

needed and the recognition of conditions that will facilitate learning for learners individually and collectively.

As an advocate, the researcher has an obligation to paint the picture vividly for the audience as the goal is to provide a view into the world of the case study participants. My goal then, as an advocate, is to persuade the reader to believe or accept the view that I have provided.

In the role of evaluator, it is my responsibility to ensure validity of the results that I report. It is also my duty to evaluate those aspects of the program that were to be evaluated.

In the role of biographer, it is my duty to paint a clear and concise picture of the study participants. The participants are complex beings and I, as a researcher, must enlighten the reader on all facets of the participant to provide a holistic view of the individuals involved in the case study. This is important because the duration of the study will stand the test of many changes in circumstance and, as circumstances change, the actions of people change.

Another role that is significant to the thoroughness of the study is relationship building. Marshall and Rossman (1999) explained that the researcher has four main roles that include issues of entry, reciprocity, personal biography, and ethics. These four issues are vital in relationship building and eventually in how much information a researcher is privy to or will happen upon through making connections.

According to Marshall and Rossman (1999), the issue of entry involves the researcher negotiating access to the site and/or participants through formal and informal

gatekeepers in an organization. Faced with the issue of gaining entry to the participants and the site, my first step in the process was to meet with the participants in a formal setting. In this setting, I was introduced by the project manager as the evaluator for Covington Middle School. Next, I introduced myself to the teachers, administrators, and educational technologist of the school and made connections with the participants through affiliations such as our university and social club activities. In facilitating this process, my first few visits to the school were absent of a recorder or a notebook. The purpose of these visits was to have a few “getting to know you” sessions. I found the participants at Covington to be friendly and open, and therefore, the process of gaining entry proved for me to be short and smooth.

Reciprocity was an issue in which I found great joy and comfort during the time that this study was conducted. Reciprocity involved me giving back to the study participants as they had so freely given to me. The school culture at Covington took on that of a family in which the whole community was involved. During my two years at Covington I found myself participating in several events such as the community walk for a diabetes effort, representing CREATE at an open house event, delivering material to other schools and to the CREATE staff at MSU, and even, void of expertise, judging young ladies at the cheerleader tryouts at the school. As the atmosphere at Covington was a welcoming one, there was always an opportunity for me to become engaged in an event or lend a helping hand.

Personal biography coincides with the interpersonal skills of the researcher. Marshall and Rossman (1999) explained that personal biography entails the researcher

possessing the skills of easily conversing with others- being an active, patient, and thoughtful listener and having an empathetic understanding of, and a profound respect, for the perspective of others. My experience as a classroom teacher brought both understanding and empathy to the table. I understood the world of a teacher on the levels of pedagogy as well as politics. In addition to my understanding the world of a teacher, I prefer to talk less than I listen both in my personal and professional life. This trait enables me to be an active listener. Adept listening is a key characteristic of a good qualitative researcher. Also, the most important lesson that I learned in my qualitative techniques course was when desiring the answer to a question the best way to get the answer is by not asking; you should listen and observe.

Paying constant attention to ethical issues was paramount as I conducted this study. There were many times that the teachers had concerns about personal issues that they wanted resolved and they would mention those things to me. I found myself serving as an activist for this group of teachers, and it was my responsibility to make sure that I exposed the concern without exposing the person. Another issue with ethics involved my visits to the school. I did recognize that the school had a set schedule before the onset of the project, just as each teacher had a set schedule. It was my duty to make the project evaluation and study fit into the structure of the school rather than the school or the teacher fitting into the structure of the project evaluation and study. I recognized and respected the fact that if I wanted the teachers to participate openly and honestly in these endeavors, I had to respect their world procedures.

At the onset of the study, the selected teachers were informed that the purpose of this study was to examine if and how technology was infused into instruction as a result of their participation in the CREATE for Mississippi project. All teachers were informed that their participation in this study was voluntary. I began conducting this study in the summer of 2001 by beginning to build relationships with the teachers at the summer workshops. I continued this relationship building process at the onset of the school year. In year one, I visited the school on a weekly basis for the purposes of conducting classroom observations; conducting interviews with the teachers, administrator, and educational technologist; writing field notes, and collecting data sources such as lesson plans submitted to both the CREATE project and the principal. In addition to visiting the school to collect data, I participated in weekly meetings, which included members of the project staff, for the purpose of sharing information and clearing misconceptions.

My visits in the second year were made on a bi-weekly basis instead of a weekly basis. I continued the process of observing classrooms, and interviewing the teachers, administrator, and educational technologist. As the project ended in 2003, I conducted interviews with the participants to attain a retrospective view of the project and of their growth. I also continued to visit the school to get a better view of the impact that the project had on the teachers' instructional methods and to gather more information about their perspective of the project. Meetings with the project staff took on a different format in year two: the meetings were held on a semester basis. Although these meetings were held less frequently than they were in year one, the focus of the meetings remained the same.

Data Collection

To conduct this case study, I employed the use of several data collection techniques. On-site visits were made to the school. Extensive field notes were recorded documenting the culture of the school, infusion of technology, and perspectives of the project. The participants were interviewed frequently during the school's two year participation in the project. Lesson plans submitted by the four teachers were reviewed and analyzed in order to gain an understanding of the participant's use of technology in the classroom. I also collaborated with other members of the staff of the project, including the project manager and field coordinator, with the goal to both disseminate and gain information about the involvement of the participants. Participant observation was also a technique used in conducting this case study. I attended professional development workshops in which the teachers were involved. Additionally, I was involved in events sponsored by the school.

Data Analysis

The analysis of the data in this study used two protocols identified by Denzin (1989). These two protocols were data source triangulation and verification. Denzin defines triangulation as the process of using multiple observers, methods, interpretive points of view, and levels and forms of empirical materials in the construction of interpretations. The specific type of triangulation utilized in this study was data source triangulation. According to Denzin, "triangulating by data sources forces the researcher to go to as many concrete situations as possible in forming the observational base. It

forces the researcher to situationally check the accuracy and repeatability of the specimens and emerging casual propositions” (p. 93).

To meet requirements of triangulation, the techniques of observation, interviewing, and document analysis were employed. To determine technology infusion, I observed the participants in their classroom settings as well as in professional development settings. In the participant’s classrooms, I observed the specific pieces of technology equipment used and the manner in which they were used. I also observed the classroom environment for evidence of technology use in past class projects. Throughout the project period, I interviewed the participants on a regular basis. Most of the interviews were conducted on an informal basis either after the observation of a lesson in their classrooms, during the lunch hour in the school cafeteria, or after a professional development session. The participants also shared information in formal interview settings. These settings took place at the end of each project year and at points throughout the year when very specific information was needed. The technique of document analysis was also used in the process of conducting this study. The teachers submitted weekly lesson plans to the school level administrator for review. These lesson plans were analyzed for evidence of technology infusion in instructional delivery. In year one of the project the participants were required to submit lesson plans to the project staff. These lessons were analyzed to determine what type of teaching equipment was being utilized and how the equipment was being utilized in instructional delivery.

Stake (1995) defined the process of validation as being “accurate in measuring things but logical in interpreting the meaning of those measurements” (p.108). I used the

technique of member checking to validate the information used in this study. I also shared information with others for the purpose of information corroboration. Stake defined member checking as a process whereby the participant examines rough drafts of writing where the actions or words of the participant are featured. Sometimes this occurs when first written, but usually member checking occurs when no further data will be collected. In year two, I met with the participants and reviewed information that I had previously gathered. On these occasions, the participants would either approve the information that I had or provide clarity for information which was not properly presented. To corroborate information, as a member of the evaluation team, I would meet with members of the CREATE staff to share and receive information. I would report my finding from the participating site and the CREATE staff members would either verify that they had observed the same pattern or occurrence or they would follow-up later verifying the information that was shared.

CHAPTER III

THE CASE

This chapter explains the development of the CREATE project, the intent of the project, and the operation of the project at Covington Middle School. Moreover, this chapter provides historical and current information about the community where Covington Middle School is located. A description of the school and its culture is also provided. In telling the story of Covington's participation in CREATE, chronicled is each participants involvement in the project. Finally, this chapter describes the impact that the project had on Covington and the Jonesdale School District.

The Project

Technology Innovation Challenge Grant Program

According to the United States Department of Education (2004), the Technology Innovation Challenge Grants program “supports partnerships among educators, business, and industry, and other community organizations to develop innovative applications of technology and plans for fully integrating technology into schools” (p.1). The program funds projects on a five year award basis and gives special consideration, when choosing programs to fund, to consortia that serve areas with high numbers of underprivileged students or with the greatest necessity for educational technology. The major thrust of

this program is to fund groups whose vision is to fully integrate technology into standards based curricula.

Center for Educational Training and Technology

The Center for Educational and Training Technology (CETT) was created on the campus of Mississippi State University in 1996. According to the website of the Center for Educational Training and Technology's (2004), the mission of the center is "to foster the development and implementation of innovative software tools and technologies through an interdisciplinary approach that will significantly enhance and improve the way people teach and learn within a technological society" (p.2). CETT was instrumental in the development of the format of the CREATE project and making connections with the partners in the educational consortium which supports the CREATE project.

CREATE for Mississippi

CREATE for Mississippi, is an acronym for Challenging Regional Teachers to Advance Technology in Education. The CREATE project, funded by the Technology Innovation Challenge Grant Program, was comprised of a group of educational partners including school districts, organizations, and Mississippi State University. This consortium of partners included (a) CREATE Foundation (b) Tupelo, (MS) School District, (c) Mississippi Department of Education Office of Educational Technology Training and Support, (d) Mississippi Library Alliance, (e) Mississippi State University Department of Technology and Education, (f) Mississippi State University Extension Service, (g) NASA/Stennis Space Center, Office of Education and University Affairs, (h)

South Eastern Regional Vision for Education, and (i) and the Appalachian Regional Commission. The CREATE project was staffed by and operated out of CETT on the campus of Mississippi State University.

CREATE's goal was to expand and support the state's technology initiative by moving Mississippi to the next level of technology integration. CREATE's efforts in moving the state to the next level of technology would include addressing the barriers to technology integration addressed in current literature. In order to ensure that the schools would be a fit for the goal that CREATE had developed, the project outlined specific criteria upon which schools would be selected for participation. These criteria included: (a) schools that represented proportionally each congressional district, (b) schools that represented both rural and urban environments and varying levels of accreditation, (c) schools that had received Mississippi Technology Literacy Challenge Grants, (d) schools that had shown a commitment to technology by writing and receiving technology grants, (e) schools with administrators who had shown an interest and commitment to time and money for technology, (f) schools recommended by the Office of Educational Technology, Training, and Support, (g) schools that had new multimedia classroom computers for all or part of their teachers, providing some consistency in equipment for purposes of developing materials and giving the teachers in those schools access to technology, (h) schools that had Internet access in their classrooms, (i) schools whose grade levels included one or more between grades 5-8, and (j) schools whose teachers had received some basic technology professional development. With these criteria in place, CREATE's goal was to have a far-reaching effect on the entire state of Mississippi.

Schools from each of Mississippi's five congressional districts were chosen to become partners in the CREATE project. Covington Middle School, the focus of this case study, began its participation with the project in its second year of operation.

CREATE began operating in the school systems in the 2000-2001 school year. Focusing on the barriers to technology integration, CREATE sought to address the barriers of lack of time for technology integration, lack of tools for technology integration, lack of training for technology integration, and lack of support for technology integration. CREATE developed a plan to address each specific barrier to technology integration.

