Spring 2013

Teachers' Perceptions of Professional Development Activities which Result in Successful Integration of Classroom Instructional Technologies

Lisa Blackmon

TEACHERS' PERCEPTIONS OF PROFESSIONAL DEVELOPMENT ACTIVITIES WHICH RESULT IN SUCCESSFUL INTEGRATION OF CLASSROOM INSTRUCTIONAL TECHNOLOGIES

by

LISA M. KOHL-BLACKMON

(Under the Direction of Russell Mays)

ABSTRACT

Recent research demonstrates the expectation of the use of technology in schools. Advances in technology often require teachers to learn new methods of teaching while trying to keep up with rapidly increasing technological changes. Unfortunately, many teachers report being inadequately prepared to utilize instructional technologies in their classrooms. School leaders have the complex task of providing effective training that meets their teachers' needs. In this quantitative study, the author sought to determine teachers' perceptions of professional development activities which result in successful classroom integration of instructional technologies in schools. Teachers from two school districts in Georgia were surveyed. Data were analyzed using descriptive statistics and standard multiple regression. The findings showed that teachers perceive peer support or mentoring and technology personnel support or modeling to be the two most effective forms of professional development activities which result in successful classroom integration of instructional technologies. Non-credit workshops provided by school district or outside consultants was perceived by teachers to be the most ineffective form of professional development for successful classroom integration of instructional technologies. Regression analysis for each of the nine types of professional development was insignificant and therefore indicated that there was not a relationship between a teachers age, years of experience, degree level or hours of student classroom technology use and teachers' perception of professional development activities which result in successful classroom integration of instructional technologies.

INDEX WORDS: Technology, Staff Development, Professional Development, Teachers Perceptions of Professional Development, Technology Professional Development, Successful Technology Professional Development

TEACHERS' PERCEPTIONS OF PROFESSIONAL DEVELOPMENT ACTIVITIES WHICH RESULT IN SUCCESSFUL INTEGRATION OF INSTRUCTIONAL TECHNOLOGIES

by

LISA M. KOHL-BLACKMON

B.S., Augusta State University, 1996

M.Ed., Piedmont College, 2004

Ed.S., Piedmont College, 2006

A Dissertation Submitted to the Graduate Faculty of Georgia Southern University in Partial Fulfillment of the Requirements for the Degree

DOCTOR OF EDUCATION

STATESBORO, GEORGIA

2013

TEACHERS' PERCEPTIONS OF PROFESSIONAL DEVELOPMENT ACTIVITIES WHICH RESULT IN SUCCESSFUL INTEGRATION OF INSTRUCTIONAL TECHNOLOGIES

by

LISA M. KOHL-BLACKMON

Major Professor: Russell Mays
Committee: Samuel Hardy
Charles B. Hodges

Electronic Version Approved:
May, 2013

DEDICATION

The work presented here is dedicated to my loving and supportive family.

First, I dedicate this work to my parents, Randy & Marylan Kohl. Without them none of this would be possible. I have been very fortunate to have the parents that every child wishes they had. They have always believed in me and been there for me and my children. I want to thank them for instilling in me the drive to accomplish all that I can in life and to settle for nothing.

Next, I dedicate this work to my sister Kathy, my brother Richard, and my sister-in-law Pam. Thanks for always believing in me and encouraging me to go on.

Finally, I dedicate this work to my children, Ashley Marie, Matthew Dillon, Taylor Nikohl and Sydney Kathleen. They are my inspiration for everything I do. They are my pride and joy and the loves of my life. I thank God for blessing with me such wonderful, caring, talented, and intelligent children. I know that I have missed many ballgames, wrestling matches, activities, concerts, and time just listening to your day as I pursued this degree, I hope that it will inspire you all to accomplish all that you can in life.

ACKNOWLEDGEMENTS

I would like to thank Dr. Russell Mays, my committee chair, for all his leadership, guidance, and support during this research project. His belief in me and continued encouragement gave me the motivation needed to finish my journey. Your willingness to pick me up and keep me going will never be forgotten.

The guidance and thoughtful insight of my committee members, Dr. Samuel Hardy and Dr. Charles Hodges, were of tremendous benefit to me, and to my research. I appreciate their service to me and to the educational community as they so generously gave of their valuable time and expertise.

I couldn't have done this without my dissertation buddies, Dr. Wendy Metcalf, Dr. Alexis Smith, and Dr. Debbie Collins. Our monthly dissertation weekends and continued emails are what helped me through this journey.

Special thanks go to Dr. Sue Cottingham, Dr. Debbie Collins, Dr. Randolf Kohl, and Dr. Teri Pettyjohn for reading and re-reading my work. Dr. Carol Thurman's knowledge of statistical analysis was also greatly appreciated. Thanks also go to Dr. Wiggins and the staff at UGA ETC for their continued help throughout this journey.

I'd like to thank my teammates, Diane Johnson and Susan Blackmon for picking up the slack while I was on this endeavor. Your friendship and support are greatly appreciated. Finally, I would like to thank all of my children's friends parents (there are too many to mention), along with my mom and dad, for carting around my children and being their other parent while I was in class, researching, or working on this paper. I will forever be in your debt.

TABLE OF CONTENTS

LIST OF TABLES

CHAPTER 1

INTRODUCTION

The roles and functions of schools are changing; mastering core academic subjects is no longer enough to succeed in today's society. Many students are now entering school with technology skills that far surpass those of their teachers (SETDA, 2007; OECD, 2009). New educational technology standards and student achievement have become pressing issues due to the national emphasis on standards-based accountability. A Presidential Blueprint for Reform (U. S. Department of Education, 2010d) and the National Education Technology Plan (U. S. Department of Education, 2010c) emphasize the use of educational technologies in the classroom. However, there is conflicting research on the success or failure of the integration of technology into the classroom (Choy, Wong & Gao, 2009; Kay, 2006; Whitehead, Jensen, & Boschee, 2003; Wozney, 2006).

Advances in technology often require teachers to learn new methods of teaching while trying to keep up with rapidly increasing technological changes. Unfortunately, many teachers report being inadequately prepared to utilize instructional technologies in their classrooms (Beaudrie & Boschmans, 2004; Bielema, 2000; Broussard, 2009; Griffin, 2003; Holmes, 2006; Latio, 2009). In a recent survey designed to gauge the use of technology in the classroom and perceptions of technology in education, 22% of 1,000 K-12 teachers and school administrators in the United States were considered frequent users of technology (Grunwald & Associates, 2010). Frequent users of technology spend 31% or more of their class time using technology to support learning. According to the U. S. Department of Education (U.S. DOE, 2000), teachers' technology training and belief in it is a key factor when examining teachers' use of educational technology in their classrooms (Choy, Wong, & Gao, 2009; U.S. DOE, 2000;). Currently, due to their novelty, modest research has been conducted on the integration of classroom instructional technologies. Items such as interactive whiteboards, student response systems, student document cameras, video cameras, and digital cameras need to be further researched as to their effectiveness in the classroom.

In order to provide teachers with the skills needed to effectively integrate classroom instruction technologies into their lessons, school districts ordinarily have prerequisite training designed to meet the needs of their teachers. Further research concerning teachers' perceptions of technology integration training needs to be sought in order for school district leaders to know what types of training to provide. This study surveyed certified middle schools teachers in two districts in Georgia to determine their perceptions of effective technology-related professional development. Research into teachers' perceptions of effective technology training methods can provide school district leaders with the information needed to provide more meaningful and effective professional development (Griffin, 2003).

Statement of Problem

The Presidential Blueprint for Reform (U. S. DOE, 2010d) and the National Education Technology Plan (U. S. DOE, 2010c) accentuate the expectations for the use of technology in the nation's schools. The emphasis is now placed on the effective use of technology to increase student achievement. However, according to research, only 22% of teachers would be classified as functioning on a beginner level (the lowest level) of technology integration (Grunwald & Associates, 2010). According to the U.S.

Department of Education (2000), teachers' technology training is a key factor when examining teachers' use of educational technology in their classrooms. Research demonstrates that sit-and-get or one-time-only professional development is not the most effective training method (Baylor & Ritchie, 2002; Becker, 2001; Lawless & Pellegrino, 2007; Rodriquez, 2000; VanFossen, 2001; Wenglinsky, 1998; Willis & Raines, 2001; Zhao & Bryant, 2007). According to research, teachers need opportunities to learn from their peers (Croft, Coggshall, Dolan, & Powers, 2010; Darling-Hammond, Wei, Andree, Richardson, & Orphanos, 2009; Rodriquez, 2000; U.S. DOE, 2000). Professional development must be ongoing with a connection to student learning. It should include hands-on technology use coupled with a variety of learning experiences, curriculum-specific applications, new roles for teachers, and administrative support. However, little if any research is available on the types of professional development teachers perceive to be effective in order to implement classroom instructional technologies, such as interactive whiteboards, student response systems, student document cameras, video cameras, and digital cameras that are found in many classrooms today.

In the current study, successful classroom integration of instructional technologies is defined as the incorporation of technology resources and technology-based practices into the daily routines, instruction, and management of the classroom by both the students and the teacher. The author's purpose in this study was to determine teachers' perceptions of professional development activities which resulted in successful classroom integration of instructional technologies in schools. This study examined the relationship between teachers' age and their perceptions of professional development activities which result in successful classroom integration of instructional technologies, and teachers' degree level and their perceptions of professional development activities which result in successful classroom integration of instructional technologies. It also examined the differences between teachers' years of experience and their perceptions of professional development activities which result in successful classroom integration of instructional technologies and any relationships between the reported number of hours of student classroom technology use and teachers' perceptions of professional development activities which result in successful classroom integration of instructional technologies. This study will provide the educational community with data pertaining to educators' perceptions of professional development.

Research Questions

The quantitative research was guided by the following over-arching question: What are teachers' perceptions of professional development activities which result in successful classroom integration of instructional technologies?

1. Does a relationship exist between teacher age and their perception of professional development activities which result in successful classroom integration of instructional technologies?
2. Does a relationship exist between teachers' years of experience and their perceptions of professional development activities which result in successful classroom integration of instructional technologies?
3. Does a relationship exist between teachers' degree level and their perception of professional development activities which result in successful classroom integration of instructional technologies?

4. Does a relationship exist between the reported number of hours of student classroom technology use and teachers' perceptions of professional development activities which result in successful classroom integration of instructional technologies?

Significance of the Study

Teachers are being trained how to use instructional technologies instead of how technology can impact learning and teaching (Brown & Warschauer, 2006; Croft et al., 2010; Darling-Hammond et al., 2009; Pass, 2008, Rodriquez, 2000). Initiatives such as The Presidential Blueprint for Reform (U. S. DOE, 2010d), the National Education Technology Plan (U. S. DOE, 2010c), and the No Child Left Behind Act (2002) have included technology-related professional development funding mandates that are designed to help accomplish effective use of instructional technologies. Professional development can take many forms including virtual training, school-wide workshops, lecture, and hands-on training. According to research, one-day or sit-and-get professional development is ineffective for teaching educators to learn how to effectively integrate new technologies (Baylor & Ritchie, 2002; Becker, 2001; Lawless & Pellegrino, 2007; Rodriquez, 2000, VanFossen, 2001; Wenglinsky, 1998; Zhao & Bryant, 2007). In fact, researchers have demonstrated that classroom teachers need opportunities to learn from their peers (Croft et al., 2010; Rodriquez, 2000; Wei et al., 2009). Professional development should be ongoing with a connection to student learning and coupled with hands-on technology use and a variety of learning experiences. It should incorporate curriculum-specific applications, new roles for teachers, and collegial learning. Active participation of teachers is essential and should be an ongoing process with sufficient time and technical assistance and support. Administrators provide this as well as adequate resources, continuous funding, and built-in evaluations, as they are noted as factors of effective professional development (Blank & de las Alas, 2009; Rodriquez, 2000; OECD, 2009).

Some research seems to support that on-going professional development and teacher support are key elements in student achievement gains through the implementation of the technology (Blank & de las Alas, 2009; Lawless & Pellegrino, 2007; Rodriquez, 2000; U. S. DOE, 2010c). However, due to the fact that only a handful of studies have examined newer site-based approaches to professional development through quantitative methods, additional research is needed in order to help school leaders stay abreast on this fast growing entity (Education Week, June 2011). The current study will add to the growing research regarding teachers' perceptions of professional development which results in successful classroom integration of instructional technologies in the classroom. Results of this study will reveal teachers' perceptions of professional development activities which result in successful classroom integration of instructional technologies.

One of the greatest challenges confronting school leadership is determining how to best provide professional development for their instructional staff (Pass, 2008). The insights uncovered by this study should give school leaders clearer direction as they develop a professional development plan for their teachers that will help foster successful integration of new technologies as they become available. School districts will be able to utilize these data to help inform their decisions when planning and reorganizing their professional development programs. By providing insights into methods of classroom instructional technology professional development that teachers utilize and perceive as effective, the study may help provide more effective instructional technology-related professional development programs. Teachers who participate in effective technology professional development programs will be better prepared to incorporate classroom instructional technology into their classrooms. If the technology needs of today's students are to be met, then determining how to provide appropriate professional development on classroom technology integration is essential (Pass, 2008).

As a member of two Title IID Technology grants, the author has not witnessed adequate professional development methods for the successful integration of technology being implemented in some Georgia middle schools. The author hopes to discover teacher perceptions of effective technology professional development for use in middle schools in Georgia. From these findings, recommendations and implications for practitioners, researchers, and administrators will be put forth.

Procedures

This study was a quantitative study with a nonexperimental design. The quantitative method was appropriate for this study because the research involved studying a population; used preconceived concepts and theories to determine the appropriate data to be collected, and used statistical methods to analyze the collected data. In addition, the author prepared objective reports of the research findings (Gall, Gall, & Borg, 2007). This study will describe teachers' perceptions of professional development activities which result in successful classroom integration of instructional technologies and will explore relationships between nine types of professional development and teacher's age, years of experience, degree level, and the reported level of student classroom technology use at middle schools in the participating districts.

In this study, there were two types of variables. The predictor variables, which are defined as the variables that make predictions about the criterion variable or how much variance they cause in the criterion variable (Pallant, 2010), were the teacher's age, the teachers' years of experience, degree level, and the reported number of hours of student classroom technology use. The criterion variable, which is defined as the element that varies because of the predictor variable (Pallant, 2010), were the types of professional development for classroom technology integration that teachers perceived as effective. In this investigation there were nine criterion variables: technology integration classes taken for credit hours, non-credit workshops provided by school districts or outside consultants, drop-in clinics or open computer labs, summer institutes, technology personnel support (modeling), peer support (mentoring), independent online help, reading printed documentation, and learning through trial and error.

The survey instrument, *Training Methods for Learning Instructional Technology* (Appendix A), was used to collect data for this study. The author created the survey by modifying, with permission, a survey used in a previous study by Griffin (2003). The survey included 12 questions related to demographics and student classroom technology use, and nine types of professional development used for technology integration training. The anonymous survey took approximately 15 minutes to complete online. The process resulted in a rapid turnaround in data collection from the approximately 230 middle school teachers who made up the sample. The two participating districts in the study were purposefully selected for participation based on the recommendation of the

University of Georgia Educational Technology Center (UGA ETC). UGA ETC recommended both districts based on participation in instructional technology professional development funded by Title IID technology grants and their incorporation of technology resources and technology-based practices into the daily routines, instruction, and management of the classroom by both the students and teachers. .

A link to the survey was made available, via email, to all certified middle school teachers in both school districts. Permission was acquired from the superintendent or central office personnel for each district. Letters of support from the participating districts were submitted to Georgia Southern University's IRB along with other approval documents (Appendices D & E). Teachers in District 1 were asked to voluntarily participate in the online survey by their Technology Director and in District 2 by their Principal. Requests were made via email from the Director of Technology in District 1 and from the Principal in District 2. Survey Monkey was used in order to eliminate the possibility of duplicate responses and to ensure participant anonymity.

Survey data from District 1 and District 2 was examined, in aggregate, with respect to teachers' perceptions of professional development activities which result in successful classroom integration of instructional technologies. The research was focused on whether teachers differ in their perceptions of methods for learning classroom instructional technology based on their years of experience. Furthermore, the research was focused on relationships between a teachers' degree level and their perceptions of the professional development activities with results in successful classroom integration of instructional technologies. The research was also focused on relationships between a teacher's age and their perceptions of the individual effectiveness of various types of professional development for successful classroom integration of instructional technologies. In addition, the research was focused on relationships between the reported number of hours of student classroom technology use and teachers' perceptions of the professional development activities which results in successful classroom integration of instructional technologies.

Limitations, Delimitations, and Assumptions

The limitations of this study stemmed from the fact teachers may not have answered the question regarding their age honestly or at all due to social desirability bias. In addition, successful classroom technology integration of the participants was based solely on the recommendation of the University of Georgia Educational Technology Center and was defined as the incorporation of technology resources and technology-based practices into daily routines, instruction, and management of the classroom by both the students and teachers. Finally, information provided regarding the reported number of hours of technology use was self-reported, and the author can only assume that those data were reported truthfully and accurately.

The delimitations of this study stemmed from the fact that this study was focused on educators currently working in middle schools in two school districts in Georgia. Both school districts had at least one middle school that had been recognized by the UGA ETC for successful implementation of technology. Successful implementation of technology was defined as the incorporation of technology resources and technology-based practices into the daily routines, instruction, and management of the classroom by both the students and teachers. All teachers at these schools were asked to voluntarily participate in the study. In addition, given that both schools were located in Georgia, the results may not be generalized to other states.

It was assumed that participants were open and honest. It was also assumed that the survey used was an appropriate tool for the purpose of this study.

Definition of Terms

21st Century Technology – For this study, 21st Century Technology is defined as technologies that have been introduced into the classroom setting in the 21st Century such as, but not limited to, interactive whiteboards, student response systems, document cameras, digital cameras, and video cameras.

Professional Development – A comprehensive, sustained, and intensive approach to improving teacher's and principals' effectiveness in raising student achievement. (National Staff Development Council, 2008)

Staff development – Processes that improve the job-related knowledge, skills, or attitudes of school employees.

Technology – Also known variously as e-learning, instructional technology and learning technology, educational technology is the use of technology to support the learning process (Educational Technology Insight, 2011).