To address the barrier of a lack of time for technology integration, CREATE developed a concept called release time. Release time could be implemented in two different ways. One way in which it could be used was that the core teachers would be provided an extra planning period during the day for the purpose of being actively engaged in some activity that would facilitate the integration of technology into their teaching. With this option, schools were provided compensation, from the project, to hire a substitute or compensate another person to cover the participating teachers' instructional load during that time period. Another option for release time was that the core teachers could choose to spend one hour after the end of each school day being actively engaged in some activity that would facilitate the integration of technology into their teaching. According to the CREATE for Mississippi's Procedures Manual (2002) a requirement of core teachers was that they develop lesson plans during the semester and submit them to the CREATE staff for the purposes of (a) evidence of production and

growth in the technology integration effort and (b) developing a searchable database of technology infused lesson plans that teachers worldwide would have access to through the Internet. This was one of the specific purposes of the release time provided to the core teachers. The provision of time served to address the challenge of the limited amount of time that teachers had to integrate technology into instruction.

To address the barrier of a lack of tools for technology integration, the project provided multimedia equipment to each of the core teachers and to the schools. At the beginning of the project year for the schools, CREATE provided each core teacher with a laptop computer. This computer was to be used by the core teachers to locate technology resources to use in their instruction and to develop technology infused lesson plans. In addition to the laptop provided to each core teacher, the project provided each school with a technology support cart and a wireless laptop cart. The technology support cart was equipped with tools necessary to support the goal of technology integration into teaching. The tools included on this cart were: (a) multimedia desktop computer, (b) digital projector, (c) laser printer, (d) scanner, (e) digital camera, carrying bag and memory stick, (f) flex-cam, (g) presentation monitor, (h) multimedia presentation cart, and (i) Windows XP Professional Operating System with Microsoft Office XP Professional. The wireless laptop cart provided to the school included (a) 15 laptop computers, (b) wireless access point, (c) laptop storage cart, (d) Windows XP Professional Operating System with Microsoft Office XP. The provision of these tools would address the challenge of limited access to technology tools faced by the teachers as they worked to integrate technology into their instruction.

To address the barrier of a lack of technology training, the project made provisions for the teachers to receive training on the use of several technology hardware and software resources. During the summer months, the CREATE staff would sponsor a week-long session for the purpose of training the teachers to use the technology equipment made available to them. The sessions would also train the teachers to use technology applications with the Microsoft Windows XP package with which they were provided. Additionally, the teachers were provided with websites, specific to their subject area, which would be useful to them in their efforts to integrate technology into their teaching. After the summer months, the CREATE staff would arrange day-long professional development sessions either on the campus of Mississippi State University or at the school sites. The CREATE staff took an extra step in addressing the barrier of a lack of training to integrate technology into teaching. The staff developed step-by-step training modules detailing the aspects of training previously received. These modules were available online at the CREATE website and served as a quick reference for teachers as they worked through the technology integration process. On-site, off-site, and online training opportunities were available to teachers to address the challenge of a lack of time to integrate technology into teaching.

To address the barrier of a lack of support to integrate technology into teaching, the CREATE project made provisions for the availability of an on-site support person to provide just-in-time assistance to teachers working to integrate technology into teaching. The position of Educational Technologist (ET) was created to fill the teachers' void of lack of support to integrate technology into teaching. The ET was a fulltime person

housed at the school to provide ongoing just-in-time instructional support on a daily basis to teachers. One of the specific duties of the ET was to develop an active student technology team (techno team). The techno team was a group of middle school students trained by the ET on technology hardware and software applications. This group of students was formed to be an extension of the ET. As the techno team members were trained to use these applications they would, in turn, provide technical and instructional support in their classes to students and teachers. The provision of an ET and techno team to provide on-site, just-in-time support were the methods set in place by CREATE to address the challenge of a lack of support for teacher to integrate technology into instruction.

Role of Project Participants

This section will describe the project participants in the CREATE project and highlight the intended roles and responsibilities of each of these participants. This section will focus specifically on the role and responsibility of the (a) administrator, (b) ET, (c) core teacher, and (d) techno team. All of the roles and responsibilities of the project participants are taken from the CREATE for Mississippi Procedures Manual (2002).

Administrator

The project viewed the participation of the administrator as pivotal to the successful operation of CREATE in the school. The administrator, first and foremost, was charged with possessing and selling the vision of technology integration into teaching to the teachers and students. The administrator was also responsible for selecting

candidates and hiring an ET for the school as well as selecting core teachers from the existing teacher pool. Additionally, the administrator was responsible for the typical administrative duties such as reviewing and receiving budget approval, making provisions for professional development sessions, and planning class schedules. Planning class schedules was a very important role of the administrator because of the creativity that was necessary to provide release time for teachers as well as providing time for the ET to meet with the techno team members.

Educational Technologist

The educational technologist (ET) was designated as the first line of defense for teachers who were working to integrate technology into instruction. The main duty of the ET was to provide on-site, just-in-time support to teachers integrating technology into teaching. The ET was also responsible for providing technology training for core teachers and non core teachers as well in both one-on-one and group sessions. As the project personnel predicted that the demand for the services of the ET would be great, another role of the ET was to develop the techno team. The techno team would receive training from the ET which would allow them to share the brunt of the work that the ET would normally have to carry. The ET was responsible for assisting teachers in locating technology resources to integrate into their instruction as well as providing assistance to teachers as they developed their technology infused lesson plans to submit to CREATE to be placed on the project's website. As an accountability measure, the ET was also

responsible for keeping and submitting a weekly log of activities that they were involved in throughout the school.

Core Teachers

The CREATE project requested that the administrator choose four teachers to be designated as core teachers. These four teachers were to represent the core subject areas in the curriculum (one teacher for each subject area). The major role of the core teachers was integrate technology into their instruction. With this role came many responsibilities. The core teachers were responsible for (a) attending all professional development session conducted by the CREATE staff, (b) developing and testing at least two technology infused lesson plans to be published on the CREATE website for the purpose of dissemination, and (c) providing professional development to other teachers within their school.

Techno team

The techno team was not a major component in the original version of the project. It was found by project staff that students were very valuable untapped resources for teacher support. The CREATE staff noticed that one of the participating schools employed the use of students in providing assistance to teachers and saw the success and value of the student's positions. Subsequently, the CREATE project implemented the use of the techno team in the project model.

The role of the techno team was to assist the ET in providing on-site technology support to core teachers and non-core teachers. The techno team members were

responsible for tasks such as troubleshooting, developing presentations to be used in class by teachers, and locating technology resources for teachers to use in the integration process. Essentially, the techno team members were an extension of the ET.

Community Information

The following section of this chapter will provide information about the region and city in which the study is conducted. This information is important because it provides insight into the culture of the participants and the conditions under which the participants operate. Possessing an understanding of the culture is helpful to the researcher because it aids in the interpretation of the actions of the participants. Additionally, it is important for the reader to possess an understanding of the culture because it aids the reader in gaining a better understanding of how the participants do what they do and more importantly, why the participants do what they do. This section of the chapter focuses on the region of the Mississippi Delta as well as the town of Darton, Mississippi.

Mississippi Delta

According to Sydnor (as cited by the United States Office of Civil Rights, 2001) The Mississippi Delta is a region that is characterized by the flat land curbed in the outline west of the Mississippi River, east of the Yazoo River, north of Memphis, Tennessee and south of Vicksburg, Mississippi. The birthplace of the American blues, the Mississippi Delta has inspired many stories of poverty, prejudice, injustice, financial gain, tolerance, and justice. Because of the fertility of the land, the Mississippi Delta

has seen the development of many farms and plantations, transforming the land into a viable economy. Early settlers brought large numbers of enslaved Africans to the area to clear the land for farming. As the slaves worked through the tedious task of clearing endless brush, up from the rows often came songs, hollers, and shouts. These hollers, shouts, and songs became the melodious underpinnings of the blues. Like the blues, the Mississippi Delta has its own songs of ups and downs, haves and have-nots, failures and accomplishments.

Today, the Mississippi Delta remains heavily populated by African Americans. According to the United States Commission on Civil Rights' Mississippi Delta Report (2001), the Mississippi Delta is one of the poorest areas in the country. This report also described the Mississippi Delta as a "third world country in the heart of America" (p.1). As the past and present of the Mississippi Delta appears to be bleak according to accounts of this report, the Mississippi Delta is home to many treasures. Vardaman, Mississippi, a Mississippi Delta town, is known worldwide as the sweet potato capitol of the world. Greenwood, MS, another Mississippi Delta town, is the cotton capitol of the world. This Mississippi Delta is also the home of many well known people who have made great contribution to the world. These Mississippi Deltans include (a) Jim Henson, the founder of the Muppets who was born and raised the in the Mississippi Delta town of Leland, Mississippi, (b) Morgan Freeman, an actor who was born in Greenwood, Mississippi, (c) Tonia Stewart, an actress who is known for her roles in the movie "A Time to Kill" and in the television show "In the Heat of the Night," was born in Greenwood and, (d) Willye B. White an Olympic gold medalist in the area of track and field, also born in

Greenwood. Greenwood is also the birthplace of the researcher of this study. The Mississippi Delta is home to two institutions of higher learning, Mississippi Valley State University in Itta Bena and Delta State University in Cleveland.

Just as the Mississippi Delta has its strong areas there are also areas in which much improvement is needed. The Delta is a place of hope and prosperity, disparity and oppression. The town of Darton is in the heart of the Delta and the people, including the participants of this study, face the good as well as the not so good aspects of living in the Mississippi Delta.

History of Darton

Darton, Mississippi is located in Wassaw County. According to local historians (as cited by CREATE, 2000), the town of Darton got its start through the merging of two settlements. These two settlements were those of Levi Woods and Leslie Brown. These two men were attracted to the area because of the profile of the land and the potential for financial gains through agriculture. Leslie Brown was the first to settle in the area. Brown migrated to the areas after experiencing financial difficulty in Clinton, Mississippi. Upon settling in the area, Brown became the owner of two plantations. The other settler, Mr. Woods was a lawyer from Jackson, who like Mr. Brown, was attracted to the area because of the landscape. Mr. Woods' goal was to develop a plantation in the area as well.

The town of Darton sprang from these early settlements. The area was christened “Darton” by the wife of Leslie Brown. Mrs. Brown named the area in honor of her uncle who fought with Napoleon.

The town of Darton suffered greatly as a result of the Civil War. The area was invaded by Union General Steel and his troops on three different occasions. After this time of turmoil, it was many years before the area recovered from the economic losses suffered during the war. Despite the bleak times that many of the citizens had, Darton bounced back and became a prosperous town. During that time, the economy of the town was supported by the business of five saloons, seven or eight general stores, two drug stores, one real estate office, two hotels, three steam gins, two corn mills, one butcher shop, one justice of the peace, one constable, and two doctors.

The first educational facility in the town of Darton was the elementary school for white children which was established in 1871. As time passed, other grade levels were added to the existing elementary school which subsequently resulted in the first graduating high school class of the school in 1950. This class was comprised of six students. In 1958, several school districts were consolidated, and high school students in Darton were assigned to the Long or Jonesdale school districts.

Darton Today

In 2004, the town of Darton still stands nestled in the flatlands of Wassaw County, Mississippi. Darton is a welcoming place with plenty of old-town charm. This is evident as visitors enter the town and are greeted by the view of Tom’s grocery store with

the antiquated RC Cola sign serving as the front for the store. The feeling of a cozy homely feel is more pronounced with the presence of small grassroots businesses in the town such as TT's Soul Food Shop with its homemade painted sign in front of a long narrow house serving as the business locale.

According to the United States Census Bureau (2000), the town of Darton is populated by just over 550 citizens. The predominant ethnic group of this small town is African American. About 530 of the citizens are African American or of other descent, and the remainder are of European American descent. The largest portion of the city's population is comprised of people ages 25-34. There are two schools in Darton: Covington Middle School, a public middle school, and Long Beach Academy, a private pre-kindergarten through 12th grade school. According to the census data, the most prevalent educational attainment level of this town is that of some high school but less than a high school diploma. Of the population of Darton, 32% have attained less than a high school education, 4% a bachelor's degree, and 1% hold graduate or professional degrees. In 2000, the per capita income of Darton was \$6,827 compared to the state's per capita income of \$9,648 and the country's per capita income of \$21,857. The major source of income in the city is the manufacturing industry. The majority of the citizens of the Darton community commute to surrounding cities to work. The cities offering employment to many Darton residents are Greenville, Leland, Parchman, and Indianola. The manufacturing industry is the most prevalent employer of most of the residents of this Delta town. The mercantiles in this Mississippi Delta community consist of a variety

store, one convenience store, one restaurant, one grocery/convenience store, and a strip of three night clubs.