Technology integration – For the purpose of this research successful classroom technology integration is defined as the incorporation of technology resources and technology-based practices into the daily routines, instruction, and management of the classroom by both the students and teachers.

Acronyms Referenced

AHS - Vermont Agency of Human Services

CBAM - Concerns-Based Adoption Model

CDD - Child Development Division

CITed - Center for Implementing Technology in Education

DCF - Department for Children and Families

ETTT - Enhancing Teaching Through Technology

FCPS - Fairfax County Public Schools

IRB - Institutional Review Board

ISTE - International Society for Technology in Education

LoTi - Levels of Technology Framework

NCES - National Center of Educational Statistics

NCREL - North Central Regional Educational Laboratory

NEA - National Education Association

NETP - National Education Technology Plan

NETS - National Educational Technology Standards

NETS - A - National Educational Technology Standards for Administrators

NETS - T - National Educational Technology Standards for Teachers

NSDC - National Staff Development Council

PTLS - Profiles for Technology Literate Students

RBS - Research for Better Schools

RESPECT - Recognizing Educational Success, Professional Excellence and Collaborative Teaching

SETDA - State Education Technology Directors Association

TSTF - Technology in Schools Task Force

UGA ETC - University of Georgia Educational Technology Training Center

URL - Uniform Resource Locator

Chapter Summary

Technological and educational advances are changing the way that many schools look and operate. Due to the national emphasis on standards-based accountability, educational technology, and student achievement have become pressing issues. Teachers are being asked to learn new methods of teaching, while at the same time facing even greater challenges of integrating classroom educational technology and facing greater diversity in the classroom. Teachers report being inadequately trained to utilize instructional technology in their classrooms. Research has validated that sit-and-learn or one-time-only professional development is not the most effective method of professional learning (Baylor & Ritchie, 2002; Becker, 2001; Lawless & Pellegrino, 2007; Rodriquez, 2000; VanFossen, 2001; Wenglinsky, 1998; Willis & Raines, 2001; Zhao & Bryant, 2007). Teachers have shown a need for opportunities to learn from their peers. Professional development should be ongoing with a connection to student learning. It can include the use of hands-on technology coupled with a variety of learning experiences, curriculum-specific applications, new roles for teachers, and emphasize administrative support.

In this study, the survey *Training Methods for Using Instructional Technology* , adapted from Griffin (2003) by the author, was employed to gain data on teachers' perceptions of professional development which result in successful classroom integration of instructional technologies. In addition, the research was focused on whether teachers differ in their perceptions of methods for learning classroom instructional technology based on their years of experience, age, degree level, or reported hours of student classroom technology use. From these findings, the author will discuss recommendations and implications for practitioners, researchers, and administrators.

The literature presented in Chapter 2 includes the push for technology integration across the nation. It also highlights traditional staff development and technology integration professional development. Years of experience and district size are also addressed in regard to professional development. Finally, Chapter 2 highlights teachers' perceptions of professional development.

CHAPTER 2

REVIEW OF RESEARCH AND RELATED LITERATURE

Across the nation many technology-rich classrooms have been established for teachers in the hope of attaining technology's promise of restructuring classrooms and increasing student achievement (Brockmeier & Gibson, 2006; Robertson, 2011). The Recognizing Educational Success, Professional Excellence and Collaborative Teaching program (RESPECT) offered $5 billion dollars in grants for programs that include the incorporation of technology and professional development for teachers (U. S. DOE, 2012). In March of 2010, the United States Department of Education (2010c) released the first draft of the National Education Technology Plan (NETP). The plan questioned many traditional education practices that have been in place for some time including age-generated grade levels, year-long classes, individual academic disciplines, and achievement measures. Technology, however, is the force behind the plan. As stated in the NETP plan:

> The plan recognizes that technology is at the core of virtually every aspect of our daily lives and work, and we must leverage it to provide engaging and powerful learning experiences and content, as well as resources and assessments that measure student achievement in more complete, authentic, and meaningful ways. Technology-based learning and assessment systems will be pivotal in improving student learning and generating data that can be used to continuously improve the education system at all levels. Technology will help us execute collaborative teaching strategies combined with professional learning that better prepare

> and enhance educators' competencies and expertise over the course of their careers. (p. ix)

In response to this plan and others such as the No Child Left Behind Act (NCLB, 2002) and the Blueprint for Reform (U. S. DOE, 2010d), "federal funding initiatives have focused on the provision of professional development for in-service teachers as a vehicle for changing teacher practice and improving student achievement" (Lawless & Pellegrino, 2007, p. 1). Yet teachers struggle when incorporating new resources such as technology into their teaching (Kramer, Walker & Brill, 2007; Mardis, 2007). Teachers are being trained on how to use technology instead of how technology can impact learning and teaching. The National Center for Research on Teacher Learning (2005) stated that teachers need more opportunities to work with and learn from their colleagues and that professional development needs to be ongoing with embedded opportunities for professional learning (Croft et al., 2010; Darling-Hammond et al., 2009; NCES, 2005; Rodriquez, 2000). The North Central Education Research Lab (NCERL) (2000) argued that professional development must be directly linked to the work teachers are doing in their classrooms each day.

Technology is not transformative on its own, "therefore professional development for teachers becomes a key issue in using technology to improve the quality of learning in the classroom" (Rodriquez, 2000, p. 1). Technology can only be as effective as the teacher's belief in it and willingness to use it (Choy, Wong, & Gao, 2009). An ongoing professional development plan would be beneficial. In order to develop this plan, administrators should first understand what research has discovered about successful technology integration, traditional staff development, and professional development for technology.

Technology Integration

According to the Institute of Educational Sciences (IES, 2002), technology integration is the incorporation of technology resources and technology-based practices into the daily routines, work, and management of schools. Many states across the United States developed technology plans that included professional development and technical support (U. S. DOE, 2010b). The plans of California, Wyoming, and Washington strongly support the integration of technology, professional development and increased administrative support of technology in the classroom. Illinois' plan ensured all students had access to technology, teachers and educators had the knowledge and skill to use technology, teachers learned how to incorporate technology standards, and technology engaged students to problem-solve in the classroom. Illinois spent $25 million to promote technology literacy and higher-order thinking related to 21st century skills (U. S. DOE, 2010b).

Nebraska, Wisconsin, and Vermont developed plans focused on the integration of technology in the classroom and the use of productivity software. These states wanted to create learning environments that supported student use of information and communication technologies, administrative backing for students and teacher learning technology, around the clock access for teachers and students to technology, development of community partnerships that enhanced technology instruction, and evaluation methods for student assessment and data collection.

Georgia's technology plan includes increased community support, teachers' ability to use technology, instructional use of technology in the classroom, administrators' use of computers, high-quality support systems in districts, and access to technology for parents, teachers, educators and the community (U. S. DOE, 2010b). In 2011 Georgia adopted the National Educational Technology Standards for Students (NETS-S). The NETS were developed by the International Society for Technology in Education (ISTE) and are used internationally. These plans show the importance that federal and state policy makers are placing on technology in education. It also demonstrates the wide variety of topics that are associated with technology integration in the classroom.

According to research, many schools continued to struggle to integrate technology into instructional programs (Lowther, Inan, Strahl, & Ross, 2008; Ottenbreit-Leftwich, Glazewski, Newby, & Ertmer, 2010; Palak & Wallas, 2009). Educators, Technology and 21st Century Skills: Dispelling Five Myths, a survey of more than 1,000 K-12 educators and school administrators in the United States designed to gauge the use of technology in the classroom and perceptions of technology in education, found that only 22% of teachers surveyed spent 31% or more of their class time using technology to support learning (Grunwald & Associates, 2010). Thirty-four percent of those surveyed spent 10% or less of their class time using technology to support learning. Teachers who used technology in their everyday lives used technology more frequently for instructional purposes (Grunwald & Associates, 2010).

It is evident that technology is available, but it is not evident why it is not used effectively in classrooms (Lowther et al., 2008; Ottenbreit-Leftwich, et al., 2010; Palak &

Wallas, 2009). Making the technology available and accessible in schools is only the first step. "In the 21st century, students must be fully engaged, this requires the use of technology tools and resources, involvement with interesting and relevant projects, and learning environments, including online environments, that are supportive and safe" (Duncan, 2010, p. 3). However, most school still limit or ban students' access to some Internet resources and technologies that students already use in their everyday lives. Due to ever-evolving capabilities and benefits of technology, school leaders must be cognizant that this goal is never attained, but continually pursued.

According to the National Center for Educational Statistics (IES, 2002), the successful integration of technology in schools needed to be measured in order to assess effectiveness. To address this, the Technology in Schools Task Force (TSTF), a representative body sponsored by the National Center for Education Statistics of the U.S. Department of Education, developed seven key questions concerning the successful integration of technology.

The first question asked: Are teachers proficient in the use of technology in the teaching/learning environment? According to the National Center of Educational Statistics (2005), surveys indicated that most teachers were technologically literate with software and programs they use on a regular basis. The same survey indicated that technology was available; however, there were many teachers still not utilizing the resource (Gray, Thomas, & Lewis, 2010). This was reiterated in a survey of 256 public school teachers in Ohio, which found that 77% of teachers surveyed identified themselves as competent in computer use, while 83% considered themselves competent in computer literacy (Latio, 2009). Latio found that although these teachers had the necessary computer literacy, computer use was low. Barriers such as a lack of computers available in the classroom coupled with teachers' attitudes and perceptions contributed to the lack of computer use by the teachers. No Child Left Behind's (NCLB) technology component provided methods to address issues relating to barriers in technology use through its Enhancing Teaching Through Technology (ETTT) program (Lowther et al., 2008). This plan recommended devising a method to identify effective technology implementation. TSTF offered two resources for measurement of their indicator. The first was the National Standards (NETS-T) established by the International Society for Technology in Education (ISTE). Schools examined the performance standards specified by ISTE and determined measures of teacher skills with technology. The second resource was developed by Fairfax County Public Schools (FCPS) of Virginia and consisted of eight teacher technology competencies divided into two competency skill areas: operational and integration. Teacher use of technology affects student use of technology (Ottenbreit-Leftwich et al., 2010). If a teacher is proficient in technology use then they are more likely to model it for their students, use it in the classroom, and allow their students to use it.

Are students proficient in the use of technology in the teaching/learning environment, was the TSTF's second key question. Technology has frequently enhanced the learning of students in all content areas in the classroom (Hardy, 2008). According to Johnstone (2008), many students spent several hours a day interacting with technology in the form of cell phones, televisions, computers, iPods, and MP3 players. When students choose and use technology tools to help themselves obtain information, analyze, synthesize, and assimilate it, and present it in an acceptable manner, then technology integration has taken place (Johnstone, 2008). According to IES (2002), the ISTE National Educational Technology Standards (NETS) provide technology foundation standards for students. These standards encompass the following categories: (a) basic operations and concepts; (b) social, ethical and human issues; (c) technology productivity tools; (d) technology communications tools; (e) technology research tools; (f) and technology problem-solving and decision-making tools. According to IES (2002), Profiles for Technology Literate Students (PTLS) developed a set of performance indicators connected to these standards and described the level of competency students should have at the completion of various grade levels.

Is technology integrated into the teaching/learning environment, was NSTF third key question. Technology integration is the incorporation of technology resources and technology-based practices into the daily routines, work, and management of schools (IES, 2002). Integration should enhance learning in a content area or multidisciplinary setting. In addition, teachers should be able to successfully connect a student's technology knowledge to technology that was integrated into the classroom (Johnstone, 2008). If teachers can find ways to take advantage of the students' knowledge, then they can integrate technology in the classroom and increase students' understanding of the curriculum with stimulating resources using auditory, visual (animated), and interactive programs and software (Cheng, Shui-fong, & Chan, 2008; Johnstone, 2008; U. S. DOE, 2008). When technology is an integral part of how the classroom functions and is as accessible as other classroom tools, then successful technology integration into the teaching/learning environment has taken place.

NETS integrated educational technology standards across all educational curricula and addressed ISTE's fourth key question: Are technology proficiencies and measures incorporated into teaching and learning standards? The integration of technology proficiencies into standards for teachers and students was an indication of technology integration into the vision for the curriculum. Although this assimilation did not provide direct evidence, it did provide institutional incorporation of the technology goals. This helps guarantee that adopted technology did not disappear when circumstances changed, since the institution had incorporated the technology goals. The National Technology Standards (NETS) are the roadmap to teaching effectively and growing professionally in a fast paced digital world (ISTE, 2009). According to ISTE, NETS were widely adopted and recognized in the United States and were increasingly adopted in countries worldwide.

Are technology proficiencies and measures incorporated into student assessment? This was the fifth question asked. This key question has two parts. First, does the student assessment include measures of technology proficiency or utilization such as the use of a calculator on a mathematics test or a student's presentation using technology? Second, to what extent is technology used to conduct assessments? Are students taking multiple-choice tests on computers or turning in electronic portfolios? The National Technology Standards for Teachers (NETS-T) address this. They require teachers to design, develop, and evaluate authentic learning experiences and assessments that incorporate contemporary tools and resources (ISTE, 2009).

The fourth indicator of the NETS-T subscale "Design & Develop Digital Age learning experiences and assessments" requires teachers to provide students with multiple and varied formative and summative assessments aligned with content and technology standards and use resulting data to inform learning and teaching (ISTE, 2009). When teachers integrated technology into the classroom properly, the shift moved from a teacher-directed classroom to a student-focused environment. Technology was then used as a tool to help students learn independently. In these circumstances, students were more responsible for understanding the concepts and for finding answers to questions given in class (Chapman & Mahlck, 2004). According to Tucker, technology can both deepen and broaden assessment practices in elementary and secondary education through more comprehensive assesments and by assessing new skills and concepts. All of which can help strengthen results on state standardized tests (Tucker, 2009). Since more rigorous accountability policies and more challenging student performance standards call for significant change in instructional practices that cannot be accomplished with short-term professional development efforts, time is a factor that must be in the forefront of district planning (Robinson, 2011).

The sixth question asked: Is technology incorporated into administrative processes? This key question addresses the extent technology is infused into the business and management of schooling. Data-driven decision making, electronic communication, and other administrative uses of technology have been widespread in schools for the past three decades (U. S. DOE, 2010a). Technology allows for more efficient communication within the school and district. It also allows for data-driven decisions that may lead to continuous school improvement. The National Education Technology Standards for Administrators (NETS-A) addresses this question. The Systemic Improvement Standard requires administrators to provide digital-age leadership and management to continuously improve the organization through the effective use of information and technology resources (ISTE, 2009).

The seventh question asked: Is technology proficiency integrated into the evaluation of instructional and administrative staff? This key question addressed the incorporation of technology into the institutional fabric of school systems. There is no better driver of technology integration into the classroom than the inclusion of technology-related dimensions in teacher evaluations (IES, 2002). This is addressed in Section SBI 1.5 of Georgia's new teacher evaluation program, CLASS Keys. SBI 1.5 requires teachers to use accessible technology to enhance learning (Georgia Department of Education, 2011). According to the CLASS Keys, an exemplary teacher develops, implements, and evaluates a comprehensive approach used for accessible technology to enhance learning and achievement for all students (Georgia Department of Education, 2011). Even though these standards are in place, evaluating technology in the classroom environment is not something that most administrators are trained to do (Ertmer et al., 2002; Mehlinger & Powers, 2002; Utecht, 2008). Utecht offered four questions that administrators could consider when conducting teacher observations: (1) Is the technology used "just because"? For instance, the teacher dabbled with technology, not having a real focus on its use within the lesson, (2) Did the technology allow the teacher/students to do old things in old ways? An example of this would be publishing a piece of writing instead of hand writing it or researching a topic on the computer instead of using an encyclopedia. (3) Is the technology allowing the teacher/student to do old things in new ways? Examples would be watching Martin Luther King Jr.'s speech or listening to a recording of Stalin. (4) Is the technology creating new and different learning experiences for the students? This means that the technology allowed the students to learn from people they never would have been able to learn from without it. Another example would involve students interacting with information in a way that is meaningful and could not have happened otherwise. A third example would be students creating and sharing their knowledge with an audience they never would have had access to without technology. Georgia's 2011 adoption of the National Education Standards will also help educators and administrators address the evaluation of the integration. According to Utecht it is great to see teachers using technology in their lessons during an evaluation. However, the level of incorporation is a better indicator of the effective use of technology. This can be done by teachers or administrators. Despite the potential benefits, the evaluation process can also create some barriers.

The technology integration barrier most frequently referred to in the literature was a lack of effective training (Bingimlas, 2009; Groff & Mouza, 2008; Schoepp, 2005; Toprakci, 2006). According to the United States Department of Education (2000), only 20% of public school teachers felt prepared to incorporate technology into their lessons. Most teachers did not believe that their pre-service programs prepared them for the integration of technology into their lessons. Rakes and Casey (2002) cited the concerns of many teachers regarding why technology was not used more in the classroom. Many teachers stated they were unaware of how technology use in the classroom could enhance student achievement. Teachers also said they did not know about the many resources available for classroom use. In addition, teachers were unsure how the use of technology would impact students, how to communicate to their peers about what they were doing, and how to obtain needed help within the classroom (Rakes & Casey, 2002).

The seven questions show how much there is to examine in the area of technology in education. The broad topics discussed in each question are faced by teachers and administration every day with the ultimate goal of increasing student achievement. None of this can occur without faculty understanding of how to implement the use of technology in the classroom. This understanding is frequently reached through the use of staff development.

Traditional Staff Development

The process that improves the job-related knowledge, skills, or attitudes of school employees is known as staff development. According to Sparks and Louckes-Horsley, staff development came of age in the 1980s (1989). It was seen as a key aspect of school improvement efforts by state legislators and administrators of school districts. This was reauthorized by the No Child Left Behind Act of 2001. The National Staff Development Council (NSDC, 2008) expanded these definitions in the Elementary and Secondary Education Act. According to NSDC, professional development is defined as "a comprehensive, sustained, and intensive approach to improving teachers' and principals' effectiveness in raising student achievement" (p. 1). In addition, the organization stated that professional development fostered collective responsibility for improved student achievement and was comprised of professional learning that (a) was aligned with rigorous state student achievement standards, (b) was conducted among educators and facilitated by well-prepared school-based leaders, (c) was discussed several times per week among established teams where educators engaged in a continuous cycle of improvement that evaluated student, teacher, and school learning needs through a review of data on teacher and student performance, (d) was defined by a clear set of educator learning goals based on analysis of the data, (e) was achieved by the educator's learning goals identified by implementing coherent, sustained, and evidence-based learning strategies, (f) was provided job-embedded coaching or support to transfer new knowledge and skills to the classroom, (g) was assessed by the effectiveness of the professional development in achieving identified learning goals, improving teaching, and assisting students in meeting academic achievement standards, (h) was informed by ongoing improvements in teaching and student learning, and (i) was supported by external assistance.