School and School District Information

The next section of this chapter sets the stage for the introduction of the story of the participants. Included is information about the Jonesdale School District, the history of Covington Middle School, a description of the school as it operates today, and the school's historical and present access to technology.

Jonesdale School District

The Jonesdale School District is populated by just under 1,100 students. The district superintendent is Mr. James Taylor. The elementary school serves about 625 students, the middle school serves about 160 students, and the high school serves about 300 students. Six percent of the students in this community attend private school. Ninety-eight percent of the student population in the Jonesdale School District is African American. According to the state of Mississippi's standard of school accreditation, Jonesdale holds a level three (successful) school rating (Mississippi Department of Education, 2002).

According to the Mississippi State Department of Education (2002), the total per pupil expenditure for the district's students was \$7,417.00 with \$5,908 being state and local funds and \$2,233.00 being federal funds. The local ad valorem tax levy that supports the basic operation of this school district was 38.31% compared to the state's rate of 39.69%. The debt service levy that services bond issues in the district and other

capital improvements was 10.35%. Ninety-two percent of the students in the Jonesdale School District were eligible for free lunch; however, the district is presently participating in a federal program that allows for all of its students to receive free lunch. The district was able to qualify for this program on the basis of the poverty level in the district.

Of the teachers employed by the Jonesdale School District, 21% held advanced degrees. Jonesdale is an area that is facing a severe teacher shortage. As a result of the shortage, the district employs persons on emergency teaching certificates to ensure that all of their classrooms are covered. According to 2001-2002 statewide school data, statewide, 1% of teachers were teaching with the use of emergency teaching certificates compared to 14% of the teachers in the Jonesdale School District. That is, while 1 out of 100 teachers in Mississippi was teaching on emergency certification, nearly 7 out of 100 teachers in Jonesdale School District were on emergency certification.

Covington Middle School History

According to the Covington Middle School Teacher Handbook, Darton was established in 1871 as an elementary school with Mr. H.W. Upper as its first principal. The school continued to operate uninterrupted as an elementary school. However, through the years, higher grades, one at a time, were added until the school became a full high school in 1949, graduating its first class of six in 1950.

Darton remained a high school until 1958 when the school district was consolidated. The high school students of Darton District were assigned to Long School District or Jonesdale School District.

The late Mr. James Covington first came to Darton Colored School in 1938 as a vocational teacher. He maintained that position until 1940. He became principal of Darton Colored School, a position he held until his death in 1963. Mr. Covington worked dutifully with the community as well as the school. His loyalty and dedication endeared him to the entire Darton community as a great humanitarian and educator.

In 1963, Mrs. Anna B. Covington, wife of Mr. James Covington, became principal of Darton Colored School. In 1968, the school was lowered to the 8th grade, having 16 teachers. A major addition was made during the years that followed. The faculty grew to 26 with a great increase in the enrollment.

In 1975, after the death of Mrs. Covington, Mr. Robert Pulley became principal of Darton Colored School. The name of Darton Colored School was officially changed to Covington Attendance Center and it housed students in first through eighth grades. Mr. Pulley remained principal of Covington Attendance Center for 10 years.

At the beginning of the 1985-1986 school year Mrs. Mary Ellen Whitt Spells, a former student of Darton Colored School, became principal of Covington Attendance Center. One year after Mrs. Spells became principal, the school structure was changed from first through eighth grades to kindergarten through sixth grade. For the first time, Covington Attendance Center received state recognition for its outstanding school attendance record. The school was honored on the local, district, and state levels.

During the 1994-1995 school year the Jonesdale School District School Board voted unanimously to change Covington Attendance Center to Covington Middle School for the 1995-1996 school year. Plans were made to involve approximately 25 teachers and other staff in the new middle school concept. According to the plan, all 7th and 8th grade students in the Jonesdale School District were to attend Covington Middle School, thereby employing “pure” middle school concepts and objectives. Upon Mrs. Spells’ retirement in 2001, Mrs. Attala F. Johnson was named principal of Covington Middle School.

Covington Middle School Today

Covington Middle School (Covington) is located in the heart of Darton, Mississippi. Covington is a very small school with a warm, family like personality. The close-knit culture of the school is supported by the student teacher ratio and the community ownership of the school. Covington is presently the educational home to 156 seventh and eight grade students and a 13 teacher faculty. According to the Mississippi Department of Education (2002), Covington, on Mississippi’s accreditation scale, was rated a level three (successful) school. School pride is always evident at Covington as the students wear daily the school’s colors of maroon and gold. The school’s mascot, the tiger, is ever-present in the hallways and across the campus and the school’s motto, “Strength in the Middle” can be found imprinted on everything from student book covers to classroom walls.

Upon entering the main building of the small campus, the walls are filled with evidence of the school's efforts to "educate" students instead of just "schooling" them. The first thing that a visitor would notice upon entering the halls of Covington is the school's mission statement. The mission statement of the school is a testament to the fact being a student at Covington involves much more than the rigorous side of academia.

Covington Middle School's mission statement (2001) provides that:

We, the Covington Middle School faculty and staff, commit ourselves to the middle school an institution where students will achieve mastery of basic skills as well as personal and social growth....Because our students are involved in a transition from childhood to adolescence, we are committed to teaching the whole child and providing a quality education that fosters self-respect, self-esteem, self-control, and a sense of responsibility. We are committed to helping each student develop an appreciation of human worth, ethnic heritage, human diversity, tolerance, and citizenship.

This mission statement was truly lived by the faculty and staff at Covington. The words faculty and staff are emphasized because it was obvious that every adult employee of Covington exhibited a sense of responsibility for the children who passed through the hallways of Covington.

Before the 2001 school year, Covington Middle School was more an institution of schooling and less an institution of education. The school existed for academic purposes devoid of any extracurricular activities that usually characterize a middle school. This

quickly changed in 2001. During this year, the school experienced an awakening that transformed student and faculty and staff alike. Additions to the existing academic program during this school year were a chapter of the National Honor Society, 4 H club, a student council chapter, a band program, and an athletic program including football, basketball, and cheerleading.

Parental and community involvement was one of the thrusts of this year of rebirth. According to teachers at the school, the level of parental involvement at the school had been very low. One of elements put into place during this year to increase parental involvement was the open house program. This open house program was different than other open house programs previously held at the school because of the monumental amount of student participation which led students to emphasize the importance of their parent's attendance. To increase parental involvement, a Parental Involvement Center has been established at the school to promote the school's support of parents and to promote the parent's support of students.

Covington has been very progressive in the respect of securing external funds to support the operation of the school. The school is involved in many grant-funded programs including The Kellog Foundation which assisted the language arts teachers with their efforts to incorporate placed based learning. The school is also involved with the Gear Up Mississippi program. This program provides assistance to the school in the area of family and community outreach, professional development, technology development, college tuition assistance for students, and tutoring and mentoring for students. One of the projects with which Covington has had the lengthiest involvement is

the Mid-South Mid-Start program, a middle-grades school improvement initiative. According to the project's website (1998), the goal of the initiative is "work with Mid-South schools in Arkansas, Louisiana, and Mississippi and help them become developmentally responsive, academically excellent, and socially equitable" (p.1). For the purpose of improving instruction and achievement in the area of language arts, some teachers at the school have been involved with the Mississippi Writing for Thinking Institute.

In attempting to sum up the essence of Covington, it was my first thought to describe it as a diamond in the rough. After spending many hours at Covington observing teachers and students, interacting with the community, and becoming one of the Covington family, I do understand, now, why the school's motto is "Strength in the Middle." This, very eloquently sums up the essence of Covington Middle School.

Technology at Covington

Before CREATE came on the scene at Covington, access to technology was limited as was the use of technology due to the lack of availability. The technology to which Covington had access included two computers in each classroom, one projector in the entire school, a video camera, and two Internet connections per classroom. When CREATE came onto the scene, the additional equipment provided by the project was a much needed addition to the technology inventory and vision of the school. The teachers used this equipment very often and very competitively. It was not uncommon for all of the equipment to be checked out.

The real proof of technology growth was in the purchase in the years following the provision of equipment by CREATE. As the administration saw the level of use of the existing equipment by teachers, there was a movement to acquire more equipment. This movement was not about procurement for the sake of procurement, but about procurement out of necessity. In the two years following the inception year of CREATE the school acquired an additional (a) two laptop carts, (b) four technology support carts, (c) three projectors, (d) two digital cameras, (e) two smart boards, (f) three video-cameras, and (g) 30 Texas Instrument calculators with an overhead projector. The school also made provisions for at least five computers per classroom, five Internet connections per classroom, and two printers per classroom.

Once Covington recognized the value of access to equipment the result was the provision of more equipment for teacher and student use. Though large purchases were made the equipment still proved to be insufficient as the demand for technology grew along with the supply.

The Players

This section of the chapter explores lives of the participants in respect to CREATE. This section tells the story of the participants and their involvement with the project, their roles as teachers at Covington, their perspectives of the CREATE project, and the impact that their participation in CREATE had on their teaching. Discusses in this section of the chapter are the principal at Covington, the ET, the techno team, and each of the core teachers. Finally, this section provides a summary of the big picture at

Covington. Discussed is the impact that the elements of the project had on Covington, specifically the teachers' teaching.

Administrator

The principal of Covington Middle School is Mrs. Attala James. Mrs. James is a graduate of Delta State University in Cleveland, Mississippi. Mrs. James earned a bachelor's degree in Business Administration and a master's degree in Educational Administration. Mrs. James is presently enrolled in and near completion of an educational specialist program in Educational Administration at Delta State University. She expresses interest in pursuing a doctoral degree. Mrs. James came to the Jonesdale School District from the neighboring North Roak School District where she had served as a computer discovery teacher as well as assistant principal at the high school for two years. Mrs. James has served in the capacity of principal at Covington for three years.

Mrs. James is an African American woman in her mid 40's. She is married and is the mother of two elementary aged children. Mrs. James is a woman, who at first glance, exudes expressions of sternness. Although sternness is one of her characteristics, it does very little to describe this woman who has a true passion for people and an excitement about the education of the children at Covington that is only surpassed by the excitement that she has about her own children. Mrs. James inherited her educational enthusiasm from her mother, who was a teacher in the Wassaw County area for many years.

The 2001-2002 school term was Mrs. James' first year to serve as principal at Covington. Mrs. James' interest and enthusiasm about CREATE and her new assignment was evident very early on. During the summer of 2001, the CREATE project staff

sponsored a workshop aimed at introducing new schools to the project and beginning the process of professional development that would continue throughout the teachers' participation in the project. It was only required that teachers and ETs attend this weeklong training session which was held on the campus of Mississippi State University. On the second day of the training session, Mrs. James was present at the workshop venue. This was a shock to some and it went unnoticed to others. I, for one, was among the group of the shocked. No other administrators had attended any of the sessions and one would think that taking on the task of heading a new school would occupy enough time, on site, without having to drive over 120 miles to check on the operations of teachers. This visit, however, went unnoticed by many at the workshop simply because they did not know who she was. Among this group of those who did not take notice were some of the core teachers from Covington. As Mrs. James was new to Covington, many teachers had not had the privilege of meeting her. It was in this setting that Mrs. James was introduced to members of the faculty by a member of the faculty. Ida, the veteran teacher of the core teacher group, had a long-standing personal relationship with "A.J." as she affectionately refers to her. Ida and Mrs. James' mother, being a member of the same profession and community had developed a personal relationship through which Mrs. James was introduced to Ida. After Mrs. James was introduced to the teachers, I noticed that she held a fairly open conversation with Stacy, the ET. It was later learned that Mrs. James and Stacy had come from the same school in North Roak and therefore had significant history. This would not be the last workshop that Mrs. James attended with the core teachers from Covington.