According to Sparks and Louckes-Horsley (1989), many school districts initiated extensive staff development projects to improve student learning. It was the research on these projects that helped the NSDC (2008) develop the five models of staff development: (a) individually-guided staff development, (b) observation/assessment, (c) involvement in a development/improvement process, (d) training, and (e) inquiry.

The first model is individually-guided staff development (NSDC, 2008). In this model, teachers take the initiative to learn things on their own by reading professional publications, having discussions with colleagues, and experimenting with new instructional strategies. It is informed by self-study, grounded in professional standards, and supported by professional development activities chosen by the educator (CDD, 2006; Kachadourian, 2006). Individually-guided staff development is designed by the teacher. Teachers determined their own goals and select the activities that help them attain these goals. Individual-guided staff development is based on the assumption that individuals can best judge their own learning needs and are capable of self-direction and self-initiated learning.

Observation/assessment made up the second model; observation/assessment staff development was founded on four assumptions (NSDC, 2008). The first assumption was that teachers were provided with data that could be reflected upon and analyzed for the purpose of student learning. The second assumption was that having a different perspective would give the teacher a different view of how they performed with students. The third assumption was that the observer would benefit by observing a colleague, preparing feedback, and sharing the feedback with the colleague. The final assumption was that multiple observations and conferences spread over time would help teachers see positive results and, therefore, continue to engage in improvement. More frequently, administrators and teachers viewed peer observation as a form of collaborative professional development (Wylie, 2008). This involved teacher teams that met daily to study standards, planned joint lessons, examined student work, and solved common problems. Then teams applied what they learned in the classroom, watched each other teach, and provided feedback (Wylie, 2008).

Involvement in a development/improvement process is the third model (NSDC, 2008). When teachers are asked to develop or adapt curriculum, design programs, or engage in systematic school improvement processes, many times they have to acquire specific knowledge or skills (NEA, 2009; NSDC, 2008). The NEA (2009) stated that if professional development was to be effective, it should deal with authentic problems and needs. This model involves the combination of learning that resulted from the involvement of teachers in these development/improvement processes. Involvement in a development/improvement process is based on three assumptions: the first assumption is that teachers' learning is driven by the demands of problem solving, the second is that people working closest to the job best understand what is needed to improve their performance; the final assumption is that teachers acquire knowledge or skills through their involvement in school improvement or curriculum development processes. According to NEA (2009), professional development should be carried out in the context of a plan for school improvement, or it is unlikely that teachers will have the resources and support they need to utilize what they have learned.

The fourth staff development model involves training. Teachers attend workshop-type sessions in which the presenter establishes the content and flow of activities (NSDC, 2008). The outcome of these sessions typically includes awareness or knowledge and skill development. Workshops are based on two assumptions: teaching behaviors change because the behaviors and techniques taught are worthy of replication, and attendees have the ability to change their way of teaching to incorporate the new ways of teaching in their classrooms. This method of staff development has been criticized for a lack of continuity and coherence (Wylie, 2008). Workshops have at least, in theory, fallen out of favor. The federal No Child Left Behind Act of 2001 defined all professional development funded through the law to include activities that were not one-day or short-term workshops or conferences.

The NSDC's (2008) fifth model of staff development involves inquiry. Inquiry may be achieved through an individual activity, in small groups, or as a faculty. Teachers begin by developing a question, gathering and analyzing their data, and implement their findings to improve instruction in their classrooms. Professional development is therefore based on collaborative or individual analyses of the differences between student performance and standards for learning (NEA, 2009). Teachers are intimately involved in the identification of what they need to learn and in the development of the learning experiences in which they would be involved (NEA, 2009).

According to NSDC (2008), inquiry was formulated on three assumptions of Loucks-Horsley and her associates (Sparks & Loucks-Horsley, 1989). The first assumption is, teachers were smart individuals who wanted to learn in order to expand their knowledge and experience. Secondly, teachers were inclined to search for data to answer pressing questions and to reflect on the data to formulate solutions. Finally, teachers want to find the answers and interpret what they find in order to improve their instruction. These assumptions have been the guiding principles for inquiry amid staff development within schools.

NSDC's five models of staff development provide an overview of the types of learning utilized by teachers in the classroom. While these types of learning are beneficial, teachers who are trying to integrate technology into their classroom require a different type of professional development.

Technology Integration Professional Development

Technology in the classroom is only as effective as the teachers' belief in it and willingness to use it (Choy, Wong, & Gao, 2009). According to Groff and Mouza (2008), there are a wide range of views of technology use by teachers. The views range from teachers who state that technology can be an asset to the learning process, to teachers who are efficient in computer use and not afraid to explore its different uses, to teachers who are afraid of their computers and do not integrate computer use in their classrooms. When teachers are trained to use technology and feel comfortable with it, they were more likely to incorporate it into the classroom (Palak & Walls, 2009). It is estimated that it takes more than ten hours of training, plus added time for practice, in order to see the actual adoption of new technologies (Mehlinger, 1997; Sivin-Kachala & Bialo, 2000). According to Abshire (2007), the North Central Regional Educational Laboratory (NCREL) stated that effective professional development for technology should include the following components: (a) a connection to student learning, (b) hands-on technology use, (c) variety of learning experiences, (d) curriculum-specific applications, (e) new roles for teachers, (f) collegial learning, (g) active participation of teachers, (h) ongoing process, (i) sufficient time, (j) technical assistance and support, (k) administrative support, (l) adequate resources, (m) continuous funding, and (n) built-in evaluation. These components help teachers connect their professional development to the implementation of their technology to support student learning.

Connection to student learning is NCREL's first component of effective professional development. Teachers' passion and desire to improve their knowledge and understanding to support student learning is the major goal of professional development (McDaid, 2008). According to the State Education Technology Directors Association (SETDA, 2007), knowledge of core content is necessary, but no longer enough in today's world. "Even if all students mastered core academic subjects, they still would be woefully under prepared to succeed in postsecondary institutions and workplaces, which increasingly value people who can use their knowledge to communicate, collaborate, analyze, create, innovate, and solve problems" (SETDA, p. 1). According to the National Staff Development Council, schools frequently provide teachers with opportunities to become fluent in using technology to bolster instruction and help students develop higher-order thinking and problem-solving skills that are sought after by postsecondary institutions and workplaces (Rodriquez, 2000). Williams, Atkinson, Cate and O'Hair (2008) stated that technology professional development can operate within a learning community environment. These enriched learning communities regularly create ways in which technology is used as an effective tool that is tightly linked to content standards and seamlessly integrated into ongoing classroom instruction (Williams et al., 2008).

When teachers feel comfortable using technology, positive impacts are the result (Kurt, 2010). Hands-on technology use is NCREL's second component of effective professional development. A survey conducted by the Pennsylvania Department of Education (RBS, 2005) found that 26% of teachers were reported at the beginner level. The findings emphasized the need for teachers to acquire core technology competencies and skills. Hands-on technology use and training allows teachers to develop confidence in their skills and comfort level with the technology (Ertmer & Ottenbreit-Leftwich, 2010; Rodriquez, 2000, Vannatta & Fordham, 2004). According to Sun Associates (2010), teachers who use technology in ways that promoted higher order thinking in the classroom are those who participate regularly in hands-on training that addressed important issues of curriculum and pedagogy in addition to learning how to use the technology. Teachers who play with technology are more likely to implement it successfully into the classroom (Vannatta & Fordham, 2010).

NCREL's third component of effective professional development is a variety of learning experiences. Research supports the fact that traditional sit-and-learn professional development sessions or one-time-only workshops have not been successful in making teachers comfortable with technology use or integration into their lessons

(Baylor & Ritchie, 2002; Becker, 2001; Lawless & Pellegrino, 2007; Rodriquez, 2000, VanFossen, 2001; Wenglinsky, 1998; Zhao & Bryant, 2007). Professional development for successful technology integration regularly originates from a variety of forms such as mentoring, modeling, ongoing workshops, special courses, structured observations, and summer institutes (Lawless & Pellegrino, 2007; Rodriquez, 2000). New technologies are regularly modeled during routine school days in the classroom. This encourages teachers to accept and use the new technologies in their own classrooms. Teachers then practice technology with hands on experience in order to become familiar with it and develop a strategy for incorporating it into their lessons and implementing it. Finally, follow up support and ongoing discussion and reflection of the use of the new technology is observed and encouraged in order to ensure future use.

When teachers are trained to utilize technology effectively, they develop lessons that reinforce student understanding, cooperative learning, and problem-solving skills across the curriculum (Kurt, 2010; Royer, 2002). Curriculum-specific application is NCREL's fourth component of effective professional development. Professional development for technology use demonstrates projects in specific curriculum areas and helps teachers integrate technology into the context. Teachers must be provided opportunities to see reformed pedagogy in action in order to personalize an understanding of the value that the technology could bring to the lesson (Linn, Slotta, & Baumgartner, 2000). Communication is an important part of this implementation as emphasized by the NETP goals. Although implementation begins with formal communication, in order for the transformation of teaching to take place, informal communication networks within the school are commonly developed and cultivated as soon as possible. Without these learning societies and ongoing informal staff development with teachers talking about technology issues among themselves, technology becomes just another way to skill and drill.

When teachers are comfortable integrating technology into their lessons the classroom shifts from teacher-centered to student-centered (Kurt, 2010). This shift requires new roles for teachers which is NCREL's fifth component of effective professional development. As technology is used more efficiently in the classroom, the way educators think about the roles of their students and their own roles also changes. Technology enriched classrooms support student-centered instruction. Inside the classroom, teachers are able to take on the role of coach or facilitator while students work collaboratively and build on the skills required by today's higher-education institutions and workplaces (Ertmer & Ottenbreit-Leftwich, 2010; Rodriquez, 2000; Vannatta & Fordham, 2004). Outside the classroom, teachers no longer work in isolation as technology supports collaboration with their peers. Working together, teachers are able to find solutions to technological problems, to act as peer advisors, and to collect data. According to the Center for Implementing Technology in Education (CITed, 2009), establishing these learning communities in which teachers are engaged in learning through technology together was noted as a key to maintaining and deepening the use of technology in the classroom.

Learning to integrate technology effectively is a social process that takes time to play, explore, analyze, and reflect (Bourgeois & Hunt, 2011). Collegial learning is NCREL's sixth component of effective professional development. Implementing successful technology integration is not something that can be done in isolation.

Teachers spend time discussing technology use with other teachers through face-to face meetings, email, or even video conferencing (Rodriquez, 2000).

In order for all students to receive the educational opportunities that technology provides, a majority of teachers in a faculty habitually attend these professional development programs. Active participation of teachers is NCREL's seventh component of effective professional development. Rodriquez (2000) suggests that administrators either mandate participation in technology professional development or encouraged teachers to participate by offering an incentive. This active participation by teachers leads to more thorough integration of professional development into the classroom.

According to a report by the U. S. DOE (2010a), teachers in Massachusetts participated in 45 hours of high-quality ongoing professional development. The same report indicated that 85% of those teachers use technology daily with their students and outside of the classroom. An ongoing process is NCREL's eighth component of effective professional development. Continued practice enables teachers to become comfortable with and to implement technology into their lessons. Professional development for technology is repeatedly approached as an ongoing process and not a one time workshop. In Hutchison's (2009) study involving 1,441 respondents from thirty-one states, 54% of participants expressed a need for more ongoing technology integration professional development.

Teachers who participate in professional development express the need for time to plan, practice skills, try out new ideas, collaborate, and reflect on their learning (Lancaster, 2006; Pass, 2008; Rodriquez, 2000). This is NCREL's ninth component of effective professional development.   Brief exposure to technology instruction does not provide sufficient training to effectively incorporate technology into the classroom (Rodriquez, 2000). It is estimated that it takes more than ten hours of training, plus added time for practice, in order to see the actual adoption of new technologies (Mehlinger, 1997; Sivin-Kachala & Bialo, 2000). Allowing time for teachers to have this practice seems to reinforce the training as well as increase computer use in the classroom (Mehlinger, 1997; Sivin-Kachala & Bialo, 2000).

Technical assistance and support is NCREL's tenth component of effective professional development**.** When teachers are trying to use technology in their classrooms and encounter problems, the teachers felt they needed immediate help and support (Lancaster, 2006; Rodriquez, 2000). Teachers can become frustrated if technical issues arise they cannot resolve. When there is no support for the classroom teacher who is having technical difficulties, there is a good chance that the teacher will discontinue using the technology (Broussard, 2009; Holmes, 2006; Latio, 2009).

Administrative support is NCREL's eleventh component of effective professional development. Power and politics play a role in the implementation of technology. Exhibiting supportive leadership and explicit expectations throughout the process is one of the main roles of administrators (CITed, 2009; Rodriquez, 2000). The support should not only go to those who are struggling with the technology, but also to those who are implementing it to its fullest potential. Collaborative leadership, hand in hand with continuing professional development, are essential. Modeling the use of technology and attending professional development also can help administrators in their quest to become experts throughout the process.

Adequate resources is NCREL's twelfth component of effective professional development. Lack of technology inside and outside the classroom makes technology use difficult. It can be hard to incorporate technology when there is not enough or if it is not working properly. Teachers with larger classrooms have to group students together which compromises the instructional task (Schoepp, 2005). Some teachers are unwilling to use technology when there is not enough to accommodate their classes (Broussard, 2009; Holmes, 2006; Latio, 2009). A significant amount of resources and money are needed from the school district in order for the technology plan and its professional development component to be successful.

Continuous funding is NCREL's thirteenth component of effective professional development. In these times of budget tightening, keeping up with the latest technology is not easy (McGrath, 2010). Costs involved in the successful integration of technology include funding for professional development, technical support, connectivity, software, replacement costs, and retrofitting. The cost of using technology to improve teaching and learning has now become a line item in school budgets (Lancaster, 2006; Rodriquez, 2000).

Effective professional development uses evaluation to ensure that each activity is meeting the needs of the participants and providing them with new learning experiences (Grossman & Hirsch, 2009; Rodriquez, 2000). Built-in evaluation is NCREL's final component of effective professional development. Pre-formative, formative, and summative evaluations should be built into the professional development program to determine whether or not it promoted the use of technology to improve student achievement.

NCREL's component for effective professional development includes many areas that can be hard to assess for effectiveness as well as many areas that can be a significant expense for school districts and the funding they look to for support. Technology is, however, something that is necessary for the students to learn for their successful integration into the world of work. This integration is much smoother if they are introduced to the technology in the classroom by teachers who have had the professional development necessary to be adequate role models. In addition to the technology integration that NCREL has spoken about, there are other factors that can affect the integration of technology. A teacher's age, years of experience, degree level, and perception of professional development are such factors.

Teachers' Age, Professional Development, and Technology Integration

Teachers' age and perception of professional development and technology integration are additional factors that should be considered. In a New York study that involved 214 teachers employed at 20 schools, teacher age was examined in regards to its association with teachers' attitudes about professional development. The results indicated that increasing age tended to lead to somewhat enhanced support for professional development (Torff & Sessions, 2008). Another study compared teacher perceptions of technology use and integration based on personal characteristics of approximately 300 South Dakota teachers. This study found no correlation between a teachers' age and their perceptions of professional development (Gorder, 2008).

In a Tennessee study that employed 54 schools with a total of 1,382 teachers, direct and indirect effects of teachers' individual characteristics and perceptions of environmental factors that influence their technology integration in the classroom were examined (Inan & Lowther, 2010). This study used a research-based path model to explain casual relationships between factors. Inan and Lowther (2010) defined technology integration as any use of technology that supports classroom instruction including technology for instructional preparation, instructional delivery, or as a learning tool. Results indicated that teacher age had a negative effect on technology integration. The older a teacher was the less they integrated technology.

Years of Experience, Professional Development, and Technology Integration

Another area that should be given consideration when implementing professional development is the life stage of the individual involved (Robinson, 2011). Different phases of an educator's life may alter their interest and willingness to integrate technology. In a study involving 732 teachers from 17 school districts and 107 different schools in Florida, path analysis was used to examine the effects of teachers' characteristics, school characteristics, and contextual characteristics on classroom technology integration and teacher use of technology as mediators of student use of technology (Ritzhaupt, Dawson, & Cavanaugh, 2012). Online surveys were administered over a two year period with 364 teachers completing the survey in 2006-2007 and 368 in 2007-2008. Each year, the teachers comprised unique and non-overlapping groups (Ritzhaput, et al., 2012). Teachers' use of technology was found to be negatively influenced by the years of teaching experience yet positively influenced by the number of years teaching experience with technology.

In a Texas study with 231 respondents from twenty-one middle schools, the relationship between the impact of professional development on classroom practices and years of experience was explored by grouping experience levels into five year intervals

(Robinson, 2002). Instructional strategies and professional collaboration were described as the type of professional development that most impacted classroom practices by most teachers regardless of their years of experience. Teachers with fewer than five years' experience reported professional development related to the needs of diverse and/or middle level learners as the type that had the most impact on their classroom practice. Teachers with between 15 and 20 years of experience listed the use of technology in instruction as the type of professional development that most impacted their classroom instruction.

A national survey was conducted in 2010 in an effort to describe the current trends on the status of professional development for K-12 online teachers. A total of 830 online teachers from virtual schools, supplemental online programs, and brick and mortar programs offering online courses responded (Dawley, Rice, & Hinck, 2010). The most highly preferred forms of professional development among the respondents was fully online followed by workshop format. The least preferred format was fully face-to-face. Teachers with 0 to 10 years of experience preferred graduate courses while this was the least preferred method of those with more than 10 years' experience. Teachers with more than 10 years of experience preferred fully online courses followed by workshops (Dawley et al., 2010; NCES, 2005).