Mrs. James was always supportive of any endeavors taken on by her teachers. Furthermore, she encouraged the teachers to seek out opportunities which would make them better teachers. In an interview following the school's participation in the project, Mrs. James revealed that in order to gain the level of loyalty that her teachers had for her, she first had to show them that she trusted them as individuals and professionals. She also revealed that it was one of her key goals to show the teachers that she supported them in their professional growth. In reference to the summer workshop where she was the only administrator present, Mrs. James commented that she wanted to know about everything in which her faculty and staff would be involved. Moreover, she was interested in the quality of the project which was about to take her school by storm. She also mentioned that she took the "family approach" as her chosen administrative method. This approach, according to Mrs. James, eliminates fear and deceptiveness that is often present in schools. It was not uncommon on my visits to the school to observe Mrs. James actively participating in a classroom setting, transporting technology equipment to teachers' rooms, or lovingly scolding a child for misbehavior, just as a parent would.

Mrs. James' enthusiasm and dedication did not go unnoticed. In 2003, Mrs. James was named the Alternate Mississippi Administrator of the Year by the Mississippi Department of Education. In reference to Mrs. James honor, it was noted that she credited her school's success to three essential anchors, those being organizational effectiveness, teaching and learning, and school and community. In addition to this state recognition, Mrs. James was also named to Mississippi's Council for Education Technology. As a

member of this council, Mrs. James serves as the only school level administrator on the board and was chosen particularly for her insight on effective technology integration.

During my visits, Mrs. James always made time to talk to me about CREATE and the happenings of the school, often she would greet me at the entrance of the school. I later asked her how she would always seem to know when I arrived at the school and she replied that she strategically placed her desk in her office so that she could get a glimpse of all of the visitors of the school and so that she could observe their facial expressions and gestures when they took their first look at the school. Luckily, I never gave a condescending look to the school building. During our talks, which would often begin in her official office, Mrs. James would ask for a change of venue when sharing intimate details about the school or about the project, in particular. Depending on the anticipated length of the conversation, we would embark upon one of two usual ventures which would include either (a) a talk in her “inner office” for short conversations or (b) a walk around the school for longer conversations. Ironically, her “inner office” ended up being the restroom inside of her office and the walk around the school ended up being a walk around the block. Mrs. James was very open about aspects of the project about which she had concerns or about which she wanted to highlight as a success of her the core teachers and techno team at her school.

Mrs. James did not have a great deal of input in the selection of core teachers for the CREATE projects as they were selected by the retiring principal, who had a good understanding of the teachers at the school. Although lack of familiarity was the case in the beginning, it was noted that the core teachers were selected based on evidence that

they were risk-takers and willing to try new things in the classroom. It was decided, through an agreement among the core teachers and Mrs. James, that the core teachers would have release time outside of the school day. The project intended for release time to occur during the regular school day; since Covington was not your “ordinary” school, provisions were made for other arrangements. Ida and Lee, being older teachers, were accustomed to the notion that being on time meant being early. As this was so, it was the agreement of these two core teacher and Mrs. James that they would have release time before the school day started since they were normally there at least an hour before they were expected. Jada and Marsha opted to have release time as it was proposed by the project, one hour after the school day.

CREATE ran deep in the veins of Covington. It was the vision of CREATE that the measures taken would impact students, core teachers, and non-teachers alike. Although CREATE knew that successfully integrating technology would have to begin with an administrative vision, again Covington not being your “ordinary” school, Mrs. James was an exception to even this rule. Not only did Mrs. James have a vision, but she was a great part of that vision. Mrs. James’ vision included improving the academic achievement of students at Covington as well as facilitating the development of well-rounded individuals. Use of technology was huge part in her plan to improve the academic performance of students at Covington. Mrs. James’ method of improving academics through student and teacher use of technology was to be a user of technology herself. The level of participation that she had in the project could have certainly qualified Mrs. James as an extra core teacher. The ET spent a great deal of time in Mrs.

James' office just as she spent a great deal of time tracking down the ET. Mrs. James became actively involved in learning the ins and outs of the equipment which was made available to the school through the project. She was also actively involved in learning to use the applications that core teachers were trained to use during professional development workshops. The ET offered a great deal of support to her as she learned to use the digital camera to take picture of the school campus, as she learned to use the projector and PowerPoint in order to assist in the development of a slideshow which was presented at the open house program. When the ET was not available to assist her, Mrs. James would often rely on the expertise of one of her core teachers. This, to some, may have been perceived as a method of checking core teacher progress, but it was my perception that since Mrs. James had trust in her teachers, it was more of situation where a genuine need was being met.

The equipment at Covington was used often. Mrs. James did realize how expensive the equipment was and how fragile it was as well. Again, to reiterate the issues of trust and "family", Mrs. James never viewed the equipment as being too precious to be touched. She viewed the equipment as tools to be used by teachers and students alike to facilitate the process of integrating technology into teaching and learning. The equipment was never stashed away in a room under lock and key. To promote the use of the tools, after year one of Chamber's participation in the project, Mrs. James required of all teachers that lesson plans be submitted via email. Even if most of the teachers at the school were familiar with using email, they would still have to go receive some type of training because Mrs. James took it a step further and required that the lesson plans be

submitted as an attachment to the email. This was a huge step for a school of teachers that had limited to technology two years before. In addition to the requirement of teachers submitting lesson plans electronically, Mrs. James also mandated that all teachers keep an electronic record of their grades. This, too, required training of the core teachers, non-teachers, and administrator. Mrs. James took the use of technology to another level in the 2003-2004 school term. During a visit, I observed children walking in the hallways with colorful apparatus' which were unidentifiable to me as I had never seen anything like it before. While sitting in a core teacher's room during class time, I noticed a student placing this unidentified object into a holder of similar color. After the class period, I inquired about the nature of the instrument and one of the students revealed that it was a hall pass. Upon closer inspection, I noticed that it was an electronic hall pass which had indicators of the time that the pass was taken from the holder, the time that the pass was replaced, and the amount of time that had elapsed. The tool also had a function which would aggregate the total amount of time that the pass was separated from the holder. The use of this tool was not only very neat and efficient but it was also a testament of Covington' growing reliance on technology.

The administrator at this school was very instrumental in the operation of this project. Not only did the administrator have a vision, she effectively conveyed the vision by living the vision.

ET

The ET at Covington was Stacy Brown. Stacy is a graduate of Alcorn State University located in Lorman, Mississippi. Stacy is presently enrolled in a master's program in the area of counseling at Alcorn State University. Stacy came to the Jonesdale School District in 2001 from the neighboring North Roak School District. Stacy taught math at South Delta for four and a half years. Upon transferring to the Jonesdale School District, Stacy served in the capacity of ET and administrative support.

Stacy's appointment as ET was not a matter of happenstance. Stacy and Mrs. James were both employed at a school in the North Roak School District. The story goes that Mrs. James left the North Roak School District during the 1999-2000 school year. At this juncture, she accepted employment with the Jonesdale School District as assistant principal of the high school. Mrs. James attempted to recruit Stacy to come to the Jonesdale School District in 1999, but Stacy declined to leave his position in North Roak. In 2001, upon accepting the principalship at Covington, Mrs. James once again called Stacy for the purpose of recruitment. Stacy initially declined again but Mrs. James offered encouragement in the form of assuring him that this would be the last time that she would attempt to recruit him. With very little urging, after the words of encouragement, Stacy left the North Roak School District for employment at Covington.

Not too soon after Stacy was introduced to the project, it was evident why he and Mrs. James had established such a good working relationship. Stacy was a risk-taker and

innovator just as Mrs. James had proved to be. The summer workshop of 2001 was the first time that Stacy met the core teachers. Not only was he facing the disadvantage of unfamiliarity but he was also at a disadvantage because he arrived at the workshop a day late. This was because all of the details of his employment had not yet been worked out on the first day of the workshop. By this time, the core teachers had all met each other and began to bond. Stacy was introduced on the second day of the workshop as the ET for Covington and the reception by the teachers was very warm and genuine. The welcoming committee, of course, was led by core teacher Ida who was the mother figure and peace maker of the group. Stacy very quickly started to participate in the training sessions and began performing his duties as ET as it was observed that he was called upon by the core teachers for help many times. This was interesting because the teachers opted to seek Stacy's assistance instead of the assistance of the CREATE staff who were standing ready to assist. A testament of Stacy's dedication to the operation of the project was noted when Stacy revealed that he was to be married on the Saturday following the workshop. This was shocking to many of the workshop participants who understood the amount of work and detail that is involved in planning and preparing for a wedding. Despite his wedding day planning jitters, Stacy stayed for the duration of the workshop and managed to remain quite focused.

Stacy's appointment to the position of ET was not "ordinary" because he did not hold a technology certification. Technology certification was one of the qualifications that the CREATE project sought in an ET. Despite Stacy's formal technology education shortcomings, he proved to be quite the asset for Covington. Stacy's success in picking

up new skills was mostly a result of his self discovery skills as well as his willingness to learn from others. It was observed that Stacy kept close contact with the male members of the CREATE staff. He would field questions about hardware and software through them. This type of dedication and drive are the types of attributes that led to him being named ET of the Year in 2003 by the CREATE staff. There is no wonder why he and Mrs. James made such a great tag team.

Stacy's office was located on the same hallway as the core teachers. This was very beneficial because this provided almost immediate access for the teachers and Stacy to each other. Stacy's office was a combination of two open areas. One space served as the area where equipment and his desk were housed. The adjoining area housed the mobile laptop lab and a few long tables. This was the place where Stacy would provide training for teachers and where he would meet with the techno team.

Year three brought about a big change for Stacy in his role as ET. The position of ET was not funded by the project during this year, instead the funding for this position was provided by the school district. The school district had noticed Stacy's role and success in the capacity of ET and felt that the continuation of this position was crucial to the district's effort to integrate technology into teaching. District officials felt that the schools would benefit from the support that Stacy had been providing at Covington. As a result, Stacy was hired for the 2003-2004 school year as the district ET.

This new position required that Stacy provide technology support for all teachers in the district. This change was frowned upon by many including the faculty at Covington and Stacy. In an interview, Stacy revealed that he would rather be assigned to one school

instead of the entire district. He said that he felt like he never got anything accomplished anymore because he always got other calls for assistance when he was on calls for assistance. The district made sure of his ready availability by providing him with a cell phone which at times he would misplace conveniently. Although the district had good intentions, it is evident that the decision makers lacked an understanding of the role of the ET. As the ET position was designed to provide just-in-time, on-site support for teachers, Stacy being pulled across the entire school district provided only for him to be just-in-time to receive another call while he was in route to other calls on-sites along the highways of Wassaw County.

Techno team

The techno team was a big deal at Covington. Many students wanted to be a part of the techno team but only a few were chosen. To be considered for membership in the techno team students were required to complete an application for membership, provide three letters of recommendation, and pass a technology skills assessment test. Through this rigorous selection process, 15 students were chosen to become members of the techno team. The membership of this team was comprised of five boys and 10 girls who were in the seventh and eighth grades. The techno team met weekly on Wednesdays during the student's activity period. All of the team members did not have the same time for their activity period so Stacy would meet with groups of techno team members throughout the day. During their meetings the techno team members would receive training on technology hardware and software applications, they would be sent out to

teacher's rooms to handle assistance requests, and they would complete school and community related projects which were assigned to the team.

The techno team was a busy group of students at Covington. There was always something to be done. Their first official assignment was during the open house meeting at the beginning of the 2001-2002 school term. The techno team members were charged with the responsibility of setting up photo opportunities of parents attending the meeting that night. They were also responsible for shooting the photo with the digital camera. After the photos had been shot, the team members had to return them to the ET so that he could incorporate them into a PowerPoint presentation. At the end of the open house meeting, the presentation was shared with the audience and the attendees were amazed to see their pictures as a part of the presentation for that night. The work of the techno team was a big hit.