A positive correlation between teaching experience and higher student achievement was noted in research (Robinson, 2011). Research suggested that the quality of a teacher was the most important predictor of student success (Darling-Hammond et al., 2009; Robinson, 2011). Student achievement levels increased as much as 53% when taught by a highly effective teacher (Strong, Ward, Tucker & Grant, 2011).

Some discrepancy exists between the types of technology professional development preferred by teachers with various years of experience. Recently graduated teachers seem to prefer graduate courses while those with more experience seem to prefer online followed by workshop formats. In a different 2011 study by Tamilenthi and Mohanasundaram which included 444 geography teachers, research indicated that teachers of different years of experience did not differ in their perceptions of professional development (Tamilenthi & Mohanasundaram, 2011). Another factor to be examined is teachers' perceptions of professional development.

Degree Level, Professional Development, and Technology Integration

A teachers' degree level was another factors examined in the previously mentioned study in which path analysis was used to examine the effects of teachers' characteristics, school characteristics, and contextual characteristics on classroom technology integration and teacher use of technology as mediators of student use of technology (Rhitzhaupt, Dawson, & Cavanaugh, 2012). Findings indicated that a teacher's level of education had a significant positive effect on their use of technology. These findings reiterate the importance of pre-pairing pre-service teachers with the skills needed to integrate classroom technologies (Dawson, 2006; Dexter, & Riedel, 2003; Jacobsen & lock, 2004; NCATE, 2008). In addition, it supports the need for providing technology integration mentoring to new teachers (Strudler, McKinney, Jones, & Quinn, 1999).

Teachers' Perceptions of Professional Development

Technology in the classroom can only be successful if the teachers believe in it and are willing to use it (Choy, Wong, & Gao, 2009). The belief that technology will be a benefit to the learning process, and an important component in the process of increasing student achievement is very important. There should not be any fear in the incorporation of its different uses (Groff & Mouza, 2008). When teachers were trained to use technology and felt at ease with it, they were more likely to incorporate it into the classroom (Palak & Walls, 2009) and recognize its significance and helpfulness (Kay & Knaack, 2009). When teachers are educated to employ technology effectively, they can develop lessons that strengthen student understanding, cooperative learning, and problem-solving skills across the curriculum (Kurt, 2010). If teachers are not trained appropriately on the technology that is used in the classroom, there is a good chance that the technology will not be used efficiently to enhance instruction (Broussard, 2009; Holmes, 2006).

Professional development designed to assist teachers in building or refining the skills of their craft leads to more integration of the topic in the classroom (Pate & Thompson, 2003; Robinson, 2011). Teachers have stated that without content-specific professional development they would not have been able to make their classrooms transform into more constructive learning environments (Robinson, 2011). Content specific professional development enables teachers to feel well-informed about curricular and instructional alternatives, learning styles, adolescent development, and assessments (Robinson, 2011).

Technology integration classes taken for credit hours are known to enable teachers to deepen their content knowledge, become more digitally literate, and improve their classroom instruction. In a survey by Robinson (2011), 3.4% of the teacher participants indicated that their most meaningful professional development experience was either during the pursuit of an advanced degree or while involved in other class work.

Non-credit workshops provided by school districts or outside consultants provided valuable and useable methods and tips to participants (Robinson, 2011). This type of professional development provides new teaching strategies, use of manipulative materials, specific content knowledge, and collaboration. In the same study by Robinson (2011), 14.6% of the respondents preferred this type of professional development.

Participants in Robinson's (2011) study indicated that summer professional development opportunities were a valuable asset. Summer institutes provided continuity from one day to the next as well as the fact that participants did not have to worry about missing valuable class time. In addition, participants stated that it allowed them to reflect on what they learned and think about how to apply concepts in their classroom the following year. According to a 2006 survey, 37% of all teachers said they participated in system-sponsored professional development activities during the summer (NEA, 2010).

When teachers are using technology in their classrooms, technical assistance and modeling are very important (Broussard, 2009; Holmes, 2006; Latio, 2009). In a study by Hutchison (2009), 80% of participants indicated that a lack of technical support was a barrier in the integration of technology. These results were similar to a study by Ertmer, et al. (2005) that reported that teachers' lack of technical skills was a result of a lack of appropriate professional development and hindered their ability to integrate technology successfully. Wei, Darling-Hammond, and Adamson (2010), in phase II of a Three-Phase study on professional development in the United States showed that some progress is being made by providing increased support and modeling for new teachers (Robinson, 2011).

Peer support or mentoring is a vital tool for both experienced and beginning teachers. It is unlikely that teachers will continue to use innovations in their instruction without the trust, support and involvement of their colleagues (Robinson, 2011; Speck & Knipe, 2005). Teachers need the opportunity and time to work with each other. Sustained discussion on classroom practices, coaching opportunities, and formal and informing mentoring are essential to that integration (Robinson, 2011; Zepeda, 2010). According to Sparks and Hirsch (1997) an effective plan of learning for teachers is one that is embedded with the school day, offering teacher's time to learn and collaborate, thus improving student achievement and sustaining change over time. Nine point nine percent of respondents in Robinson's study indicated that peer support or collaboration was the most beneficial form of professional development.

On-line professional learning communities provide teachers with easy access and flexibility (Salazar, Aguirre-Munoz, Fox & Nuanez-Lucas, 2010). They are communities that are comprised of a group of individuals who are drawn together by shared values, goals, and interest. In addition, it can provide a more learner-centered approach, enrichment, and new ways for teachers in rural areas to interact with other teachers. Teachers who have already attended some sort of professional development within the last year were more likely to utilize online resources for help (Hutchison, 2009). Research indicates that teachers who received professional development on using the Internet perceived the value of online help to be much higher than those who did not (Hutchison). For administrators, on-line professional development offers high quality and usually cost-effective professional development for teachers (Salazar, et al., 2010).

Printed materials are referred to as the most affordable and accessible type of professional development. The materials often developed by education corporations (Pate & Thompson, 2003; Robinson, 2011). Printed materials include creative consumables, downloadable material, books, and articles.

Chapter Summary

In an attempt to comply with a Presidential call for more innovation and meet the diverse needs of teachers, school districts are beginning to offer a variety of professional development training activities. Research shows that although teachers are attending these professional development training activities, the majority still feel inadequately trained to implement old technologies, such as computers, in their classroom.

In addition, 21st century technology is continually changing. Many classrooms now contain interactive white boards, document cameras, student response systems, video cameras, digital cameras, and individual student computers. This is where the gap in the literature exists. Little, if any, research is available about teachers' perceptions of the individual effectiveness of various types of professional development for the implementation and use of these new innovative types of teaching tools.

The literature presented in Chapter 2 includes the push for technology integration across the nation. It also highlights traditional staff development and technology integration professional development. Teachers' age, years of experience, and degree level are also addressed in regards to professional development. Finally, Chapter 2 highlights teachers' perceptions of professional development. Chapter 3 discusses the research questions, research design, population and participants of the study, survey instrument, data collection procedures, data analysis, and a reporting of the data.

CHAPTER 3

METHODS AND PROCEDURES

The Presidential Blueprint for Reform (U. S. DOE, 2010d) and the National Education Technology Plan (U. S. DOE, 2010c) demonstrate national expectations for the use of technology in the nation's schools. The emphasis is on the effective use of technology in creating new opportunities for learning which promote student achievement. However, according to research, 34% of teachers were considered infrequent users (the lowest level) of technology integration. This meant they spend 10% or less of their class time using technology to support learning. (Grunwald & Associates, 2010). Research reveals that sit-and-get or one-time-only professional development is not the most effective method (Baylor & Ritchie, 2002; Becker, 2001; Lawless & Pellegrino, 2007; Rodriquez, 2000; VanFossen, 2001; Wenglinsky, 1998; Willis & Raines, 2001; Zhao & Bryant, 2007). Teachers seek opportunities to learn from their peers (Croft et al., 2010; Darling-Hammond et al., 2009; Rodriquez, 2000; U.S. DOE, 2000). Professional development should be ongoing with a connection to student learning. It should include hands-on technology use coupled with a variety of learning experiences, curriculum-specific applications, new roles for teachers, follow-up training, and administrative support (Lancaster, 2006; Rodriquez, 2000).

Professional development is most effective when it is directly linked to the work teachers are doing in their classrooms each day (NCREL, 2000). However, little if any research is available on the types of professional development needed in order to implement classroom instructional technologies, such as interactive whiteboards, student response systems, student document cameras, video cameras, and digital cameras that are found in many classrooms today.

In this study, the author's purpose was to determine teachers' perceptions of professional development activities which result in successful classroom integration of instructional technologies in schools. This study also examined the relationship between a teacher's age and his/her perceptions of professional development activities which result in successful classroom integration of instructional technologies and any relationships between a teachers' degree level and his/her perceptions of professional development activities which result in successful classroom integration of instructional technologies. It addition this study examined the differences between a teacher's years of experience and their perceptions of professional development activities which result in successful classroom integration of instructional technologies, and any relationships between the reported number of hours of student classroom technology use and teachers' perceptions of professional development activities which result in successful classroom integration of instructional technologies. This study will provide the educational community with needed data pertaining to educator professional development and training.

Research Questions

The research was guided by the following over-arching question: What are teachers' perceptions of the individual effectiveness of various types of professional development for successful classroom integration of instructional technologies?

1. Does a relationship exist between teachers' ages and their perceptions of the individual effectiveness of professional development activities which result in successful classroom integration of instructional technologies?
2. Does a relationship exist between teachers' years of experience and their perceptions of professional development activities which result in successful classroom integration of instructional technologies?
3. Does a relationship exist between teachers' degree level and their perception of professional development activities which result in successful classroom integration of instructional technologies?
4. Does a relationship exist between the reported number of hours of student classroom technology use and teachers' perceptions of professional development activities which result in successful classroom integration of instructional technologies?

Research Design

This study was a quantitative study and used a survey instrument. The quantitative method was appropriate for this study because the author was studying all members of the population, used preconceived concepts and theories to determine the appropriate data to be collected, and used statistical methods to analyze the collected data. In addition the author prepared objective reports of the research findings (Gall, Gall, & Borg, 2007). This study will describe the methods of professional development involving classroom instructional technology that teachers from middle schools in two districts in Georgia perceive effective; relationships between a teacher's age and their perceptions; difference between years of experience and their perceptions, differences between degree level and their perceptions; and relationships between the reported number of hours of student classroom technology use and a teacher's perceptions.

In this study, there were two types of variables. The predictor variables, which are defined as the variables that make predictions about the criterion variable or how much variance they cause in the criterion variable (Pallant, 2010), were the teacher's age, the teachers' years of experience, the teachers' degree level, and the reported number of hours of student classroom technology use. The criterion variables, which are defined as the element that varies because of the predictor variable (Pallant, 2010), are the types of classroom instructional technology professional development that teachers perceive as effective. In this investigation there were nine criterion variables: technology integration classes taken for credit hours, non-credit workshops provided by school districts or outside consultants, drop-in clinics or open computer labs, summer institutes, technology personnel support (modeling), peer support (mentoring), independent online help, reading printed documentation, and learning through trial and error.

The survey instrument, *Training Methods for Learning Instructional Technology* (Appendix B), was used to collect data for this study. The author created the survey by modifying, with permission, a survey used in a previous study by Griffin (2003) (Appendix A). The survey included 12 questions related to demographics, student classroom technology use, and nine types of professional development used for technology integration training. The anonymous online survey took approximately 15 minutes to complete. This process resulted in a rapid turnaround in data collection from approximately 230 middle school teachers who were asked to complete the survey. The population in the study consisted of two districts that were purposefully selected for participation based on the recommendation of the University of Georgia Educational Technology Center (UGA ETC). UGA ETC recommended these two districts due to their participation in additional technology training funded by Title IID technology grants and their as the incorporation of technology resources and technology-based practices into the daily routines, instruction, and management of the classroom by both the students and teachers.

The link to the online survey created in Survey Monkey was made available, via email, to all certified middle school teachers in both school districts. After approval by the Institutional Review Board of Georgia Southern University, Teachers in District 1 were asked to voluntarily participate in the online survey by their Director of Technology. Teachers in District 2 were asked to voluntarily participate in the online survey by their principal. Requests were made via email with follow-up emails. Survey Monkey was used in order to ensure participant anonymity.

Survey data from District 1 and District 2 were examined with respect to teachers' perceptions of various forms of professional development which result in successful classroom integration of instructional technologies. Data were analyzed to gain insight into professional development attendance trends among educators. The research focused on whether teachers differ in their perceptions of methods for learning classroom instructional technology based on their ages, years of experience, and degree level. The study also focused on the relationships between the reported number of hours of student classroom technology use and teachers' perceptions of professional development which results in successful classroom integration of instructional technologies.

Population

The setting used in this study consisted of middle school teachers in two school districts in Georgia. According to the 2010-2011 Georgia Report Card, District 1 consisted of a total of 888 certified teachers, 208 of which taught at the middle school level in the district. The total enrollment for District 1 was 12,611 students. District 2 consisted of a total of 175 certified teachers, 45 of which taught at the middle school in the district. The total enrollment for District 2 was 2,350 students.

Participants

The participants for this study were 230 middle school teachers in two districts in Georgia in which at least one of the schools had been recognized for successful implementation of technology into the school by the UGA ETC. UGA ETC recommended these districts to the author based on their participation in educational professional development funded by Title IID technology grants and their incorporation of technology resources and technology-based practices into the daily routines, instruction, and management of the classroom by both the students and teachers. The participants of the study included all members of the population who were still employed at the middle schools in the districts. The population consisted of individuals who had experience with the phenomena under investigation (Creswell, 2009). The population involved certified middle school teachers only, and it included various years of teaching experience, age, and student use of technology. The participants, schools, and school districts in the study were anonymous. Although these schools were unique, the data were analyzed as a whole.

Table 1

Schools Participating in Study Ranked by District and Number of Certified Teachers

District	School	Number of Certified Teachers	Percentage of Free/ Reduced Meals	Percentage of African American Students	Percentage of Hispanic Students	Percentage of White Students	Percentage of Special Education Students
1	District	888	49	21	4	70	9
1	1A	58	64	35	4	55	11
1	1B	75	37	13	5	78	10
1	1C	75	47	16	4	78	9
2	District	175	57	18	6	72	12
2	2A	45	57	17	7	72	8

Table 2

Certified Teacher Degree Level

	School 1A	School 1B	School 1C	School 2A	Total
4 Year Bachelors	25	22	23	15	85
5 Year Masters	22	30	40	25	117
6 Year Specialist	10	23	11	4	48
7 Year Doctorate	1	0	1	1	3

Table 3

Certified Teacher Years of Experience

	School 1A	School 1B	School 1C	School 2A	Total
<1	0	1	4	1	6
1-10	28	39	31	11	109
11-20	15	21	19	23	78
21-30	10	12	19	8	49
>30	5	2	2	2	11

The current study focused on providing further insight into teachers' perceptions of professional development activities which result in successful classroom integration of instructional technologies.

Instrument

This study investigated teachers' perceptions of professional development activities which result in successful classroom integration of instructional technologies by teachers working in middle schools in two districts in Georgia in which at least one of the schools in each district had been recognized for successful implementation of technology. Data relating to technology training methods, teacher's ages, years of experience, degree level, and students' use of technology were obtained for this study. A survey used by Griffin (2003) was adapted, with permission, to include new types of technology integration professional development. The survey modifications were minor and did not require revalidation of the survey. Griffin's survey combined previously used and established surveys with demographic questions.

According to Griffin (2003), the technology training methods questions were taken from a study conducted by Robinson (2002) on the perceptions of pre-service educators, in-service educators, and professional development personnel to determine effective methods for learning technology integration skills. Griffin supplemented these questions to include information on the frequency with which educators utilize certain learning methods. Additional questions pertaining to the reasons for utilizing particular technology training methods were also added. Robinson's (2002) technology training methods questions were developed from the Computer Competence Skills questionnaire developed by Davis (1999) at Cornell University. The scale designed by Davis included not effective (NE) receiving a score of one, no opinion (NO) receiving a score of 3, and very effective (VE) receiving a score of 5 and had a reliability of .85 (Griffin, 2003). Technology-training methods included in the questionnaire are credit classes, non-credit workshops, drop-in clinics, faculty support, peer support, online help, printed documentation, and trial and error.

Griffin (2003) also used Griffin and Christensen's (1999) Level of Use instrument to provide information regarding educators' level of technology use. According to Griffin, Level of Use is a self-assessment instrument adapted from the Concerns-Based Adoption Model (CBAM). The CBAM was developed by Hall and Rutherford (1974) for a study of adoption of any new educational innovation. CBAM is an instrument which is a self-assessment measure targeted toward describing behaviors of educators as they progress through various levels of implementation. The instrument is based on the eight levels of use: non-use, orientation, preparation, mechanical use, routine, refinement, integration, and renewal (Griffin, 2003). The instrument is an appropriate indicator of an educator's progress of classroom instructional technology integration.

In addition, Griffin (2003) used the Level of Technology Integration (LoTi) questionnaire to provide information on the educator's level of technology integration. The LoTi questionnaire was developed by Moersch (1995) to measure authentic classroom technology use, personal computer use, and current instructional practices. The questionnaire consists of 50 items and has been tested for reliability, internal consistency, and validity. The overall reliability coefficient of the LoTi questionnaire was .94 with each subscale's reliability ranging from .59-.86 (Griffin, 2003). The reliability measures of this survey indicate that the LoTi questionnaire is a reliable instrument for measuring levels of technology integration.

Finally, Griffin (2003) used the Stages of Adoption of Technology survey that was developed by Christensen (1997). According to Griffin, Stages of Adoption of Technology survey is a quick self-assessment instrument that measures the impact of information technology training and trends over time.