The techno team members were always busy answering requests by teachers. Each techno team member was assigned one teacher for which they were to serve as their personal technology assistant. The team members were also frequently called upon for assistance by teachers whose classes they were enrolled in during times of technology crises. Outside of these responsibilities, the techno team members would complete assignments such as connecting and setting up equipment for teachers, developing PowerPoint presentations for teachers to use in their instruction, and processing documents for teachers with the use of Microsoft Word.

The techno team was a big part of the Darton community as well. The techno team would commit to clean up efforts in the community. On one occasion, the team

members participated in a project whereby they were responsible for raking the leaves in the yards of elderly citizens. Of course, they always had their digital camera in tow and would take pictures with the patrons who would consent. The response from the community was very positive.

Through the assistance of an outside source, the school obtained the use of a t-shirt press machine. The student techno team saw the use of this machine as an opportunity for them to advertise their skills. The students would have to create the design of the shirts using a scanner for any pictures or designs that might appear on the shirt and they would have to employ the use of Microsoft Word to develop the word scheme for the shirt. The first thing that they did with the press machine was make a t-shirt that read "Covington Middle School Student Techno Team." Once these t-shirts were seen by the public, the techno team had more requests than they could fill. They made t-shirts for the faculty, for student organizations, and for the community. The largest t-shirt project that the team completed was a community project. The community was in the process of developing a community playground. The assistant superintendent of the district approached Stacy with the idea of the techno team making t-shirts for sale to raise the proceeds for this project. The student techno team produced over 200 hundred t-shirts for this community fundraising effort.

The student techno team served many purposes. They served as a great support system for teachers desiring to integrate technology into their teaching. The formation of the team itself provided an extra curricular outlet for students who had become accustomed to not participating in anything but schooling. The techno team also served as

the advertisement agency for the school. These students will be proud for years to come when they see the community playground and know that they are partly responsible for the development of that piece of their community.

Core Teachers

This section of the study will highlight the participation of the four core teachers. Addressed will be the participation of Ida, Lee, Jada, Marsha, and Carmen in the project and the differences that the provision of time, tools, training, and support made in their teaching. Each teacher's profile will provide a description of their teaching responsibilities, their teaching practices before CREATE, their teaching practices during and after the operation of the project, and their perceptions of the project.

Ida

Ida Midyoung is the veteran teacher of the core teacher group. Ida is a graduate of Mississippi Valley State University located in Itta Bena, Mississippi. Combined, Ida has 33 years of teaching experience. She spent 25 years teaching math at Simmons High School in the Jonesdale School District. Ida has been at Covington for eight years. In her eight years at Covington, Ida has taught social studies and computer discovery courses. In her role as a CREATE core teacher, Ida served as the core teacher in the area of social studies.

Ida is high spirited woman of small stature in her late 50's. Ida is a veteran teacher in the Jonesdale School District and this gives her the advantage of knowing almost all of the parents of her current students. When visitors come to the campus, Ida is

always on the committee to welcome them or acquaint them to the school. Ida was wonderful pick for this position. She has the inside track on the community, she has the inside track on the school's cafeteria, and she always has refreshments hidden away in her classroom to share with guests.

Ida's classroom reflects her personality perfectly. Upon entering the classroom one would think that they had just entered the Warner Brothers Studio. Ida has a great passion for the characters of Looney Tunes. Unlike most teachers' desks, Ida's desk with table extensions is covered with Looney Tunes figurines. This collection is one that she began but through the years, students have contributed greatly to Ida's collection. When asked how many figurines she had collected she answered that her count ceased at 500 over two years ago. In addition to the figurines on the desk, Ida has stuffed Looney Tunes characters hanging from the ceiling of her classroom. In year three she shared with me that she was going to retire at the end of the school year and I firmly replied that I did not believe her because there was no way that she would be able to clear her classroom of all traces of Looney Tunes.

Ida is an avid user of technology for personal use. Ida owns two personal computers and they serve as her source of entertainment when she is at home. One of my trips to the school required an evening meeting with the entire CREATE team from Covington. Ida extended an invitation for me to stay at her house until the evening meeting began; I accepted. The first thing that Ida did when we made it to her home was turn on the computer. On this evening Ida used the computer to check various email accounts, create documents for school purposes, and entertain herself through playing

games online. This was a sign to me that technology played a great part in Ida's personal existence.

Before and during the CREATE project, Ida served as a computer discovery teacher at Covington. Ida's classroom was equipped with 25 desktop computers for student use. In addition to Ida's computer discovery teaching assignment, she taught one section of social studies during the school day. Needless to say, Ida's major concentration was on computer discovery as most of her school day was devoted to this course. Ida's day consisted of teaching students how to complete basic computer operations such as saving documents, printing documents, using the coloring and word art features of computer programs, and producing documents. For the most part, the students had a textbook that would guide them step-by-step through the processes. Instruction in this classroom was, for the most part, scripted. Ida's main resource for classroom instruction was the desktop computers available to her.

Very rarely did Ida use the equipment provided by CREATE. In the first year of the project, Ida often commented that she did not have any use for the classroom equipment which was provided by CREATE. This story changed drastically in year two of the project. Returning from the Easter break, Ida went to her classroom to start her day only to find out that her entire lab was no longer functioning. This was a nightmare for Ida as the focus of her classes depended on the use of the desktop computers in her laboratory classroom. This would be the first time that Ida would make use of the equipment provided by the project. For a whole week and a half, until her laboratory classroom was up and running again, Ida employed the use of the mobile laptop cart.

This experience was very different for the students but the reviews from the students were positive. Despite the popularity of the use of the laptops, Ida reverted back to the use of the desktops for good.

Ida made much use of the laptop computer provided to her by the project. During the summer workshop in year one, the core teachers were introduced to the use of Microsoft PowerPoint. Using a laptop much like the one that she would later receive, Ida caught on to using this application quite quickly. The teachers were to develop a presentation based on their subject area and needless to say, Ida's presentation was over the top! Ida used explosive graphics in her presentation along with the addition of lively music clips. She later learned to insert pictures into her presentations and this lesson, too, was valued and used in the workshop setting by Ida. PowerPoint seemed to be Ida's favorite technology application. During the school year Ida did use the laptop computer to develop the lesson plans which she was required to submit to the CREATE staff. Although Ida was fond of the use of PowerPoint, this fondness did not show very much in her lesson plans which were to be published or lesson plans submitted to her principal for her regular school duties. In her lesson plans submitted to CREATE, the integration of technology that was most evident was the use of the Internet. In all four of the lesson plans submitted to CREATE, the major method of integrating technology was the use of the internet. One of Ida's CREATE lesson plans did call for the use of the scanner as well as one calling for the use of PowerPoint. Lesson plans submitted to the principal on a weekly basis by Ida reflected no use of technology outside of the desktops in her classrooms. The plans were generally based on assignments from the textbook used for

the class which did not employ the use of any extra hardware or software outside of the printer.

Ida, being an unconventional teacher, opted to have release time before the school day would begin. This allowed for little time for interaction with the ET as Stacy reported to work at the regular report time. However, in a few cases when requested, Stacy would report to school earlier to meet with Ida. Ida would use her release time mostly to locate resources to integrate into her CREATE lesson plans. She would mostly spend time looking up other lesson plans in the area of social studies and finding websites relevant to the topic of her lessons. In addition to locating resources to use in her lesson plans, Ida would use her release time to practice software applications on which she received training for during professional development sessions.

Ida and Stacy kept close contact throughout the school day. The hitch to this is that unless there was a troubleshooting request, these visits were mainly social calls. Ida was self-reliant and called on Stacy for very little support. The ironic twist is that every period of the day for two years, the makeup of the students in Ida's classes would include at least one techno-team member. Ida did not make use of the expertise of the techno-team members for troubleshooting; she would call on Stacy.

From the year before CREATE to the two years after CREATE, little changed in the instructional practices of core teacher Ida. Before CREATE began to operate at Covington, the barriers to technology integration faced by Ida were not first order barriers as cited in Ertmer (1999). The impact that the provision of time, tools, training, and support had on her teaching practices was like the saying, "If you always do what you

always did, you will always get what you always got.” In this case she was pleased with what she had done in the past and was pleased enough that she was content with expecting more of the same. Although Ida’s individual technology skill level increased, this proficiency was not translated into instructional use. According to Ertmer, et al. (1999), Ida’s barrier to technology could be characterized as a second order barrier to technology infusion. This barrier was her unwillingness to change existing classroom practices. Before CREATE she was teaching her class in the way that she knew how to and the way she had found most effective. During CREATE, she saw no reason to fix that which, to her, was not broken. CREATE was not the project for Ida because this program addressed first order barriers to technology infusion. For her to be able to infuse technology into teaching, she would need the provision of means which would address second order barriers to technology infusion.

Before the inception of CREATE, Ida utilized the computer lab to deliver instruction to her technology discovery students. Her lessons were scripted through the use of textbooks used by her students daily. Her instructional practices were largely the result of the makeup of her class. Her class was housed in the computer lab and she saw the use of the lab as being the best way to convey the information to her students that they needed in order to be successful in her class. Ida was happy with her instructional setup. As this was so, when the tools from the project were provided there was no desire on her part to incorporate them into her existing working system. The training that she received was largely used for personal reasons. Learning new technology skills was fun for her, but she did not see the training as being useful in her teaching. Ida was a teacher

who would make the best efforts possible first at solving a problem before seeking the assistance of an outside source. The provision of support in the form of an ET did not benefit Ida in the respect of changing her teaching practices. She viewed Stacy as a colleague and made contact with him mainly for social purposes. The time provision was beneficial to Ida as she used the time to develop her lesson plans for CREATE. This had no impact on her teaching practices because she developed the lesson plans solely to fulfill her obligation as a core teacher to the project; the lessons were not piloted. In a nutshell, she continued to use the same equipment that she had been using for years and assigning the same type of activities that she had been assigning for years. Although the ET and student techno team were available to provide support, Ida seldom accepted support from support personnel. In her social studies classes, lesson plans reflected heavy use of the textbook before, during, and after CREATE. Ida did use the release time provided to her. This time was very instrumental in locating resources to use in her CREATE lesson plans as well as practicing skills, like PowerPoint, which she acquired in professional development sessions. It was unfortunate that although she possessed the capacity to develop technology infused lesson plans, she never piloted or used any of the lesson plans that she developed for the project.

Lee

Following Ida in years of teaching experience is Lee Gardner. Lee is a graduate of Tougaloo College, a private Methodist HBCU located in Jackson, Mississippi. He earned a bachelor's degree in Chemistry and has 13 years of teaching experience. Lee has taught

science courses, particularly Chemistry, at Mississippi schools in Longville, Trisdale as well as Jonesdale. His regular teaching area at Covington was seventh and eighth grade Integrated Science. In his role as a CREATE core teacher, Lee served as the core teacher in the area of science.

Lee is in his late 50's with a laid-back and pleasant demeanor. Lee's calm demeanor was not in sync with the level of intensity usually exhibited in his classroom. In our first interview, he revealed that he was not a technology user, but that he was open to the idea of learning new things. Lee seemed like the perfect candidate for the CREATE project with his *tabula rasa* attitude about technology integration. Mrs. James was very proud to have him as a member of the faculty. She commented that Lee's knowledge of content reflected that of a college professor instead of a middle school teacher. She was very pleased that her students were exposed to a person who would be willing and able to share such an extensive knowledge base.

Lee was a slow and meticulous learner. During professional development sessions throughout the projects duration, Lee could be found somewhere close to Stacy or one of the members of the CREATE staff. This was not perceived as insecurity but perceived as the manifestation of a desire to do all things the right way. Lee sought assistance from anyone with expertise; I would even assist on occasions.