From these questionnaires, Griffin (2003) developed a new survey that combined the previously mentioned questionnaires with additional demographic questions. The first part of the survey elicits demographic data. The demographic data included gender, age, highest degree received, years of teaching experience, grade level teaching assignment, hours of professional development during the last year, hours of professional development during the last five years, hours per week students used computers for the respondent's class, and whether or not the administrator or teacher has a computer at home. The second part of the survey addressed the perceived effectiveness of methods

for learning technology integration skills as well as the frequency of choice. Questions addressing the reasons for frequency of choice were also included in this section.
The third part of the survey included the level of technology use instruments and stages of adoption. According to Griffin, this section included questions taken from Level of Use (Griffin & Christensen, 1999) and the LoTi questionnaire. Data from this section will provide a measure of each educator's technology level of integration.

According to Griffin (2003), due to the small number of participants in the pilot study, data analysis was not conducted. The pilot study did give Griffin valuable information regarding the feasibility of the online survey. This information included a more accurate time frame for taking the survey as well as confirmation of the feasibility of the online survey.

With the permission of Griffin (Appendix A), the author created a new online version of the survey using Survey Monkey. Participants accessed the appropriate URL (uniform resource locator) to enter and complete the anonymous survey. A computer with Internet connectivity was required to complete the anonymous survey. The anonymous survey contained demographic questions to include teachers' years of teaching experience, ages, degree level, current teaching positions (e.g. content area: math, language arts, science, social studies, reading, special education, or connections: art, music, PE, keyboarding, etc.), whether or not they had received an advanced degree in technology, types of technology available in the classroom, and types of technology used in the classroom. Question eight asked the participants to rate nine different types of professional development as to their beliefs of its efficiency using a five point Likert-type scale ranging from NE to VE with NE being not experienced and VE being very effective. These questions from part II of Griffin's survey titled Training Methods for Learning Technology Integration Skills (TMLTIS) which were originally created by Davis with a reliability measure of .85, were adapted by the author to include the term "modeling" after technology personnel support and "mentoring" after peer support. The terms modeling and mentoring were added for clarification. The author also added summer institutes as a training method in order to align these with the fourteen components of technology professional development. The question from the TMLTIS regarding the frequency of utilization of each method was omitted by the author because it did not answer any of the author's research questions. Question 9 asked the participants to select, from a list, the reasons why they chose to attend the learning method they chose most often. Choices included: location of the training, fits with your learning style preference, time-easy to fit your schedule, required by your district/school, best method for learning the technology skills, it was the only training available, and other. This question, also from part II of the TMLTIS, was adapted by the author by changing the option "required by your district/campus" to "required by your district/school" and including the option of "it was the only training available". All of the CBAM, Stages of Adoption, and LoTi questions from Griffin's survey were omitted because the author did not believe they provided answers to any of the research questions. These questions were replaced with question 10, an open-ended question that asked the participants to list the number of hours per week they estimate their students used technology in their class for each of the following: prepare written text (e.g. word processing, desktop publishing); create or use graphics or visual displays (e.g. graphs, diagrams, pictures, maps); learn or practice basic skills (e.g. reading or math skills);

conduct research (e.g. Internet searching, using reference materials on CD-ROM); correspond with others (e.g. student, teachers, experts) via email, network, or Internet; contribute to blogs or wikis; use social networking websites; solve problems, analyze data, or perform calculations; conduct experiments or perform measurements; develop and present multimedia presentations; create art, music, movies, or webcasts; develop or run demonstrations, models, or simulations; and, design and produce a product. An open ended question, number 11, was added and asked participants to indicate what local/system factors supported the use of technology in their classroom. Another open ended question, number 12, was added and asked participated to indicate what factors did not support the use of technology in their classroom.

A pilot study of the new instrument was conducted in the fall of 2011 for study prior to administration to the population in order to see that it could be accessed and administered easily and according to plan (Fink, 2006). Fifteen selected teachers, who were not to be part of the study, were asked to complete the anonymous survey. Revisions were made based on the pilot feedback. Question number two, what is your age, was changed from an open ended question to a multiple choice type question. Question number eight was transformed into a matrix type question and a not experienced choice was added. Question number nine was also made into a matrix type question in order to allow participants to select reasons for attending each of the different types of learning methods. Since the survey was not validated by an institution, no psychometric properties were determined for the survey. The cost of the anonymous survey was minimal as it was created by the author, piloted, and administered using Survey Monkey.

Data Collection Procedures

Data were collected via an online anonymous survey created in Survey Monkey. Survey Monkey provided secure transmission by enabling SSL encryption and masking IP addresses. Informed consent was also obtained through the Survey Monkey link. The anonymous survey took approximately 15 minutes to complete. Data were collected from teachers in each middle school from District 1 and District 2 during the fall of 2012.

All teachers (approximately 230) from middle schools in District 1 and District 2 were asked to participate in the online anonymous survey via Survey Monkey. Survey Monkey is a secure web-based survey tool. Once approved by the Director of Testing and Research in District 1 and the Principal at the middle school in District 2, permission was obtained from the Institutional Review Board of Georgia Southern University. Teachers were asked to voluntarily participate in the online anonymous survey. Each request was made via email with follow-up emails (Sue & Ritter, 2011). Technical assistance was made available via email and phone support, however none was needed. A copy of the survey results were made available to the participating districts.

An application for the Approval of Investigation Involving Human Subjects was submitted to the Georgia Southern Institutional Research Board (IRB) before data acquisition took place.

Response Rate

According to Fink (2006), response rate is the number of participants who respond divided by the number of eligible respondents. In this study, 230 certified middle school teachers from two districts in Georgia were asked to participate. A total of 143 responses were gathered for a 62% response rate. This is well above the average response rate of 39.6% (Perkins, 2011).

Data Analysis

After the survey data were collected, the actual response rate was calculated. All surveys in which the respondent agreed to the informed consent were used. The survey results were recorded on an Excel spreadsheet and transferred into SPSS 19.0 for further analysis. After the data were entered into SPSS, they were tabulated and analyzed using descriptive statistics and multiple regression analysis. Multiple regression is the most commonly used statistic in the social sciences and is used to (a) make predictions about a criterion variable or (b) complete a causal analysis to determine whether predictor variables affect criterion variables (Pallant, 2010). According to Pallant (2010) multiple regression analysis is based on correlation, but because it is more sophisticated than correlation, it makes it an ideal statistic for real-life examples, rather than laboratory-based experiments.

Using SPSS, the first level of data analysis was to develop a table of descriptive statistics including frequency and percent. The descriptive statistics were analyzed for anomalies. Descriptive statistics utilize data collection and analysis techniques that yield reports concerning the measures of central tendency, variation, and correlation (The Association for Educational Communication and Technology, 2001). Data were measured using the frequency and percent.

The analysis was conducted on each type of professional development for each survey question. Numerical values were assigned to each question with very effective (VE) being interpreted as 5, effective (E) being interpreted as 4, ineffective (I) being interpreted as 3, very ineffective (VI) being interpreted as 2, and not experience (NE) being interpreted as 1. A multiple regression analysis was used to evaluate the relationship, if any, between the predictor variables (a teacher's age, years of experience, degree level, and hours of student classroom technology use) and the criterion variables (their perceptions of the nine types of professional development for successful integration of educational instructional technologies).

Reporting the Data

Demographic data were reported in tables. Additional individual tables were used to demonstrate if a relationship existed between a teacher's age, years of experiences, degree level, and reported number of student classroom technology use and teachers' perceptions of professional development activities which result in successful classroom integration of instructional technology. Each table contained a narrative.

Chapter Summary

This is a quantitative exploratory study using a survey instrument. The quantitative method focuses on controlling a small number of variables to determine relationships and the strengths of those relationships (Mills, 2003). This is the appropriate method for this study because the author was studying the population, used preconceived concepts and theories to determine the appropriate data to be collected, used statistical methods to analyze the collected data, and prepared objective reports of the research findings (Gall, Gall, & Borg, 2007). The purpose of this study was to determine teachers' perceptions of professional development activities which result in successful classroom integration of instructional technologies.

In this study, there were two types of variables. The predictor variables, which are defined as the variables that make predictions about criterion variable or how much variance they cause in the criterion variable (Pallant, 2010), were the teacher's age, the teachers' years of experience, degree level, and the reported number of hours of student classroom technology use. The criterion variables, defined as the element that varies because of the predictor variable (Pallant, 2010), were the types of classroom instructional technology professional development that teachers perceive as effective. In this investigation there were nine criterion variables: technology integration classes taken for credit hours, non-credit workshops provided by school districts or outside consultants, drop-in clinics or open computer labs, summer institutes, technology personnel support (modeling), peer support (mentoring), independent online help, reading printed documentation, and learning through trial and error.

The anonymous survey instrument, *Training Methods for Learning Instructional Technology* (Appendix B), was used to collect data for this study. The author created the survey by modifying, with permission, a survey used in a previous study by Griffin (2003). The survey included seven questions related to demographics and student classroom technology use, and nine types of professional development used for technology integration training. The anonymous survey took approximately 15 minutes to complete online. This process resulted in a rapid turnaround in data collection of the approximately 230 middle school teachers who completed the anonymous survey. The two districts in the study were purposefully selected for participation based on the recommendation of the UGA ETC. UGA ETC recommended both districts based on their participation in instructional technology professional development funded by Title

IID technology grants and their incorporation of technology resources and technology-based practices into the daily routines, instruction, and management of the classroom by both the students and teachers.

Item Analysis

The following is a chart that contains each item on the Training Methods for Learning Instructional Technology survey. Each item is referenced to the original survey from which Griffin obtained the item.

Table 4.

Quantitative Item Analysis

Question Number	Question	Survey Origin	Research Question
8	Please rate how effective you believe each training method to be for learning educational technology integration skills	Computer Competence Skills Questionnaire Davis 1999	Overarching, 1, 2, 3
9	Reasons why you chose to attend the learning method you chose to attend most often.	Computer Competence Skills Questionnaire Davis 1999	Overarching
10	How many hours per week your students use various types of technology	N/A	3

Chapter 3 discussed the research questions, research design, population and participants of the study, survey instrument, data collection procedures, data analysis, and a reporting of the data. Chapter 4 includes the reporting of data and data analysis.

CHAPTER 4

REPORT OF DATA AND DATA ANALYSIS

The roles and functions of schools are changing; mastering core academic subjects is no longer enough to succeed in today's society. Many students are now entering school with technology skills that far surpass those of their teachers (OECD, 2009; SETDA, 2007). New educational technology standards and student achievement have become pressing issues due to the national emphasis on standards-based accountability. A Presidential Blueprint for Reform (U.S. DOE, 2010d) and the National Education Technology Plan (U.S. DOE, 2010c) emphasize the use of educational technologies in the classroom.

Advances in technology often require teachers to learn new methods of teaching while trying to keep up with rapidly increasing technology changes. Unfortunately, many teachers report being inadequately prepared to utilize instructional technologies in their classroom (Beaudrie & Boschmans, 2004; Bielema, 2000; Broussard, 2009; Griffin 2003; Holmes, 2006; Latio, 2009). Research has validated that sit-and-learn or one-time-only professional development is not the most effective method of professional learning (Baylor & Ritchie, 2002; Becker, 2001; Lawless & Pellegrino, 2007; Rodriquez, 2000; VanFossen, 2001; Wenglinksy, 1998; Willis & Raines, 2001; Zhao & Bryant, 2007). Teachers have demonstrated a need for opportunities to learn from their peers (Croft et al., 2010; Rodriquez, 2000; U.S. DOE, 2000; Wei et al., 2010).

In this study, the author adapted survey *Training Methods for Using Instructional Technology* was employed to gain data on teachers' perceptions of professional development which result in successful classroom integration of instructional technologies. In addition, the research focused on whether teachers differ in their perceptions of methods for learning classroom instructional technologies based on their years of experience, age, degree level, or reported hours of student classroom technology use.

This chapter presents an overview of the research questions and design. A description of the respondents is included and research results are presented in tables and narrative format. Finally, responses to the research questions are provided.

Research Questions

The research was guided by the following over-arching question: What are teachers' perceptions of professional development activities which result in successful classroom integration of instructional technologies?

1. Does a relationship exist between teacher age and their perception of professional development activities which result in successful classroom integration of instructional technologies?
2. Does a relationship exist between teachers' years of experience and their perceptions of professional development activities which result in successful classroom integration of instructional technologies?
3. Does a relationship exist between teachers' degree level and their perception of professional development activities which result in successful classroom integration of instructional technologies?
4. Does a relationship exist between the reported number of hours of student classroom technology use and teachers' perceptions of professional development

activities which result in successful classroom integration of instructional technologies?

Research Design

The purpose of this study was to explore teachers' perceptions of professional development which results in successful classroom integration of instructional technologies. The researcher conducted an anonymous quantitative study to describe the methods of professional development involving classroom instructional technology that teachers from middle schools in two districts in Georgia perceive effective; relationships between a teacher's age and their perceptions; difference between years of experience and their perceptions; differences between degree level and their perceptions; and relationships between the reported number of hours of student classroom technology use and a teacher's perceptions.

In this study, there were two types of variables. The predictor variables, which are defined as the variables that make predictions about the criterion variable or how much variance they cause in the criterion variable (Pallant, 2010), were the teacher's age, the teachers' years of experience, the teachers' degree level, and the reported number of hours of student classroom technology use. The criterion variables, which are defined as the element that varies because of the predictor variable (Pallant, 2010), were the types of classroom instructional technology professional development that teachers perceive as effective. In this investigation there were nine criterion variables: technology integration classes taken for credit hours, non-credit workshops provided by school districts or outside consultants, drop-in clinics or open computer labs, summer institutes, technology personnel support (modeling), peer support (mentoring), independent online help, reading printed documentation, and learning through trial and error.

The survey instrument, *Training Methods for Learning Instructional Technology* (Appendix B), was used to collect data for this study. The author created the survey by modifying, with permission, a survey used in a previous study by Griffin (2003) (Appendix A). The survey includes 12 questions related to demographics, student classroom technology use, and nine types of professional development used for technology integration training.

The link to the online survey created in Survey Monkey was made available, via email, to all certified middle school teachers in both school districts. After approval by the Institutional Review Board of Georgia Southern University, permission was acquired from the superintendent or central office personnel for each district. Teachers in District 1 were asked to voluntarily participate in the online survey by their Director of Technology. Teachers in District 2 were asked to voluntarily participate in the online survey by their principal. Requests were made via email with follow up emails. Survey Monkey was used in order to ensure participant anonymity.

Survey data from District 1 and District 2 were examined with respect to teachers' perceptions of various forms of professional development which result in successful classroom integration of instructional technologies. Data were analyzed to gain insight into professional development attendance trends among educators. The research focused on whether teachers differ in their perceptions of methods for learning classroom instructional technology based on their age, years of experience, and degree level. The study also focused on the relationships between the reported number of hours of student classroom technology use and teachers' perceptions of professional development which results in successful classroom integration of instructional technologies.

To examine realibility and internal consistency Cronbach's alpha tests were conducted. Cronbach's alphas for the 9 types of professional development were .842 (Table 5). According to George and Mallery's (2003) rule of thumb for evaluating alpha coefficients this falls into the good range which indicates a good internal consistency of of the items.

Table 5

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.842	.841	9

Respondents

The participants for this study were 230 middle school teachers in two districts in Georgia in which at least one of the schools had been recognized for successful implementation of technology into the school by the University of Georgia Educational Technology Center (UGA ETC). UGA ETC recommended these districts to the author based on their participation in education professional development funded by Title IID technology grants and their incorporation of technology resources and technology-based practices into the daily routines, instruction, and management of the classroom by both the students and teachers. .

The author sent an email request to the Technology Director in District 1 and the Principal in District 2 asking them to email all middle school teachers in their district and ask them to participate in the study. The Technology Director in District 1 and the Principal in District 2 sent an email out to all teachers in the study asking them to participate. A link to the web-based survey was included in the email to direct the participants to the data collection website. Within one week of the request, 117 teachers had responded. The author sent another email to the Technology Director in District 1 and the Principal in District 2 asking them to send a reminder email to all of the middle school teachers in their districts. This email promoted more responses. A total of 143 responses were gathered for a 62% response rate. An initial review of the survey responses indicated that 129 of the respondents agreed to the informed consent.

The first level of data analysis used descriptive statistics for each of the demographic questions, Q1-Q7. Seventy four (N=74) of the respondents answered the question about years of teaching (Table 6). Responses ranged from a minimum of 0 to a maximum of 30 with a mean of 13.59 and a standard deviation of 6.975.

Table 6

Years Teaching

	N	Minimum	Maximum	Mean	Std. Deviation
Years Teaching	74	0	30	13.59	6.975

Ninety-one (N=91) of the respondents answered the question about their age (Table 7). 7.7% of the respondents were between the ages of 20-29. Thirty-one point nine percent of the respondents were between the ages of 30-39. Thirty-six point three percent of the respondents were between the age of 40-49. Twenty point nine percent of the respondents were between the ages of 50-59 and 3.3% of the respondents were 60 or older.

Table 7

Participants' Ages

Age	Frequency	Percent
20-29	7	7.7
30-39	29	31.9
40-49	33	36.3
50-59	19	20.9
60+	3	3.3
Total	91	100.0

Eighty-eight (N=88) of the respondents answered the question about their degree level (Table 8). A Bachelor's degree was earned by 15.9% of the respondents. A Master's degree was earned by 48.9% of the respondents. A Specialist degree was earned by 33% of the respondents, and 2.3% of the respondents had earned a Doctorate. Nine of the respondents indicated they had received advanced technology training.

Table 8

Degrees

	Frequency	Percent
Bachelors	14	15.9
Masters	43	48.9
Specialist	29	33.0
Doctorate	2	2.3
Total	88	100.0

Eighty-nine (N=89) of the respondents answered the question about their teaching position (Table 9). Seventy-two point nine percent of the respondents indicated they were a content area (math, language arts, social studies, or science) teacher. Eighteen percent of the respondents indicated they taught special education. Ten percent of the respondents indicated they were connections (P.E., Art, Music, Computers, etc.) teachers.

Table 9

Teaching Position

	Frequency	Percent
Content Area Teacher	64	71.9
Special Education	16	18.0
Connections	9	10.1
Total	89	100.0

Question 6 asked the respondents to indicate what type of technology they had available in their classroom. Choices included: student computers, one-to-one computers, interactive whiteboards, student response systems, document cameras, video cameras, ipod, and other (Table 10). Fifty-seven respondents indicated they had student computers available. Thirteen of the respondents indicated they had one-to-one computers available. Seventy-two of the respondents indicated they had interactive whiteboards available. Forty-one of the respondents indicated they had student response systems available. Forty-six of the respondents indicated they had document cameras available. Nine of the respondents indicated they had video camera available and five of the respondents indicated they had IPads available.

Table 10

Types of Technology Available in the Classroom

	Frequency	Percent
Student Computers	57	22.2
One-to-One Computers	13	5.1
Interactive Whiteboard	72	28.1
Student Response Systems	41	16.0
Document Camera	46	18.0
Digital Camera	13	5.1
Video Camera	9	3.5
Ipod	5	2.0
Total	256	100.0

Question 7 asked teachers to choose, from a list, the types of technology they use in their classroom. Choices included: student computers, one-to-one computers, interactive whiteboards, student response systems, document cameras, video cameras, ipod, and other (Table 11). Student computers in their classroom were used by 59 of the respondents. One-to-one computers were used by 15 of the respondents. Interactive whiteboard in their classroom were used by 70 of the respondents. Student response systems were used by 36 of the respondents in their classroom. A document camera was used by 39 of the respondents in their classroom. A digital camera was used by 15 of the respondents in their classroom. A video camera was used by six of the respondents in their classroom and six of the respondents indicated they used an Ipod in their classroom.

Table 11

Types of Technology Used in the Classroom

	Frequency	Percent
Student Computers	59	24.0
One-to-One Computers	15	6.1
Interactive Whiteboard	70	28.5
Student Response Systems	36	14.6
Document Camera	39	15.6
Digital Camera	15	6.1
Video Camera	6	2.4
Ipod	6	2.4
Total	246	100.0

Response to Research Questions

The overarching question in this study was: What are teachers' perceptions of professional development activities which result in successful classroom integration of instructional technologies? Survey question number 8 asked respondents to rate how effective they believed each of the nine training methods (technology integration classes taken for credit hours, non-credit workshops provided by school districts or outside consultants, drop-in clinics or open computer labs, summer institutes, technology personnel support (modeling), peer support (mentoring), independent online help, reading printed documentation, and learning through trial and error to be for learning education technology integration skills. Each professional development choice was given five choices where 5 represented very effective, 4 represented effective, 3 represented, ineffective, 2 represented very ineffective, and 1 represented not experienced. The mean and standard deviation where calculated for each type of professional development (Table 12). Based on a mean score of 4.12, peer support or mentoring was perceived to be the most effective form of professional development for learning educational technology integration skills by the respondents. Technology personnel support or modeling was perceived to be the second most effective form with a mean score of 3.96, followed by technology integration classes taken for credit hours with a mean score of 3.79. This was followed by learning through trial and error with a mean score of 3.76. Summer institutes and reading printed documentation also received a mean score of 3.76. They were followed by independent online help with a mean score of 3.30 and drop-in clinics or open computer labs with a mean score of 3.24. Non-credit workshops provided by school district or outside consultants was perceived by the respondents to be the most ineffective form of professional development for learning educational technology integration skills with a mean score of 2.37.

Further analysis of each of the nine types of professional development methods for learning educational technology integration skills was conducted (Table 13). Ninety-two of the respondents answered the questions about technology integration classes taken for credit hours. Fifty-five point four percent of the respondents found this method effective, 1.1% found it to be very ineffective and 14.1% had not experienced it. Ninety-three of the respondents answered the question about non-credit workshops provided by school district or outside consultants. Fifty-four point seven percent of the respondents found this method to be effective, 2.2% found it to be very ineffective and 12.9% of the respondents had not experienced this type of professional development. Ninety-three of the respondents answered the question about drop-in clinics or open computer labs. Five percent of the respondents found drop-in clinics or open computer labs an effective form of professional development for learning educational technology integration skills. Two point two percent of the respondents found this method ineffective and 12.9% had not experienced it. Fifty-seven percent of the 93 respondents that answered the question about summer institutes (week long -or longer- training during the summer) found it effective, 2.2% found it very ineffective. This type of professional development for learning educational technology integration skills had the highest percentage of not experience with 19.4%. Fifty-seven point six percent of 92 respondents perceived technology personnel support or modeling to be an effective form, while 1.1% felt it was very ineffective and 6.5% had not experienced it. Peer support or mentoring was perceived to be the most very effective (28.0%) and the most effective (63.4%) method for learning educational technology integration skills. Only 1.1% of the 93 respondents who answered this question felt it was very ineffective and only 2.2% had not experienced it. Independent online help (technology help that is obtained on-line from outside sources) was perceived by 38.7% of the 93 (N=93) respondents to be effective. Three point two percent felt that it was a very ineffective manner and 12.9% had not experienced it. Among the 93 respondents, 9.7% indicated that reading printed documentation was an effective form of learning educational technology integration skills, while 3.2% felt it was very ineffective and 6.5% had not experienced it. Finally 41.9% of 93felt that learning through trial and error was an effective form, 4.3% indicated that it was ineffective and 1.1% had not experienced it.

Table 12

Perceptions of effectiveness of Technology integration professional development by mean.

	N	Minimum	Maximum	Mean	Std. Deviation
Peer support (mentoring)	91	1	5	4.12	0.74
Technology personnel support (modeling)	91	1	5	3.96	0.99
Technology integration classes taken for credit hours	91	1	5	3.79	1.26
Learning through trial and error	91	1	5	3.76	0.86
Summer institutes (Week long (or longer) training during the summer)	91	1	5	3.42	1.34
Reading printed documentation	91	1	5	3.42	0.95
Independent online help (Technology help that is obtained on-line from outside sources)	91	1	5	3.30	1.12
Drop-in clinics or open computer labs	91	1	5	3.24	1.30
Non-credit workshops provided by school district or outside consultants	91	1	5	2.37	1.08

Table 13

Effectiveness of Training Methods for Learning Educational Technology Integration Skills.

Types of Professional Development	Very Effective	Effective	Ineffective	Very Ineffective	Not Experienced	Response Count
Technology integration classes taken for credit hours	27.2% (25)	55.4% (51)	2.2% (2)	1.1% (1)	14.1% (13)	92
Non-credit workshops provided by school district or outside consultants	11.8% (11)	54.7% (51)	18.3% (17)	2.2% (2)	12.9% (12)	93
Drop-in clinics or open computer labs	12.9% (12)	50.5% (47)	21.5% (20)	2.2% (2)	12.9% (12)	93
Summer institutes (Week long (or longer) training during the summer)	14.0% (13)	57% (53)	6.5% (6)	3.2% (3)	19.4% (18)	93
Technology personnel support (modeling)	27.2% (25)	57.6% (53)	7.6% (7)	1.1% (1)	6.5% (6)	92
Peer support (mentoring)	28.0% (26)	63.4% (59)	5.4% (5)	1.1% (1)	2.2% (2)	93
Independent online help (Technology help that is obtained on-line from outside sources)	10.8% (10)	38.7 % (36)	34.4% (32)	3.2% (3)	12.9% (12)	93
Reading printed documentation	9.7% (9)	39.8% (37)	40.9% (38)	3.2% (3)	6.5% (6)	93
Learning through trial and error	21.5% (20)	41.9% (39)	31.2% (29)	4.3% (4)	1.1% (1)	93

The sub questions in this study asked: (1) Does a relationship exist between teachers' ages and their perceptions of the individual effectiveness of professional development activities which result in successful classroom integration of instructional technologies? (2) Does a relationship exist between teachers' years of experience and their perceptions of professional development activities which result in successful classroom integration of instructional technologies? (3) Does a relationship exist between teachers' degree level and their perception of professional development activities which result in successful classroom integration of instructional technologies? (4) Does a relationship exist between the reported number of hours of student classroom technology use and teachers' perceptions of professional development activities which result in successful classroom integration of instructional technologies?

Multiple linear regression was conducted to evaluate how well participants' age, years of teaching experience, degree level, teaching position, and hours of student classroom technology use predicted the effectiveness of technology integration classes for credit hours (Table 15). Age, degree level, teaching position, and hours of student classroom technology use were dummy coded as follows: Age: Age1 (20-29) =1, remaining categories = 0; Age2 (30-39)=1, remaining categories=0; Age3 (40-49)=1, remaining categories=0; Age4 (50-59)=1, remaining categories=0. Degree: Degree1 (Bachelors)=1, remaining categories=0; Degree2 (Masters)=1, remaining categories=0; Degree3 (Specialist)=1, remaining categories=0. Teaching Position: TeachPo1 (Content Area Teacher)=1, remaining categories=0; TeachPo2 (Special Education)=1, remaining categories=0; TeachPo3 (Connections)=1, remaining categories=0. Computer Use: CompUse1 (<3 hours)=1, remaining categories=0; CompUse2 (4-7 hours)=2, remaining categories=0; CompUse3 (8-12 hours)=1, remaining categories=0. The regression equation was not significant ($F(13,46) = .562$, $p > .05$) with an R^2 of .137.

Collinearity was likely to exist $r = -.75$ between content area and special education (Table 14). The tollerence values for content area and special education were .351 and .349 respectfully which are not less than .10; therefore, the multicollinearity assumption was not violated. This is also supported by the VIF values which are 2.847 and 2.865, which are well below the cut-off of 10. Since the regression equation was not significant and multicollinearity did not exist, participants' age, years of teaching, experience, degree level, and teaching position cannot be used to predict teachers' perceptions of the effectiveness of technology integration classes.

Table 14

Means, Standard Deviations, and Inter-correlations for Technology Integration Classes and Predictor Variables

	Variable	M	SD	N	1	2	3	4	5	6	7	8	9	10	11	12	13
	Tech_Int	3.79	1.27	90	.02	.002	-.11	.09	.03	.15	-.19	.01	.05	-.05	.13	-.19	-.05
Pearson Correlation	Predictor Variable																
	1. 20-29	.08	.27	91	-	-.20	-.22	-.15	.01	.19	-.19	-.23	.11	-.10	-.01	.08	-.39
	2. 30-39	.32	.47	91		-	-.52	-.35	.09	-.25	.23	-.05	.05	-.11	.12	-.11	-.40
	3. 40-49	.36	.48	91			-	-.39	-.14	.02	.02	.26	-.23	-.04	-.06	.21	.25
	4. 50-59	.21	.41	91				-	.09	.18	-.24	-.10	.11	.24	-.01	-.14	.28
	5. Bachelors	.16	.37	88					-	-.43	-.31	-.22	.38	-.07	.17	-.19	-.29
	6. Masters	.49	.50	88						-	-.69	-.01	-.15	.22	-.15	.02	.19
	7. Specialist	.33	.47	88							-	.16	-.13	-.18	.03	.12	-.02
	8. Content Area	.72	.45	89								-	-.75	.02	.04	.15	.35
	9. SpecEd	.18	.39	89									-	-.15	.06	-.04	-.30
	10. <3	.28	.45	75										-	-.40	-.30	.24
	11. 4-7	.29	.46	75											-	-.31	-.22
	12. 8-12	.19	.39	75												-	-.01
	13. Years Teaching	13.59	6.98	74													-

Table 15

Summary of Standard Regression Analysis for Variable Predicting Effectiveness of Technology Integration Classes Taken for Credit Hours (N = 91)

Variable	B	*SE B*	β
Age1	-.1.230	1.939	-.260
Age2	-.997	1.185	-.369
Age3	-1.022	1.124	-.390
Age4	-.654	1.132	-.211
Years	-.038	.038	-.210
Degree1	-.674	1.290	-.196
Degree2	-.132	1.199	-.052
Degree3	-.846	1.219	-.316
TeachPo1	.645	.648	.230
TeachPo2	.427	.761	.130
CompUse1	-.421	.511	-.150
CompUse2	-.038	.503	-.014
CompUse3	-.771	.578	-.239
R^2		.137	
F		.562	

Standard multiple linear regression was conducted to evaluate how well participants' age, years of teaching experience, degree level, teaching position, and hours of student classroom technology use predicted the effectiveness of non-credit workshops

(Table 17). Age, degree level, teaching position, and hours of student classroom technology use were dummy coded as follows: Age: Age1 (20-29) =1, remaining categories = 0; Age2 (30-39)=1, remaining categories=0; Age3 (40-49)=1, remaining categories=0; Age4 (50-59)=1, remaining categories=0. Degree: Degree1 (Bachelors)=1, remaining categories=0; Degree2 (Masters)=1, remaining categories=0; Degree3 (Specialist)=1, remaining categories=0. Teaching Position: TeachPo1 (Content Area Teacher)=1, remaining categories=0; TeachPo2 (Special Education)=1, remaining categories=0; TeachPo3 (Connections)=1, remaining categories=0. Computer Use: CompUse1 (<3 hours)=1, remaining categories=0; CompUse2 (4-7 hours)=2, remaining categories=0; CompUse3 (8-12 hours)=1, remaining categories=0. The regression equation was not significant ($F(13,46) = .707$, $p>.05$) with an R^2 of .166.

Collinearity was likely to exist $r = -.75$ between content area and special education (Table 16). The tollerence values for content area and special education were .351 and .349 respectfully which are not less than .10; therefore, the multicollinearity assumption was not violated. This is also supported by the VIF values which are 2.847 and 2.865, which are well below the cut-off of 10. Since the regression equation was not significant and the multicollinearity assumption was not violate, participants' age, years of teaching, experience, degree level, and teaching position cannot be used to predict teachers' perceptions of the effectiveness of non-credit workshops.

Table 16

Summary of Standard Regression Analysis for Variable Predicting Effectiveness of Non-credit Workshops Clinics (N = 91)

1) Variable	B	*SE B*	β
Age1	.478	1.284	.-.112
Age2	-.295	1.055	.120
Age3	.052	1.001	.022
Age4	.547	1.008	.195
Years	.006	1.149	-.133
Degree1	-.416	1.068	-.276
Degree2	-.630	1.086	-.095
Degree3	-.232	.577	.244
TeachPo1	.620	.678	.104
TeachPo2	.310	.455	.104
CompUse1	-.838	.448	-.225
CompUse2	-.563	.515	-.262
CompUse3	.006	.034	.039
R^2		.166	
F		.707	

Table 17

Means, Standard Deviations, and Inter-correlations for Non Credit Workshops and Predictor Variables

	Variable	M	SD	N	1	2	3	4	5	6	7	8	9	10	11	12	13
	NC Workshops	3.49	1.15	91	.02	-.17	.01	.13	.02	-.12	.09	.11	-.02	-.15	-.01	-.06	.12
	Predictor Variable																
	1. 20-29	.08	.27	91	-	-.20	-.22	-.15	.01	.19	-.19	-.23	.11	-.10	-.01	.08	-.39
	2. 30-39	.32	.47	91		-	-.52	-.35	.09	-.25	.23	-.05	.05	-.11	.12	-.11	-.40
	3. 40-49	.36	.48	91			-	-.39	-.14	.02	.02	.26	-.23	-.04	-.06	.21	.25
	4. 50-59	.21	.41	91				-	.09	.18	-.24	-.10	.11	.24	-.01	-.14	.28
Pearson Correlation	5. Bachelors	.16	.37	88					-	-.43	-.31	-.22	.38	-.07	.17	-.19	-.29
	6. Masters	.49	.50	88						-	-.69	-.01	-.15	.22	-.15	.02	.20
	7. Specialist	.33	.47	88							-	.16	-.13	-.18	.03	.12	-.02
	8. Content Area	.72	.45	89								-	-.75	.02	.04	.15	.35
	9. SpecEd	.18	.39	89									-	-.15	.06	-.04	-.30
	10. <3	.28	.45	75										-	-.40	-.30	.24
	11. 4-7	.29	.46	75											-	-.31	-.22
	12. 8-12	.19	.39	75												-	-.01
	13. Years Teaching	13.59	6.98	74													-

Standard multiple linear regression was conducted to evaluate how well participants' age, years of teaching experience, degree level, teaching position, and hours of student classroom technology use predicted the effectiveness of Drop-in Clinics (Table 19). Age, degree level, teaching position, and hours of student classroom technology use were dummy coded as follows: Age: Age1 (20-29) =1, remaining categories = 0; Age2 (30-39)=1, remaining categories=0; Age3 (40-49)=1, remaining categories=0; Age4 (50-59)=1, remaining categories=0. Degree: Degree1 (Bachelors)=1, remaining categories=0; Degree2 (Masters)=1, remaining categories=0; Degree3 (Specialist)=1, remaining categories=0. Teaching Position: TeachPo1 (Content Area Teacher)=1, remaining categories=0; TeachPo2 (Special Education)=1, remaining categories=0; TeachPo3 (Connections)=1, remaining categories=0. Computer Use: CompUse1 (<3 hours)=1, remaining categories=0; CompUse2 (4-7 hours)=2, remaining categories=0; CompUse3 (8-12 hours)=1, remaining categories=0. The regression equation was not significant ($F(13,46) = .627$, $p>.05$) with an R^2 of .151.

Collinearity was likely to exist $r = -.75$ between content area and special education (Table 18). The tollerence values for content area and special education were .351 and .349 respectfully which are not less than .10; therefore, the multicollinearity assumption was not violated. This is also supported by the VIF values which are 2.847 and 2.865, which are well below the cut-off of 10. Since the regression equation was not significant and the multicollinearity assumption was not violated, participants' age, years of teaching, experience, degree level, and teaching position cannot be used to predict teachers' perceptions of the effectiveness of Drop-in Clinics.