Lee was a man with little technology history who ultimately grew to possess a big technology vision. Before CREATE, he did not use technology in his personal or professional life. In his teaching career prior to CREATE, Lee was conventional in that he thought that all he needed in order to teach a good science lesson was students and

nature. Ultimately, Lee became an avid user of technology for one of the most practical purposes that I heard verbalized by any CREATE core teacher. Lee revealed that he enjoyed using technology because it provided efficiency in teaching. This was plainly evident to me as I sat in his room on what I think was the worst and best day possible. Every school year he teaches a lesson about anatomy. To make this lesson complete, the classic frog dissection method is used. As usual when I was in the classroom observing, Lee felt the need to include me in the lesson and issued to me a frog carcass, dissecting tools, and a tray. In his instruction, the use of the technology support cart, specifically the monitor and the flex-cam was implemented. He taught us step by step how to expose the organs of the frog and carried us through the description of all of the animal's organs. Though thoroughly disgusted, I was very pleased to see the process of integration taking place in Lee' classroom.

One other interesting feature of the frog dissection lesson was that Lee had spent many hours with Stacy to figure out how to use the equipment for this presentation. On the day of the presentation, Stacy brought the support cart into the classroom and left him to his own devices. It was observable that he was having some degree of difficulty with the operation of the equipment at the beginning of the class session. To his advantage, there were two techno-team members enrolled in his class and he did call upon them for assistance. After the lesson was over he commented that the teaching of the lesson included the same content elements, but provided efficiency in the way that the students could observe and follow his procedures via the monitor and flex-cam. This was different for him in the respect that traditionally students had to gather around one frog while he

was the only person who got the hands on experience. Ironically, Lee was the only core teacher who used the flex-cam.

The structure of his lessons began to change soon after he became a core teacher. It seemed that after every professional development session he would attend, Lee would have a lesson plan that would reflect the use of the training that he received. Lesson plans submitted to the principal for his regular teaching duties illustrated that he incorporated the use of every piece of equipment on the technology support cart. In preparation for the school's science fair, in year two, he employed the use of the wireless laptop lab for the purpose of his students being able to search the Internet for science projects ideas.

Lee opted to have release time before the school day started because he, just as Ida, usually reported to work before the school day began. This time was used to practice his skills in the area of the most recent training. He explained to me once that the skills always seemed to make sense during the training sessions, but he sometimes found himself at a loss once he got the opportunity to try the skill on his own. The release time, ET, and student techno team were very valuable when it came to translating the use of tools and training into instruction for Lee.

Although Lee appears to be such a success story, he still held a bit of his conventional approach to teaching. In a reflective conversation, he stated that even though he thought that technology was great for enhancing the learning experience, he also thought that some of the children had been handicapped by the experience. He further explained that because the children at Covington had been exposed to so much technology integration by core teachers and non-core teachers the children no longer

wanted to read from textbooks or write down information from the board. Lee stated that if the children took on the attitude that if the lesson was not presented to them using technology or if they did not have to sit in front of a computer screen to be taught the lesson, then the lesson was not worth learning.

Lee's innovative teaching strategies did not go unnoticed. In 2002 he was named STAR teacher at Covington. This honor was made possible through the nomination and subsequent appointment by the STAR student for 2002. Also in 2002, the principal provided him a fully equipped technology support cart which was to be permanently housed in his classroom. Additionally, Mrs. James, in 2002, appointed Lee to the position of administrative assistant. Although he did not possess an administrator's license, he was responsible for tasks such as keeping order in the hallways and reporting occurrences of misbehavior in the school. This appointment resulted in Lee being responsible for one less class period per day.

Jada

Jada Starks is a young teacher, where teaching experience is concerned. She is a graduate of Mississippi Valley State University located in Itta Bena, Mississippi where she earned a bachelor's degree in English. Presently, she is enrolled in the Master's of Arts in Teaching Program at Mississippi Valley State University. Jada has five years of teaching experience and all have been spent at Covington. Her regular teaching area at Covington was eighth grade language arts and reading. In her role as a CREATE core teacher, she served as the core teacher in the area of language arts.

Jada is a tall, small framed, well groomed teacher in her mid 20's. Her classroom is decorated with bright colors (primarily pink and green) and exudes a feeling of energy and vitality. Her classroom was always filled with chatter which was a sign, most of the time, of cooperative work among students. She was a free and inquisitive spirit and her students took on the same type of personality while they were in her classroom.

CREATE seemed to be a perfect fit for this novice teacher of language arts. Jada was much like Lee in the aspect that she acted like a sponge when introduced to new skills. At her first introduction to the CREATE project, in the year one summer workshop, she was one of the students who listened for instructions at first, but soon ventured out on her own path and found the end of the lesson. She was usually ahead of the core teacher group. During one of the professional development workshops in the first year, the core teacher group was introduced to an exercise whereby the Microsoft Excel program could be used to administer spelling tests to students. Jada took notice of this activity and subsequently used it quite frequently in her classroom in conjunction with the wireless laptops.

During a classroom observation, she was presenting a lesson on the types of sentences. To present this lesson, Jada used the traditional instructional methods of lecturing, questioning, and chalkboard presentation. When it was time for the students to apply the information that they had learned from the lesson, they had to develop PowerPoint presentations including the characteristics of a specific type of sentence and provide examples of this type of sentence. This application and assessment phase of the lesson actually served as a remediation phase in that the students were re-teaching the lesson for the day. Jada also used technology for enrichment purposes. An example of

this is the student's use of the wireless laptops to develop crossword puzzles using their vocabulary words for the week. The students would develop the puzzles and then exchange puzzles with their classmates.

Technology integration became a daily part of her instruction. Evidence of this was not only in her lesson plans which were submitted to her principal but also in the frequent disappearance of the technology support cart and the wireless laptop lab. The teachers at Covington were presented with a problem in year one when they realized that each time they went to retrieve the equipment, the equipment was already gone. The usual culprit in these situations was Jada. Her frequent need for the equipment coupled with the other teachers' desire to use the equipment forced the ET to develop a rotation plan for the use of the equipment. This rotation plan limited her to access about twice a week. This did not stop a determined Jada. She would make deals with teachers which would result in her having access to the equipment on the days which were not originally assigned to her. She was quite the technology hoarder.

Just as Jada hoarded the technology equipment, she would also hoard the time of the ET. She had release time after the school day which allowed for the presence of the ET. Although she had release time with Stacy after school, during the school day, Stacy saw his fair share of her classroom. There were many times during my observations that Stacy would be in Jada's classroom for the whole period, not providing on-site support to her, but providing support to the students. It would be fair to conclude that she began to view Stacy more along the line of her personal teacher assistant rather than the ET for all

core teachers. Inspection of Stacy's ET logs reveal that he logged many hours assisting Jada during class time as well as after the school day.

Her release time was made up of some well spent hours. Not only did Jada use her release time to find resources to incorporate into her CREATE lesson plans, she also spent time finding ideas to support the technology infusion takeover that was happening in her classroom on a daily basis. Jada would use her release time to locate resources, develop lesson plans, test lessons that she planned to use, and seek the assistance of the ET.

Jada's dedication and enthusiasm for teaching paid off. In 2002, she was named Teacher of the Year at Covington. This honor, according to Mrs. James, was the result of her innovative approach to instruction. In addition to the Teacher of the Year award, Jada was also named as the director of an after-school tutoring project at Covington. As one of the perks of this appointment, she relocated to a classroom which was equipped with its own 15 station wireless laptop lab, a smart board, a technology cart with a digital projector, and a ceiling mounted projection screen. This was one big step for Jada and one giant leap for the other teachers in the school who needed to gain access to the technology which she previously hoarded.

Marsha

Marsha Gills was a core teacher during the first year of the CREATE project at Covington. Marsha is a graduate of Mississippi Valley State University where she earned a bachelor's degree in Elementary Education. She has five years of teaching experience,

three of which were spent at Covington. Marsha left Covington in 2002 to teach in a neighboring school district. At Covington, her regular teaching area was seventh grade math. In her role as a core teacher, she served as the core teacher in the area of mathematics.

Marsha was a woman in mid 40s with a scathing disposition. Marsha always radiated a stand-offish spirit to the CREATE staff, to other teachers in the school, and to me. During the summer workshop of 2001, much of her time was spent surfing the Web instead of following along with the professional development sessions. Toward the end of the weeklong workshop, one of the members of the CREATE staff was conversing with Marsha about an aspect of the project that dealt specifically with professional development. Marsha, in response, gave quite a colorful and offhanded response to the comments of the staff member. The entire CREATE team from Covington was embarrassed by the antics of Marsha. Ida issued an apology to CREATE staff members on Marsha's behalf. My conversations with this core teacher were short and direct, usually a question and answer, with nothing volunteered. Marsha did not share of herself with anyone.

Her school day before the inception of CREATE consisted of teaching seventh and eighth grade mathematics. Because of the lack of technology that existed in the school, Marsha relied on the use of textbooks, worksheets, and the chalkboard to convey her lessons. After CREATE, her classroom strategies did not change very much. When CREATE supplied equipment to the school, she did not use the support cart or the wireless laptop lab. Although this equipment went unused by Marsha, the laptop that

CREATE provided to her was used very often. During observations in her classroom, she could be found at any time of the day sitting at her laptop computer playing online games, viewing pictures of her grandchildren, or surfing the Web. Marsha's students could be found completing a worksheet or completing an assignment from the textbook. Technology played a big part in her personal life, but not in her professional life.

Marsha did not make use of her release time as it was intended. She opted to have release time after school. An interview with Stacy revealed that Marsha reported that she worked better at home and she would take her laptop home to fulfill her CREATE duties. This arrangement did not allot any time to meet with the ET to receive training or support. The lack of support that she received and her lack of interest in the project were evident in her production. She was always late submitting her CREATE lesson plans, which became a constant problem for the ET, the principal, and the CREATE staff. This consistent problem led to the CREATE staff meeting with Mrs. James to discuss her lack of dedication to the project. As a result, Mrs. James shared with Marsha that she would withhold CREATE payment until she fulfilled her obligation to the project.

Marsha's lesson plans, which were submitted to Mrs. James weekly, reflected no use of technology. The lessons would generally employ the use of lectures, textbooks, and worksheet. The lesson plans that she submitted to CREATE to be published on the website made limited use of technology. Although in one lesson she employed the use of Microsoft PowerPoint, the lesson could have more efficiently been taught using conventional methods. Marsha's other lessons were dominated by the students' use of Internet searches.

At the end of the 2001-2002 school year, she announced that she would be resigning from her position as a teacher at Covington. This decision, on her part, also ended her commitment to the CREATE project. Upon Marsha's separation with the school and project, Carmen Wyms was chosen to replace Marsha in the capacity of core teacher.

Carmen

Carmen Wyms is the youngest of the core teachers where teaching experience is concerned. Carmen is a graduate of Mississippi Valley State University, located in Itta Bena, Mississippi where she earned a bachelor's degree in History. Presently, Carmen is enrolled in the Master's of Arts in Teaching program at Mississippi Valley State University. Carmen has two years of teaching experience, both have been spent at Covington. Carmen's regular teaching area at Covington is seventh grade language arts and United States history. In her role as a CREATE core teacher, Carmen served as the core teacher in the area of math.

Carmen's experience as a core teacher differed from the other four core teachers' experience. She became a member of the core teacher team during the second year of the project at Covington. The second year at Covington was CREATE's third year in operation. During this year, funding for the project was reduced significantly and the project staff had to develop means of cutting costs for the project. One way in which the costs were cut was the discontinuation of release time for the core teachers.

As a core teacher in year two of the project, Carmen got the chance to take advantage of the professional development opportunities, the support of the ET, and the use of the tools. Carmen was not afforded the opportunity to experience the time or monetary compensation of release time, but this seemed to have minimal effect on her zest for integrating technology into teaching. This core teacher caught on to the elements of CREATE very quickly. Although Carmen came to Covington excited about the possibilities of using technology to enhance learning, the fact that Jada was appointed as her mentor teacher did not hurt her success in her role as a core teacher.