Table 18

Means, Standard Deviations, and inter-correlations for Drop In Clinics and Predictor Variables

	Variable	M	SD	N	1	2	3	4	5	6	7	8	9	10	11	12	13
	Drop In	3.46	1.158	91	.06	.18	-.28	.10	.11	-.12	.03	-.15	.11	-.11	.06	-.13	-.10
	Predictor Variable																
Pearson Correlation	1. 20-29	.08	.27	91	-	-.20	-.22	-.15	.01	.19	-.19	-.23	.11	-.10	-.01	.08	-.39
	2. 30-39	.32	.47	91		-	-.52	-.35	.09	-.25	.23	-.05	.05	-.11	.12	-.11	-.40
	3. 40-49	.36	.48	91			-	-.39	-.14	.02	.02	.26	-.23	-.04	-.06	.21	.25
	4. 50-59	.21	.41	91				-	.09	.18	-.24	-.10	.11	.24	-.01	-.14	.28
	5. Bachelors	.16	.37	88					-	-.43	-.31	-.22	.38	-.07	.17	-.19	-.28
	6. Masters	.49	.50	88						-	-.69	-.01	-.15	.22	-.15	.02	.20
	7. Specialist	.33	.47	88							-	.16	-.13	-.18	.03	.12	-.02
	8. Content Area	.72	.45	89								-	-.75	.02	.04	.15	.35
	9. SpecEd	.18	.39	89									-	-.15	.06	-.04	-.30
	10. <3	.28	.45	75										-	-.40	-.30	.24
	11. 4-7	.29	.46	75											-	-.31	-.22
	12. 8-12	.19	.39	75												-	-.01
	13. Years Teaching	13.59	6.98	74													-

Table 19

Summary of Standard Regression Analysis for Variable Predicting Effectiveness of Drop-in Clinics (N = 91)

Variable	B	*SE B*	β
Age1	.828	1.306	.192
Age2	.750	1.074	.304
Age3	.034	1.018	.014
Age4	.740	1.026	.261
Years	.015	.035	.088
Degree1	-.776	1.169	-.246
Degree2	-.1.072	1.086	-.466
Degree3	-.844	1.105	-.345
TeachPo1	-.337	.587	-.131
TeachPo2	-.225	.690	-.075
CompUse1	-.536	.463	-.209
CompUse2	-.238	.456	-.094
CompUse3	-.455	.524	-.154
R^2		.151	
F		.627	

Standard multiple linear regression was conducted to evaluate how well participants' age, years of teaching experience, degree level, teaching position, and hours of student classroom technology use predicted the effectiveness of summer institutes (Table 21). Age, degree level, teaching position, and hours of student classroom technology use were dummy coded as follows: Age: Age1 (20-29) =1, remaining categories = 0; Age2 (30-39)=1, remaining categories=0; Age3 (40-49)=1, remaining categories=0; Age4 (50-59)=1, remaining categories=0. Degree: Degree1 (Bachelors)=1, remaining categories=0; Degree2 (Masters)=1, remaining categories=0; Degree3 (Specialist)=1, remaining categories=0. Teaching Position: TeachPo1 (Content Area Teacher)=1, remaining categories=0; TeachPo2 (Special Education)=1, remaining categories=0; TeachPo3 (Connections)=1, remaining categories=0. Computer Use: CompUse1 (<3 hours)=1, remaining categories=0; CompUse2 (4-7 hours)=2, remaining categories=0; CompUse3 (8-12 hours)=1, remaining categories=0. The regression equation was not significant ($F(13,46) = .681$, $p>.05$) with an R^2 of .161.

Collinearity was likely to exist $r = -.75$ between content area and special education (Table 20). The tollerence values for content area and special education were .351 and .349 respectfully which are not less than .10; therefore, the multicollinearity assumption was not violated. This is also supported by the VIF values which are 2.847 and 2.865, which are well below the cut-off of 10. Since the regression equation was not significant and the multicollinearity assumption was not violated, participants' age, years of teaching, experience, degree level, and teaching position cannot be used to predict teachers' perceptions of the effectiveness of summer institutes.

Table 20

Means, Standard Deviations, and Inter-correlations for summer institutes and Predictor Variables

	Variable	M	SD	N	1	2	3	4	5	6	7	8	9	10	11	12	13
	Summer Institutes	3.43	1.34	91	-.15	-.01	-.12	.20	.13	-.06	-.07	.04	.06	-.03	-.06	-.09	.15
	Predictor Variable																
Pearson Correlation	1. 20-29	.08	.27	91	-	-.20	-.22	-.15	.01	.19	-.19	-.23	.11	-.10	-.01	.08	-.39
	2. 30-39	.32	.47	91		-	-.52	-.35	.09	-.25	.23	-.05	.05	-.11	.12	-.11	-.40
	3. 40-49	.36	.48	91			-	-.39	-.14	.02	.02	.26	-.23	-.04	-.06	.21	.25
	4. 50-59	.21	.41	91				-	.09	.19	-.24	-.10	.11	.24	-.01	-.14	.28
	5. Bachelors	.16	.37	88					-	-.43	-.31	-.22	.38	-.07	.17	-.19	-.29
	6. Masters	.49	.50	88						-	-.69	-.01	-.15	.22	-.15	.02	.20
	7. Specialist	.33	.47	88							-	.16	-.13	-.19	.03	.12	-.02
	8. Content Area	.72	.45	89								-	-.75	.02	.04	.15	.35
	9. SpecEd	.18	.39	89									-	-.16	.06	-.04	-.30
	10. <3	.28	.45	75										-	-.40	-.30	.24
	11. 4-7	.29	.46	75											-	-.31	-.22
	12. 8-12	.19	.39	75												-	-.01
	13. Years Teaching	13.59	6.98	74													-

Table 21

Summary of Standard Regression Analysis for Variable Predicting Effectiveness of Summer Institutes (N = 91)

Variable	B	*SE B*	β
Age1	-1.077	1.505	-.215
Age2	-.509	1.237	-.178
Age3	-.824	1.174	-.297
Age4	-.010	1.182	-.003
Years	.011	.040	.056
Degree1	-.900	1.348	-.247
Degree2	-1.281	1.252	-.480
Degree3	-1.415	1.273	-.498
TeachPo1	.551	.677	.186
TeachPo2	.400	.795	.115
CompUse1	-.636	.533	-.214
CompUse2	-.609	.526	-.208
CompUse3	-.550	.604	-.161
R^2		.161	
F		.681	

Standard multiple linear regression was conducted to evaluate how well participants' age, years of teaching experience, degree level, teaching position, and hours of student classroom technology use predicted the effectiveness of Technology Personnel Support (Table 23). Age, degree level, teaching position, and hours of student classroom technology use were dummy coded as follows: Age: Age1 (20-29) =1, remaining categories = 0; Age2 (30-39)=1, remaining categories=0; Age3 (40-49)=1, remaining categories=0; Age4 (50-59)=1, remaining categories=0. Degree: Degree1 (Bachelors)=1, remaining categories=0; Degree2 (Masters)=1, remaining categories=0; Degree3 (Specialist)=1, remaining categories=0. Teaching Position: TeachPo1 (Content Area Teacher)=1, remaining categories=0; TeachPo2 (Special Education)=1, remaining categories=0; TeachPo3 (Connections)=1, remaining categories=0. Computer Use: CompUse1 (<3 hours)=1, remaining categories=0; CompUse2 (4-7 hours)=2, remaining categories=0; CompUse3 (8-12 hours)=1, remaining categories=0. The regression equation was not significant ($F(13,46) = 1.205$, $p>.05$) with an R^2 of .254.

Collinearity was likely to exist $r = -.75$ between content area and special education (Table 22). The tollerence values for content area and special education were .351 and .349 respectfully which are not less than .10; therefore, the multicollinearity assumption was not violated. This is also supported by the VIF values which are 2.847 and 2.865, which are well below the cut-off of 10. Since the regression equation was not significant and the multicollinearity assumption was not violated, participants' age, years of teaching, experience, degree level, and teaching position cannot be used to predict teachers' perceptions of the effectiveness of Technology Personnel Support.

Table 22

Means, Standard Deviations, and Inter-correlations for Technology Personnel and Predictor Variables

	Variable	M	SD	N	1	2	3	4	5	6	7	8	9	10	11	12	13
	Tech Personnel	3.96	.993	90	-.11	.15	-.20	.11	.09	-.20	.12	-.11	.16	-.13	-.04	-.02	.17
	Predictor Variable																
Pearson Correlation	1. 20-29	.08	.27	91	-	-.20	-.22	-.15	.01	.19	-.19	-.23	.11	-.10	-.01	.08	-.39
	2. 30-39	.32	.47	91		-	-.52	-.35	.09	-.25	.23	-.05	.05	-.11	.12	-.11	-.40
	3. 40-49	.36	.48	91			-	-.39	-.14	.02	.02	.26	-.23	-.04	-.06	.21	.25
	4. 50-59	.21	.41	91				-	.09	.18	-.24	-.10	.11	.24	-.01	-.14	.28
	5. Bachelors	.16	.37	88					-	-.43	-.31	-.22	.38	-.07	.17	-.19	-.29
	6. Masters	.49	.50	88						-	-.69	-.01	-.15	.22	-.15	.02	.20
	7. Specialist	.33	.47	88							-	.16	-.13	-.18	.03	.12	-.02
	8. Content Area	.72	.45	89								-	-.75	.02	.04	.15	.35
	9. SpecEd	.18	.39	89									-	-.15	.06	-.04	-.30
	10. <3	.28	.45	75										-	-.40	-.30	.24
	11. 4-7	.29	.46	75											-	-.31	-.22
	12. 8-12	.19	.39	75												-	-.01
	13. Years Teaching	13.59	6.98	74													-

Table 23

Summary of Standard Regression Analysis for Variable Predicting Effectiveness of Technology Personnel Support (N = 91)

Variable	B	*SE B*	β
Age1	.873	1.050	.235
Age2	1.081	.863	.510
Age3	.323	.819	.157
Age4	.758	.825	.312
Years	.069	.028	.482
Degree1	-.382	.940	-.141
Degree2	-.869	.873	-.440
Degree3	-.464	.888	-.221
TeachPo1	-.299	.472	-.136
TeachPo2	.211	.554	.082
CompUse1	-.549	.372	-.250
CompUse2	-.298	.367	-.138
CompUse3	-.139	.422	-.055
R^2		.254	
F		1.205	

Standard multiple linear regression was conducted to evaluate how well participants' age, years of teaching experience, degree level, teaching position, and hours of student classroom technology use predicted the effectiveness of Peer Support (Table 25). Age, degree level, teaching position, and hours of student classroom technology use were dummy coded as follows: Age: Age1 (20-29) =1, remaining categories = 0; Age2 (30-39)=1, remaining categories=0; Age3 (40-49)=1, remaining categories=0; Age4 (50-59)=1, remaining categories=0. Degree: Degree1 (Bachelors)=1, remaining categories=0; Degree2 (Masters)=1, remaining categories=0; Degree3 (Specialist)=1, remaining categories=0. Teaching Position: TeachPo1 (Content Area Teacher)=1, remaining categories=0; TeachPo2 (Special Education)=1, remaining categories=0; TeachPo3 (Connections)=1, remaining categories=0. Computer Use: CompUse1 (<3 hours)=1, remaining categories=0; CompUse2 (4-7 hours)=2, remaining categories=0; CompUse3 (8-12 hours)=1, remaining categories=0. The regression equation was not significant ($F(13,46) = .503$, $p>.05$) with an R^2 of .124.

Collinearity was likely to exist $r = -.75$ between content area and special education (Table 24). The tollerence values for content area and special education were .351 and .349 respectfully which are not less than .10; therefore, the multicollinearity assumption was not violated. This is also supported by the VIF values which are 2.847 and 2.865, which are well below the cut-off of 10. Since the regression equation was not significant and the multicollinearity assumption was not violated, participants' age, years of teaching, experience, degree level, and teaching position cannot be used to predict teachers' perceptions of the effectiveness of Peer Support.

Table 24

Means, Standard Deviations, and Inter-correlations for Peer Support and Predictor Variables

	Variable	M	SD	N	1	2	3	4	5	6	7	8	9	10	11	12	13
Pearson Correlation	Peer Support	4.12	.743	91	-.05	.02	.09	-.08	-.01	-.06	.05	.10	-.04	-.21	.28	.05	.03
	Predictor Variable																
	1. 20-29	.08	.27	91	-	-.20	-.22	-.15	.01	.19	-.19	-.23	.11	-.10	-.01	.08	-.39
	2. 30-39	.32	.47	91		-	-.52	-.35	.09	-.25	.23	-.05	.05	-.11	.12	-.11	-.40
	3. 40-49	.36	.48	91			-	-.39	-.14	.02	.02	.26	-.23	-.04	-.06	.21	.25
	4. 50-59	.21	.41	91				-	.09	.18	-.24	-.10	.11	.24	-.01	-.14	.28
	5. Bachelors	.16	.37	88					-	-.43	-.31	-.22	.38	-.07	.17	-.19	-.29
	6. Masters	.49	.50	88						-	-.69	-.01	-.15	.22	-.15	.02	.20
	7. Specialist	.33	.47	88							-	.16	-.13	-.18	.03	.12	-.02
	8. Content Area	.72	.45	89								-	-.75	.02	.04	.15	.35
	9. SpecEd	.18	.39	89									-	-.15	.06	-.04	-.30
	10. <3	.28	.45	75										-	-.40	-.30	.24
	11. 4-7	.29	.46	75											-	-.31	-.22
	12. 8-12	.19	.39	75												-	-.01
	13. Years Teaching	13.59	6.97	74													-

Table 25

Summary of Standard Regression Analysis for Variable Predicting Effectiveness of Peer Support (N = 91)

Variable	B	*SE B*	β
Age1	.055	.851	.020
Age2	.109	.699	.069
Age3	.098	.663	.063
Age4	-.053	.668	-.029
Years	.014	.023	.131
Degree1	-.294	.762	-.146
Degree2	-.300	.708	-.203
Degree3	-.296	.720	-.029
TeachPo1	.031	.383	.019
TeachPo2	.008	.449	.004
CompUse1	-.104	.301	-.064
CompUse2	.503	.297	.310
CompUse3	.219	.342	.116
R^2		.124	
F		.503	

Standard multiple linear regression was conducted to evaluate how well participants' age, years of teaching experience, degree level, teaching position, and hours of student classroom technology use predicted the effectiveness of Independent Online

Help (Table 27). Age, degree level, teaching position, and hours of student classroom technology use were dummy coded as follows: Age: Age1 (20-29) =1, remaining categories = 0; Age2 (30-39)=1, remaining categories=0; Age3 (40-49)=1, remaining categories=0; Age4 (50-59)=1, remaining categories=0. Degree: Degree1 (Bachelors)=1, remaining categories=0; Degree2 (Masters)=1, remaining categories=0; Degree3 (Specialist)=1, remaining categories=0. Teaching Position: TeachPo1 (Content Area Teacher)=1, remaining categories=0; TeachPo2 (Special Education)=1, remaining categories=0; TeachPo3 (Connections)=1, remaining categories=0. Computer Use: CompUse1 (<3 hours)=1, remaining categories=0; CompUse2 (4-7 hours)=2, remaining categories=0; CompUse3 (8-12 hours)=1, remaining categories=0. The regression equation was not significant ($F(13,46) = .538$, $p>.05$) with an R^2 of .132.

Collinearity was likely to exist $r = -.75$ between content area and special education (Table 26). The tollerence values for content area and special education were .351 and .349 respectfully which are not less than .10; therefore, the multicollinearity assumption was not violated. This is also supported by the VIF values which are 2.847 and 2.865, which are well below the cut-off of 10. Since the regression equation was not significant and the multicollinearity assumption was not violated, participants' age, years of teaching, experience, degree level, and teaching position cannot be used to predict teachers' perceptions of the effectiveness of Independent Online classes.

Table 26

Means, Standard Deviations, and Inter-correlations for Online Help and Predictor Variables

Variable	M	SD	N	1	2	3	4	5	6	7	8	9	10	11	12	13
Online	3.30	1.130	91	-.003	-.10	-.06	.18	-.08	.06	-.01	.03	.05	-.14	.11	-.09	.14
Predictor Variable																
1. 20-29	.08	.27	91	-	-.20	-.22	-.15	.01	.19	-.19	-.23	.11	-.10	-.01	.08	-.39
2. 30-39	.32	.47	91		-	-.52	-.35	.09	-.25	.23	-.05	.05	-.11	.12	-.11	-.40
3. 40-49	.36	.48	91			-	-.39	-.14	.02	.02	.26	-.23	-.04	-.06	.21	.25
4. 50-59	.21	.41	91				-	.09	.18	-.24	-.10	.11	.24	-.01	-.14	.28
5. Bachelors	.16	.37	88					-	-.43	-.31	-.22	.38	-.07	.17	-.19	-.29
6. Masters	.49	.50	88						-	-.69	-.01	-.15	.22	-.15	.02	.20
7. Specialist	.33	.47	88							-	.16	-.13	-.19	.03	.12	-.02
8. Content Area	.72	.45	89								-	-.75	.02	.04	.15	.35
9. SpecEd	.18	.39	89									-	-.15	.06	-.04	-.30
10. <3	.28	.45	75										-	-.40	-.30	.24
11. 4-7	.29	.46	75											-	-.31	-.22
12. 8-12	.19	.39	75												-	-.01
13. Years Teaching	13.59	6.97	74													-

Pearson Correlation

Table 27

Summary of Standard Regression Analysis for Variable Predicting Effectiveness of Independent Online Help (N = 91)

Variable	B	*SE B*	β
Age1	.831	1.289	.197
Age2	.458	1.060	.190
Age3	.434	1.005	.185
Age4	.934	1.012	.338
Years	.027	.034	.097
Degree1	-.579	1.154	-1.88
Degree2	-.120	1.072	-.053
Degree3	-.120	1.090	-.050
TeachPo1	.381	.580	.152
TeachPo2	.573	.681	.196
CompUse1	-.652	.457	.267
CompUse2	-.038	.450	.868
CompUse3	-.565	.517	.477
R^2		.132	
F		.538	

Standard multiple linear regression was conducted to evaluate how well participants' age, years of teaching experience, degree level, teaching position, and hours of student classroom technology use predicted the effectiveness of Reading Printed

Documentation (Table 29). Age, degree level, teaching position, and hours of student classroom technology use were dummy coded as follows: Age: Age1 (20-29) =1, remaining categories = 0; Age2 (30-39)=1, remaining categories=0; Age3 (40-49)=1, remaining categories=0; Age4 (50-59)=1, remaining categories=0. Degree: Degree1 (Bachelors)=1, remaining categories=0; Degree2 (Masters)=1, remaining categories=0; Degree3 (Specialist)=1, remaining categories=0. Teaching Position: TeachPo1 (Content Area Teacher)=1, remaining categories=0; TeachPo2 (Special Education)=1, remaining categories=0; TeachPo3 (Connections)=1, remaining categories=0. Computer Use: CompUse1 (<3 hours)=1, remaining categories=0; CompUse2 (4-7 hours)=2, remaining categories=0; CompUse3 (8-12 hours)=1, remaining categories=0. The regression equation was not significant ($F(13,46) = .703$, $p>.05$) with an R^2 of .166.