Carmen hit the ground running in the summer of 2002. She attended the summer professional development workshop held on the campus of MSU. There she picked up skills using Microsoft Word, PowerPoint, and Excel as well as skills in using the tools available at the school. She promptly began to use the equipment to integrate technology into her teaching. On one of my visits early in the school year, Carmen was using the mobile laptop lab in her classroom so that her students could complete an assignment for a lesson developed by a teacher from another school participating in the CREATE project. This lesson, which was based on the American Revolution, called for the use of the computer on the support cart, projector, laptop lab, and Microsoft PowerPoint. Carmen and her students executed the completion of this lesson very successfully. Although she did not have to create lesson plans for submission to CREATE, it was not uncommon to observe her making use of lesson plans from the CREATE website developed by other core teachers.

As for support, Carmen had plenty of it. She was fortunate in that she had available to her two support sources: the ET and her mentor teacher. She made much and very good use of these support persons although they sometimes seemed like one in the same as Stacy was practically attached to Jada most of the time. Carmen seemed to use each of them for a specific purpose. She relied on Stacy for technical assistance and training with equipment. Jada was relied on for her expertise in making connections with technology and content. Of the core teachers, Carmen seemed to benefit most by the provision of just-in-time, on-site support.

Impact at Covington Middle School

The provision of time, tools, training, and support, made possible through the CREATE project, made a great difference at Covington. The participants benefited greatly from the operation of the project in their school. Through the project, the core teachers were provided release time. The purpose of this time was for the teachers to develop technology infused lesson plans, collaborate with the ET, and locate technology resources to use in their lesson development and delivery. The teachers at Covington used this time, mostly, in that exact manner. The release time made a difference at Covington. It enabled the teachers to do just what the project had intended: to integrate technology into teaching. The teachers gained the use of tools which had not existed in the school before. The teachers used the equipment mostly just as the project had intended: to integrate technology into teaching. The teachers were provided with more technology training than they would have normally been provided with from the school district. The

training made a difference in both the school and with the teachers. Covington, acquiring more tools, changed the way that they operated as a school. This is evident with the inception of the electronic submission of grades and lesson plans. The teachers used the training to learn to use the tools and technology programs to do just what the project had intended: to integrate technology into teaching. The ET at Chamber was a hot commodity. Once the teachers recognized the usefulness of this position and how the person in this position could make their teaching jobs easier while at the same time making it more challenging they solicited the ET to do just what the project had intended for the position: to provide support to teachers for the integration of technology into teaching.

The differences at Covington were evident in the behaviors of the teachers and the execution of a vision in the principal. Although this study did not seek to study the effects that the project had on the student, being an educator, I would be remiss in my duties if I omitted the impact that the project had on the students.

As discussed in the description of the school, the students at Covington had grown accustomed to not being involved in activities outside of learning. The project called for the development of the techno team which provided an opportunity for students to be involved in an extracurricular activity as well as continue to be involved the process of learning. These students learned most in their capacity as teacher. They provided training to their teachers and they also provided valuable resources for their teachers to use in teaching. The students also benefited because they were introduced to a new way of learning. When CREATE came to Covington, long gone were the days when the students

used textbooks and worksheets as their avenue to learning. Their teachers were finally catching up with the times and introducing their classes to a new concept, the integration of technology into teaching.

CHAPTER IV

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

The CREATE for Mississippi project sought to enhance the educational experiences of teaching and learning through supporting teacher integration of technology. CREATE's method of supporting technology integration into teaching was to address the four main barriers to technology integration; these barriers included (a) lack of time, (b) lack of tools, (c) lack of training, and (d) lack of support. CREATE took specific measures at Covington Middle School to promote the integration of technology into the teaching practices of four teachers, referred to as core teachers. This study examined whether the measures taken by the CREATE project prompted teachers at Covington to integrate technology into their teaching. This chapter will provide a summary of the literature review, research methodology of the study, conclusions drawn from the data analysis, and recommendations for practice and further research.

Summary

The purpose of this study was to determine whether the measures implemented to address barriers to technology infusion changed the technology use patterns of core teachers at a middle school. This research explored four specific research questions:

1. Does the availability of a technology cart, wireless cart, and laptop remove the barrier of lack of tools for middle grade teachers to infuse technology in instruction?
2. Does the availability of technology training remove the barrier of lack of training for middle grade teachers to infuse technology in instruction?
3. Does the availability of support remove the barrier of lack of support for middle grade teachers to infuse technology in instruction?
4. Does the availability of release time remove the barrier of lack of time for middle grade teachers to infuse technology in instruction?

Ertmer, et al. (1999) noted that there exist first and second order barriers to teacher technology use. The first order barriers were described as being extrinsic, such as a lack of time, tools, training, and support. These barriers were addressed for the participating teachers. They also noted that second order barriers are those that are intrinsic to teachers including beliefs about teaching, beliefs about computers, established classroom practices and unwillingness to change. This was evident in the varying levels of technology integration by the core teachers. As the first order barriers were no longer a challenge for the teachers, the second order barriers to technology integration account for the varying levels of technology integration by the core teachers.

Technology integration is not the sole responsibility of the classroom teacher. Teachers need backing in their efforts to integrate technology into their teaching. There are elements, like training, support, tools, and time, necessary for the successful integration of technology in teaching which the availability of are not all determined by

the classroom teacher. This is supported by the CEO's Forum on Learning & Technology (2001), which noted that schools and districts must continue to make the commitment to professional development by providing the necessary support, resources and time for teachers to learn both how to use technology, and more importantly, how to integrate it into the curriculum to achieve educational objectives.

A review of the literature revealed four findings about technology integration into teaching. These findings were summed well in the findings of Metzler and Sherman (1998). They initially suggest the provision of administrative support for the successful infusion of technology into teaching. Next, they suggested that the school administrator provide sufficient access to hardware and software, and provide sufficient training and time for teacher to hone their technology skills. Metzler and Sherman also supported the notion of providing time to teachers to integrate technology into instruction. They asserted that teachers must be allowed time to talk about technology with other teachers and follow training sessions to become familiar with new ideas where technology is concerned. In the area of providing support for teacher's technology endeavors, they believed that the role of the technology coordinator is to provide teachers with ongoing technology support and training. Metzler and Sherman asserted that where access to technology is a factor, technology is a tool that requires practice to be used well and that the technology should be located where the teachers are able to gain free and easy access.

The review of literature revealed that teachers do not integrate technology into teaching because of the barriers of a lack of time, tools, training, and support exist. The literature suggested that teachers be provided with time to learn new skills, practice the

skills which were learned, and develop lesson plans which are infused with technology.

The literature also suggested that teachers be provided adequate access to tools in order to integrate technology into teaching. In addition to access to tools, the tools should be regularly rotated and updated to support the applications needed for use by teachers. The literature suggested that school provide training to teachers about how to integrate technology into teaching instead of how to use the tools. Moreover, the literature suggested that the training received by teachers be ongoing and continuous to properly facilitate the processes of learning and change. Finally, the literature suggested that schools provide an on-site person who the teachers can consult about issues of technology integration into their teaching. The presence of this support person was said to benefit teachers by making the process of integration less stressful for teachers.

The purpose of this study was to examine a middle school's participation in a technology project aimed at addressing the barriers to teacher's technology integration into teaching. Specifically, this study was conducted to determine whether the measures implemented to address barriers to technology infusion changed the technology use patterns of core teachers at a middle school to enhance their instructional content and delivery.

This study addressed a gap that exists in the literature relevant to the barriers of technology integration into teaching. There does exist literature that identifies the barriers to technology integration into teaching but very little literature exist that addresses the changes that occur when the barriers to technology integration are addressed. Conducting this study was important because it documented the impact that addressing these barriers

to technology infusion had on the actual goal of moving teachers to infusing technology into their instructional practices.

The site chosen for this study was Covington Middle School. Covington was one of the four participating schools assigned to me in my role as an evaluator in CREATE. This site was chosen because I was interested in observing the changes related to instructional technology that would take place in a setting where there was no previous access to technology equipment, release time, technology training, and technology support. Additionally, this site provided a setting in which the entire school was available for study.

The research design selected was the case study. The case study design was appropriate for this study because I was interested in questions of how teachers would integrate technology into their teaching and why teachers would integrate technology into their teaching

This study chronicled the participation of a middle school in a project which sought to facilitate teachers' integration of technology into teaching. Specifically, this project focused on the participation of the administrator, core teachers, ET, and techno team. The method that this project subscribed to was addressing the barriers to technology integration into teaching which include (a) lack of time, (b) lack of tools, (c) lack of training, and (d) lack of support.

To address the barrier of a lack of time, the project implemented the concept of release time. Release time was time that the teachers were compensated for outside of the school day to engage in activities which would lead to their integration of technology into

teaching. Some of these activities included collaborating with technology support personnel at the school site, locating technology resources to integrate into their lesson plans, and developing technology infused lessons.

To address the barrier of a lack of tools, the project provided tools to the participating school as well as the participating teachers. Each of the core teachers received a personal laptop to use in developing technology infused lessons. The school received a wireless laptop lab and a technology support cart which included (a) a multimedia desktop computer, (b) digital projector, (c) laser printer, (d) scanner, (e) digital camera, carrying bag and memory stick, (f) flex-cam, (g) a presentation monitor, (h) multimedia presentation cart, and (i) Windows XP Professional Operating System with Microsoft Office XP Professional.

To address the barrier of a lack of training, the project conducted technology sessions on the campus of Mississippi State University as well as at the school site. These sessions were designed to develop teacher competency in the use of hardware and software. The project also funded the position that would provide an on-site support person whose duty included providing technology training for teachers.

To address the barrier of a lack of support, the project provided an on-site technology support person. The person who held this position, called the ET, provided just-in-time support for teachers as they worked to integrate technology into their teaching. This person was also responsible for the development and operation of the techno team. The techno team was a group of students whose job it was to serve as an extension of the ET in supporting teachers' efforts to integrate technology into teaching.

A blanket statement about the results of this study cannot be made for the team of core teachers. Their integration of technology varied for different reasons. However, it can be surmised that the provision of time, tools, training, and support did make a difference in teaching practices, as well as a difference in the school, overall.

The core teachers used their release time mainly for creating lesson plans to submit to the CREATE staff and for locating technology resources to use in their teaching. The existence of the CREATE lesson plans is a testament to the fact that the teachers used their release time for the intended purpose. It can be reasonably deduced that the teachers used the resources which they located during their release time in their instruction. Because it was observed that technology was used in instruction, and apparently not on a whim, the provision of time did change the teaching practices of the core teachers. During observations, it was obvious that the lessons were planned in advance because the delivery of the lessons flowed smoothly. The teachers had the tools necessary for the delivery of the lessons available and their delivery of the lessons was usually flawless; little to no time was used to figure out how to use equipment. It would be safe to believe that the teachers used their release time to develop lessons and prepare for lesson delivery.

Notably, from the range of technology application used by the teachers, either for personal or teaching purposes, the training provided by the ET and CREATE staff was beneficial to the teachers. The use of the skills acquired through training was evident. The presence of these skills in CREATE lesson plans, school lesson plans, and in observed classroom instruction supports that the provision of training does increase the likelihood

that teacher will integrate technology into their teaching when the barrier of a lack of training is addressed.

The same statement is true for the provision of tools for the teachers' integration of technology. There was not a piece of equipment provided by the CREATE project which was not used in instruction by the team collectively. The importance of the tools in instruction is evident in the fact that the ET was forced to develop an equipment rotation plan to ensure that all teachers had equal access to the equipment. This is further substantiated by the schools progress in purchasing additional tools after receiving the tools from the CREATE project.

The ET at Covington spent much of his time in the classrooms of core teachers either providing assistance with a technical issue or providing technology integration insight to smooth over a pedagogical issue. Because of the support of the ET, all of the core teachers were more comfortable and adept users of technology because of the presence and support that he provided.

Conclusions

The general research question that this study sought to answer was:

Will middle grade teachers infuse technology in teaching when the barriers of technology access, training, time, and support are addressed?

The general answer offered for this question is yes, middle grade teachers did infuse technology into teaching when the barriers of technology access, training, time, and support were addressed. It seemed that the barriers to technology integration with which Jada, Lee, and Carmen faced were first order barriers, as explained by Ertmer, et

al. (1999). Once the barriers of a lack of time, tools, training, and support were addressed, these teachers exhibited major changes in their teaching because these barriers were addressed. It was noted that these teachers were frequent users of the tools provided. These three teachers used the time provided by the project to develop technology infused lesson plans and locate resources for the further integration of technology into their teaching. These core teachers also used a wide array of technological applications in the development of their lesson plans and in observed classroom teaching exercises. These teachers sought the support and assistance of the ET. This was clearly noted in the ET log and by the observed presence and provision of assistance by the ET in the classroom of these core teachers. It is concluded, in the case of these three core teachers, that the provision of time, tools, training and support was vital to these teachers' integration of technology into teaching.

Secondary barriers to technology integration were not factors for these teachers' integration of technology into teaching. These teachers' readily accepted the idea of changing their teaching practices to include the integration of technology. These teachers were open to change, and they possessed beliefs about their roles as educators. Two of these teachers were considered novice teachers. This explains that they had no established classroom patterns which could not be modified. The other core teacher proved to be a risk taker, which helps explain his acceptance of change in his teaching practices.

In the case of Marsha and Ida, it is concluded that the provision of time, tools, training, and support did not make a difference in their teaching practices. This is because

these teachers were not prohibited from integrating technology in teaching because of first order barriers, but because of the presence of second order barriers. Ertmer, et al. (1999) pointed out that second order barriers to technology integration are based on the belief system of teachers. Ida's lack of technology integration in teaching was due to her established classroom practices: she had always relied on the use of the lab to teach her class and furthermore believed that using the lab was the best way to teach. On the other hand Marsha's lack of technology integration into teaching was due to her beliefs about teaching and her unwillingness to change. Marsha believed that teaching was an exercise of rote memorization and self discovery. She did not view herself as a tool in the process of teaching and learning; she was happy to believe that textbooks and worksheets were the vital tools in the teaching and learning process. Again, it is concluded that the provision of time, tools, training, and support did not make a difference in the teaching practices of Marsha and Ida.

Initially, this study was only concerned with the differences that would occur when first order barriers were addressed. It was found that second order barriers were also a factor in teachers' integration of technology into teaching. Obviously, for technology integration to occur in teaching, first order barriers must be addressed. Teachers cannot integrate technology without the tools of technology. Tools must be accessible and reliable for use. Tools are no good to teachers when they do not know how to operate them. Additionally, knowing how to operate the tools is only a small step in the technology integration process. Training must be provided for teachers so that they will be able to make the connections between pedagogy and technology. Teachers need to

know what type of programs will most efficiently address their instructional delivery needs. After teachers have received training and are able to make the connection between pedagogy and technology, they must be provided time to implement what they have learned. If these skills are not used they are essentially lost and no good to anyone. Although it seems to be a costly venture, schools must allocate time for teachers to practice their skills and put them to use. The translation of skills into instruction seems well worth the investment of time for a few hours a month. To ensure that the technology integration process flows as smoothly as possible, it is well worth a school's funds to hire a person who will provide on-site, just-in-time support to teachers as they integrate technology into teaching. Technology integration should not be a "here today, gone tomorrow" fad for education. The aim of technology integration should be sustainability; the provision of a support person is one way to ensure sustainability.

In contrast to first order barriers, second order barriers to technology integration deal more with personality than physical resources. An educator's method of teaching is generally influenced by the personality of the educator. As second order barriers to technology integration are about personalities and belief systems, there is little that can be done to prompt the change of technology integration by teachers faced with these barriers. The most reasonable thing that a school could do to prompt teachers to integrate technology into teaching is to have a strong administrative presence. This administrator's goal must be the "selling" of technology integration to the resistant teacher. Otherwise, there must be an intrinsic desire on the part of the teacher to change beliefs about teaching and technology.

Recommendations

The following are recommendations for practice:

1. In order to reap the full benefits of an ET, the district should place Stacy back in his position as ET at Covington and invest in the funding of the position of ET at the districts remaining schools. The intended purpose of the ET was to provide on-site, just-in-time support to teachers. If the ET is not available on site when the teachers need him, then the teachers lose the ready support needed to make the technology integration process smooth.
2. The district should utilize the expertise of the core teachers to provide technology training and support for teachers in the district. The core teachers have gained skills at introductory and advanced levels of technology integration. Teachers in the school district will benefit from the training that these teachers provide in elevating their skills to the advanced level at which they (core teachers) operate. Once all of the teachers in the district, including core teachers, have reached a similar skill level, the school district should seek the training services of an outside source to elevate the skill levels of the teachers. It is further recommended that the district employ these teachers as ETs.
3. To address second order barriers to technology integration, in hiring administrative personnel, the district should select persons with a strong technology vision who are willing to practice their vision as well as translate their vision into teacher use of technology in instruction.

The following are recommendations for further research:

1. A follow-up study should be conducted with the participants from this study to determine whether there was a continuation in the integration of technology in teaching after the CREATE project no longer operated in the school setting. As the school has already lost its technology support person, it is likely that the barrier of a lack of support will manifest itself again. Just as this barrier is manifested, it is possible that, without proper sustainability, other barriers to technology integration will reappear.
2. A follow-up study should be conducted with the participants from this study to determine whether the school continued with the model of providing time, tools, training, and support for teachers to integrate technology into their teaching. Sustaining of the elements used to address the barriers to technology use is the key. It was intended that the changes in the teaching practices of the core teachers would spread to the other teachers in the school. This will not occur if the participants, specifically the core teachers, did not begin to own the concept of technology integration into teaching.
3. A follow-up study should be conducted to determine if the actions of the CREATE project to address the barriers of technology integration at the participating school had a widespread effect which prompted the school district to implement these measures in other schools in the district
4. Further research should be conducted to gain a more in depth understanding of the reason that teachers fail to integrate technology into teaching when the first order

barriers to technology integration do not exist. As shown in this study, when first order barriers are addressed and second order barriers exist, the efforts used in addressing the first order barriers are essentially useless. Along with the physical resources, teachers must possess an intrinsic desire to change their teaching practices.

5. A study should be conducted addressing the issue of consistent technology use for instructional purposes and its effects on students' willingness to participate in the learning process without the use of technology. In this study, a core teacher raised the issue of students being resistant to traditional methods of instruction after being exposed to technology infused instruction.

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APPENDIX

VITAE

VITAE

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PERSONAL DATA

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EDUCATIONAL BACKGROUND

Doctor of Philosophy: Mississippi State University, Starkville, Mississippi.
Major Area: Elementary Education
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Educational Specialist: Mississippi State University, Starkville, Mississippi
Major Area: Elementary Education, 2000

Master of Science: Mississippi Valley State University, Itta Bena,
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Bachelor of Science: Mississippi Valley State University, Itta Bena,
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Major Area: Elementary Education, 1997

PROFESSIONAL EXPERIENCE

January 2004 – Present

Lecturer. Responsibilities include: delivery of instruction for undergraduate courses in social foundations of education and introduction to elementary education, development of course syllabi, student evaluation, student advisement, placement and supervision of practicum students, and supervision and evaluation of student teachers. Mississippi State University

August 2003 – December 2003

Assistant Professor of Early Childhood/Elementary Education. Responsibilities included: delivery of instruction in undergraduate courses in methods of instruction for preschool, adapting the learning environment for children with disabilities, and guidance and management, development of course syllabi, student evaluation, student advisement, committee membership, conducting research. Mississippi Valley State University

January 2003- August 2003

Instructor for undergraduate course in essential college skills. Responsibilities included: delivery of instruction, development of course syllabus, and student evaluation. East Mississippi Community College

August 2002-August 2003

Instructor for undergraduate course in social foundations of education. Responsibilities included: delivery of instruction, development of course syllabus, text selection, and student evaluation. Mississippi State University

August 2001-August 2003

Research Associate II. Member of the evaluation team for CREATE for Mississippi, a Technology Innovation Challenge Grant. Responsibilities included: conducting research in a central Mississippi middle school, collaborating with colleagues on best practices in research and technology integration, and writing and presenting reports regarding successes, explanations, and recommendations. Mississippi State University

- August 2000-August 2001 Graduate Research Assistant. Member of the evaluation team for CREATE for Mississippi, a Technology Innovation Challenge Grant. Responsibilities included: conducting research in a central Mississippi middle school, collaborating with colleagues on best practices in research and technology integration, and writing and presenting reports regarding successes, explanations, and recommendations. Mississippi State University
- June 2000-August 2000 Project facilitator. Project facilitator for Project GOALS, a federally funded tutoring and abstinence grant. Responsibilities included: delivery of instruction related to issues of positive self-concept and sexual abstinence. Starkville (MS) Public Schools
- August 1999-May 2000 Sixth grade math and science teacher, Henderson Intermediate School, Starkville (MS) Public Schools
- August 1997-May 1999 Second and third grade teacher, Davis Primary School, Greenwood (MS) Public Schools

PUBLICATIONS

- 2002 “Teaching Technology Infusion to In-Service Teachers: A Case Study,” paper published in the Proceedings of the annual meetings of the Society for Information Technology in Teacher Education. Co-authors: Melissa Nail, Beth Ferguson, Mike Lehman, and Dwight Hare.
- 2001 “Investigating the Benefits of the Educational Technologist in the Middle School Environment: A Qualitative Study,” paper published in the Proceedings of the annual meetings of the Society for Information Technology in Teacher Education. Co-authors: Melissa Nail, Beth Ferguson, Mike Lehman, and Dwight Hare.

PROFESSIONAL PAPER PRESENTATIONS

- 2002 “Strategies in Qualitative Research,” Paper presented at the conference for Methodological Issues and Practices in Using QSR Nvivo and NUD*IST, London, England. Co-authors: Mike Lehman, Melissa Nail, Beth Ferguson Coghlan, and Dwight Hare.

- 2001 “Technology Integration and the Changing Faces of Instruction in the Middle School Classroom,” paper submitted for presentation at the annual meeting of the American Education Research Association. Co-authors: Beth Ferguson, Melissa Nail, and Dwight Hare.
- 2001 “Investigating the Benefits of the Educational Technologist in the Middle School Environment: A Qualitative Study,” paper presented at the annual meeting of the Society for Information Technology in Teacher Education. Co-authors: Melissa Nail, Beth Ferguson, Mike Lehman, and Dwight Hare.

PAPERS UNDER REVIEW

- 2003 “Investigating the Significance of the Role of the Educational Technologist in the Middle School Environment,” paper submitted for publication in the Journal for Effective Teaching. Co-authors: Melissa Nail, Beth Ferguson, and Dwight Hare.

GRANTS

- 2003 United States Department of Education, Fund for the Improvement of Postsecondary Education. Written with Beth Ferguson Coghlan and Dwight Hare. Not funded.

RESEARCH

- 2002 Literacy in Elementary Schools. Mississippi State University
- 2000 Student Perception of In-School Suspension. Henderson Intermediate School
- 2000 Technology Infusion in the Middle School Setting. Mississippi State University

PROFESSIONAL ACTIVITIES

- 2001 START Institute. Attended a series of training sessions on technology training procedures.
- 2001 Institutional Review Board/ Human Subjects Training. Completed a training session for Institutional Review Board policies and procedures for the protection of human subjects. Certified to conduct research using human subjects.

PUBLIC SERVICE

- 2002 Presenter of a lecture titled “Constructivist in the Elementary Classroom” at Mississippi Valley State University.
- 2003 Tutor, Safe & Drug-Free Schools Program, Starkville Family Centered Programs.

COURSE LOAD

Spring 2004

EDF 3333: Social Foundations of Education

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EDE 4887: Student Teaching

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EC 400: Methods of Instruction: Preschool

EC 312: Adapting the Learning Environment for Children with Disabilities

EC 316: Guidance and Management

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EDF 3333: Social Foundations of Education

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EDF 3333: Social Foundations of Education

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