Collinearity was likely to exist $r = -.75$ between content area and special education (Table 28). The tollerence values for content area and special education were .351 and .349 respectfully which are not less than .10; therefore, the multicollinearity assumption was not violated. This is also supported by the VIF values which are 2.847 and 2.865, which are well below the cut-off of 10. Since the regression equation was not significant and the multicollinearity assumption was not violated, participants' age, years of teaching, experience, degree level, and teaching position cannot be used to predict teachers' perceptions of the effectiveness of Reading Printed Documentation.

Table 28

Means, Standard Deviations, and inter-correlations for Reading Printed Materials and Predictor Variables

	Variable	M	SD	N	1	2	3	4	5	6	7	8	9	10	11	12	13
	Reading Printed Doc	3.42	.955	91	-.04	-.003	-.16	.23	-.03	-.05	.07	-.08	.15	-.11	.13	-.16	.03
	Predictor Variable																
Pearson Correlation	1. 20-29	.08	.27	91	-	-.20	-.22	-.15	.01	.19	-.19	-.23	.11	-.10	-.01	.08	-.39
	2. 30-39	.32	.47	91		-	-.52	-.35	.09	-.25	.23	-.05	.05	-.11	.12	-.11	-.40
	3. 40-49	.36	.48	91			-	-.39	-.14	.02	.02	.26	-.23	-.04	-.06	.21	.25
	4. 50-59	.21	.41	91				-	.09	.18	-.24	-.10	.11	.24	-.01	-.14	.28
	5. Bachelors	.16	.37	88					-	-.43	-.31	-.22	.38	-.07	.17	-.19	-.29
	6. Masters	.49	.50	88						-	-.69	-.01	-.15	.22	-.15	.02	.20
	7. Specialist	.33	.47	88							-	.16	-.13	-.19	.03	.12	-.02
	8. Content Area	.72	.45	89								-	-.75	.02	.04	.15	.35
	9. SpecEd	.18	.39	89									-	-.15	.06	-.04	-.30
	10. <3	.28	.45	75										-	-.40	-.30	.24
	11. 4-7	.29	.46	75											-	-.31	-.22
	12. 8-12	.19	.39	75												-	-.01
	13. Years Teaching	13.59	6.97	74													-

Table 29

Summary of Standard Regression Analysis for Variable Predicting Effectiveness of Reading Printed Documentation (N = 91)

Variable	B	*SE B*	β
Age1	.566	1.068	.159
Age2	.483	.878	.237
Age3	.373	.833	.189
Age4	1.023	.839	.438
Years	.006	.028	.046
Degree1	-.670	.956	-.258
Degree2	-.313	.888	-.164
Degree3	-.078	.903	-.038
TeachPo1	.295	.480	.140
TeachPo2	.654	.564	.264
CompUse1	-.449	.378	-.212
CompUse2	-.084	.373	-.040
CompUse3	-.616	.429	-.253
R^2		.166	
F		.703	

Standard multiple linear regression was conducted to evaluate how well participants' age, years of teaching experience, degree level, teaching position, and hours of student classroom technology use predicted the effectiveness of Trial and Error (Table

31). Age, degree level, teaching position, and hours of student classroom technology use were dummy coded as follows: Age: Age1 (20-29) =1, remaining categories = 0; Age2 (30-39)=1, remaining categories=0; Age3 (40-49)=1, remaining categories=0; Age4 (50-59)=1, remaining categories=0. Degree: Degree1 (Bachelors)=1, remaining categories=0; Degree2 (Masters)=1, remaining categories=0; Degree3 (Specialist)=1, remaining categories=0. Teaching Position: TeachPo1 (Content Area Teacher)=1, remaining categories=0; TeachPo2 (Special Education)=1, remaining categories=0; TeachPo3 (Connections)=1, remaining categories=0. Computer Use: CompUse1 (<3 hours)=1, remaining categories=0; CompUse2 (4-7 hours)=2, remaining categories=0; CompUse3 (8-12 hours)=1, remaining categories=0. The regression equation was not significant ($F(13,46) = 1.184$, $p>.05$) with an R^2 of .251.

Collinearity was likely to exist $r = -.75$ between content area and special education (Table 30). The tollerence values for content area and special education were .351 and .349 respectfully which are not less than .10; therefore, the multicollinearity assumption was not violated. This is also supported by the VIF values which are 2.847 and 2.865, which are well below the cut-off of 10. Since the regression equation was not significant and the multicollinearity assumption was not violated, participants' age, years of teaching, experience, degree level, and teaching position cannot be used to predict teachers' perceptions of the effectiveness of Trial and Error.

Table 30

Means, Standard Deviations, and inter-correlations for Trial and Error and Predictor Variables

	Variable	M	SD	N	1	2	3	4	5	6	7	8	9	10	11	12	13
	Trial and Error	3.76	.861	91	.13	.11	-.05	-.14	.03	-.12	.12	-.06	-.01	-.39	.23	-.12	-.20
	Predictor Variable																
Pearson Correlation	1. 20-29	.08	.27	91	-	-.20	-.22	-.15	.01	.18	-.19	-.23	.11	-.10	-.01	.08	-.39
	2. 30-39	.32	.47	91		-	-.52	-.35	.09	-.25	.23	-.05	.05	-.11	.12	-.11	-.40
	3. 40-49	.36	.48	91			-	-.39	-.14	.02	.02	.26	-.23	-.04	-.06	.21	.25
	4. 50-59	.21	.41	91				-	.09	.18	-.24	-.10	.11	.24	-.01	-.14	.28
	5. Bachelors	.16	.37	88					-	-.43	-.31	-.22	.38	-.07	.17	-.19	-.29
	6. Masters	.49	.50	88						-	-.69	-.01	-.15	.22	-.15	.02	.20
	7. Specialist	.33	.47	88							-	.16	-.13	-.18	.03	.12	-.02
	8. Content Area	.72	.45	89								-	-.75	.02	.04	.15	.35
	9. SpecEd	.18	.39	89									-	-.15	.06	-.04	-.30
	10. <3	.28	.45	75										-	-.40	-.30	.24
	11. 4-7	.29	.46	75											-	-.31	-.22
	12. 8-12	.19	.39	75												-	-.01
	13. Years Teaching	13.59	6.97	74													-

Table 31

Summary of Standard Regression Analysis for Variable Predicting Effectiveness of trial and Error (N = 91)

Variable	B	*SE B*	β
Age1	.426	.912	.133
Age2	.157	.750	.086
Age3	.159	.711	.089
Age4	.122	.716	1.563
Years	-.007	.024	-.060
Degree1	.194	.816	-.083
Degree2	.179	.758	.104
Degree3	.310	.771	.170
TeachPo1	-.234	.410	-.123
TeachPo2	-.439	.481	-.197
CompUse1	-.914	.323	-.480
CompUse2	-.097	.319	-.052
CompUse3	-.624	.366	-.285
R^2		.251	
F		1.184	

Survey question 9 asked respondents why they attended the learning methods they attended for each of the nine types of professional development (technology integration classes taken for credit hours, non-credit workshops provided by school districts or outside consultants, drop-in clinics or open computer labs, summer institutes, technology personnel support (modeling), peer support (mentoring), independent online help, reading printed documentation, and learning through trial and error) (Table 32). Respondents were give the choices: location of training, fits with my learning style preference, time – easy to fit into my schedule, required by district/school, best method for learning the technology skills, it was the only training available, or other. Of the 77 respondents who answered the question about technology integration classes taken for credit hours 52.9% attended this type of training because it was required by their district or school. Two point six percent attended it because it was the only training available. Of the 72 respondents who answered the question about non-credit workshops provided by school district or outside consultants, 36.1% attended it because of time – easy to fit into schedule. It was the only training available and other received the lowest percentage, each at 12.5%. Of the 71 respondents that answered the question about drop-in clinics or open computer labs 38% attended because of time-easy to fit into schedule and 8.5% chose other. Of the 62 respondents who answered the question about summer institutes, 35.5% attended because of time-easy to fit into schedule while 3.2% attended because it was the only training available. Of the 78 respondents who answered the question about technology personnel support or modeling 35.9% attended because it was required by their district or school and 3.8% attended for other reasons that the options provided. Of the 80 respondents who answered the question about peer support or mentoring 47.5% chose this method because of time-easy to fit into their schedule and 2.5% chose other. Of the 68 respondents who answered the question about independent online help, 44.1% attended because of time-easy to fit into their schedule and 7.4% attended because they felt it was the best method for learning the technology skills. Of the 76 respondents who answered the question about reading printed material, 34.2% choose this method because it was the only training available or because of time – easy to fit into their schedule. 6.6% attended either because of the location of the training or because it was the best method for learning the technology skills. Of the 79 respondents who answered the question about learning through trial and error, 39.2% chose this method because of time – easy to fit into their schedule and 6.3% chose this method because it was required by the district or for other reasons not given.

Table 32

Why Did You Attend the Learning Methods That You Attended?

Types of Professional Development	Location of the training	Fits with your learning style preference	Time - easy to fit into your schedule	Required by your district/ school	Best method for learning the technology skills	It was the only training available	Other	Response Count
Technology integration classes taken for credit hours	29.9% (23)	33.8% (26)	39% (30)	51.9% (40)	26% (20)	2.6% (2)	10.4% (8)	77
Non-credit workshops provided by school district or outside consultants	18.1% (13)	18.1% (13)	36.1% (26)	34.7% (25)	16.7% (12)	12.5% (9)	12.5% (9)	72
Drop-in clinics or open computer labs	23.9% (17)	18.3% (13)	38% (27)	19.7% (14)	16.9% (12)	15.5% (11)	8.5% (6)	71
Summer institutes	17.7% (11)	16.1% (10)	35.5% (22)	25.8% (16)	16.1% (10)	3.2% (2)	27.4% (17)	62

Technology personnel support (modeling)	24.4% (19)	30.8% (24)	33.3% (26)	35.9% (28)	21.8% (17)	10.3% (8)	3.8% (3)	78
Peer Support (mentoring)	35% (28)	36.3% (29)	47.5% (38)	10% (8)	25% (20)	5.0% (4)	2.5% (2)	80
Independent online help	14.7% (10)	14.7% (10)	44.1% (30)	14.7% (10)	7.4% (5)	22.1% (15)	10.3% (7)	68
Reading printed documentation	6.6% (5)	15.8% (12)	34.2% (26)	13.2% (10)	6.6% (5)	34.2% (26)	7.9% (6)	76
Learning through trial and error	8.9% (7)	27.8% (22)	39.7% (31)	6.3% (5)	15.2% (12)	35.4% (28)	6.3% (5)	79

Survey question 10 asked respondents to estimate the number of hours per week that their students used technology to accomplish the following 13 tasks: Prepare written text (e. g. word processing, desktop publishing); create or use graphics or visual displays (e. g. graphs, diagrams, pictures, maps); learn or practice basic skills (e.g. reading or math skills); conduct research (e.g., internet searching, using reference materials on CD-ROM); correspond with others (e.g., students, teachers, experts) via email, network, or internet; contribute to blogs or wikis; use social networking websites; solve problems, analyze data, or perform calculations; conduct experiments or perform measurements; develop and present multimedia presentations; create art, music, movies, or webcasts; develop or run demonstrations, models, or simulations; design and produce a product. Respondents were then asked to total their answers to obtain a total number of hours per week they estimated that their students used technology while in their classroom. A total of 79 respondents answered this question. Their answers ranged from 0 hours to 100 hours per week. A total for each option was obtained (Table 33). Technology was used the most hours, a total for all respondents of 252, to learn or practice basic skills (e.g., reading or math skills). Using technology to solve problems, analyze data, or perform calculations was the second highest use of technology with a total for all respondents of 114. The use of technology for creating art, music, movies or webcasts had the smallest number of computer use with a total for all respondents of 26 hours.

Table 33

How Many Hours per Week Do You Estimate That Your Students Use Technology While in Your Class for Each of the Following?

Answer Options	**Response Total**
Prepare written text (e.g. word processing, desktop publishing)	60
Create or use graphics or visual displays (e.g., graphs, diagrams, pictures, maps)	80
Learn or practice basic skills (e.g., reading or math skills)	252
Conduct research (e.g., Internet searching, using reference materials on CD-ROM)	62
Correspond with others (e.g., students, teachers, experts) via email, network, or Internet	53
Contribute to blogs or wikis	29
Use social networking websites	28
Solve problems, analyze data, or perform calculations	114
Conduct experiments or perform measurements	42
Develop and present multimedia presentations	65
Create art, music, movies, or webcasts	26
Develop or run demonstrations, models, or simulations	34
Design and produce a product	43
Total of all the above	803

Question 11 was an open-ended question that asked respondents what local/systems factors support the use of technology in their classroom. Initial analysis of respondents answers produced three overarching themes: curriculum factors (Table 34), technology factors (Table 35), and support factors (Table 36). Respondents' answers were coded using a c for curriculum factors, a t for technology factors, and a s for support factors. Once responses were sorted by their new codes, tables were produced.

Table 34

Curriculum Factors That Support the Use of Technology in the Classroom

Standards and hands on assignments
Math instruction
Title 1 - Use of smart board for music purpose
Required
Requirement by state; technology integration standards do exist; the availability of it
Programs continue to expand in number
System encourages use of online resources and learning strategies

Table 35

Technology Factors That Support the use of Technology in the Classroom.

Smart board, and computer
Buying the technology when funds are available
Equipment is available
I have a lot of technology for use in large-group instruction
Make smart board available....give classes to use the board
Computer lab on each hall
Our system has continued to provide more technology over the years including document Cameras and Smart boards. I feel that this trend will continue to grow.
[School / system] Provides training opportunities and equipment
Computers for a Small Group, Software to support their Reading needs
Providing the technology.
Funding, supportive administration
Title 1 - Use of smart board for music purpose
I have access to an LCD, smart slate, smart board, Elmo and 4 student computers in my room. We have 4 computer labs open for classroom use. Our principal has made it a priority to use funds for these items. We have the support of our technology department for set up and minimal training of these technologies
Money, having experienced co-workers who are willing to help, having good tech support
We receive the materials
Requirement by state; technology integration standards do exist; the availability of it

Table 35 (continued)

Technology Factors That Support the Use of Technology in the Classroom.

Title one funds
Availability and student interest
Providing the needed computers, network, and access to proven software and/or web sites.
Title I money allows for more technology in classrooms
Computers and interactive white boards are provided, but these are often passive for students and used primarily to hold interest.
Availability of the technology, training offered on new technology, media specialist who encourages technology
Some technology is available to use in classroom.
Availability of computer labs
Our system is very supportive of the use of technology and has a forward thinking plan for the implementation of more technology
I have a smart board and document camera, so I use them as often as possible-usually daily
Small set of desktop computers, SMART Boards, LCD Projectors, Technology support persons at the county level, Title 1 funds to buy technology equipment, ELOST money being designated to technology needs
It is available
Internet access
Availability and ease of use.
Our system is very technology driven, and provides all the resources necessary to Implement said technology. Time, technology, and training are all provided and encouraged. We also have a tremendous IT & Tech team that support and assist whenever necessary
Availability of resources, administrative support when trying new things in the classroom
Availability, time to practice using it effectively
Title I funds allowed purchase of much needed technology
Wi-Fi

Table 36

Support Factors That Support the use of Technology in the Classroom

Good technical support
Provides training opportunities and equipment
Great technology department in our district
Funding, supportive administration
I have access to an LCD, smart slate, smart board, Elmo and 4 student computers in my room. We have 4 computer labs open for classroom use. Our principal has made it a priority to use funds for these items. We have the support of our technology department for set up and minimal training of these technologies.
Experts in the building that I can turn to
Money, having experienced co-workers who are willing to help, having good tech support
We have a great technology department who will help at the drop of a hat.
I have several peers that teach on my hall and are usually able to help me with any kind of technology issue
Classes offered
Classes to improve knowledge
Workshops by teachers
Programs continue to expand in number. system encourages use of online resources and learning strategies
Board of education, PLU training, online courses
Information specialist, Media Specialist
Availability of the technology, training offered on new technology, media specialist who encourages technology
Our system is very supportive of the use of technology and has a forward thinking plan for the implementation of more technology
Our system is very technology driven, and provides all the resources necessary to implement said technology. Time, technology, and training are all provided and encouraged. We also have a tremendous IT & Tech team that support and assist whenever necessary.
Availability of resources, administrative support when trying new things in the classroom
availability, time to practice using it effectively

Survey question number 12 was an open-ended question that asked respondents what factors do not support the use of technology in their classroom. Initial review of responses revealed the following categories: Lack of technology factors (Table 37), Technical factors with technology (Table 38), Use of technology factors (Table 39), Time factors (Table 40), and Incorporation factors (Table 41).

Table 37

Lack of Technology Factors

Availability of computers for student use
I only have one student computer for 128 students.
Number of computer available in the classroom
There are not enough student computers in the classroom, and the labs are hard to schedule
There is one student computer in my classroom, so it limits how many students may use it to create presentations
Limited time and too many students
Lack of availability, number of students
Funding for personnel to support technology
Not enough computers (one-to one), not enough confidence in the technology, not enough planning time to grow accustomed to the technology
Budget, Amount of time that students are in my classroom, and the software available on the computers other than the reading software provided
Not enough equipment to go around
The fact that there is only one student use computer in the classroom and getting students at the computer is a challenge to incorporate within lesson plans
Limited computers. Only one teacher computer in the classroom
We do not have enough student computers in the classroom
We do not all have interactive white boards. Also, I have never been trained on how to use the document camera.
Technological problems; broken remotes; blown bulbs; lack of understanding of certain programs/tasks; only having one computer for students in the classroom; difficulties in installation of equipment (i.e. smart board isn't bright enough; projector not aligned fully with smart board
Economy
Limited amounts of personal computers.
Budget
Not enough technology per student and teachers aren't given enough freedom to create with technology
Lack of equipment
Availability of computer lab, internet connectivity, we only have one student computer in the classroom and the lab must be reserved. Certain families still do not have access at home to a computer. My students create webpages and upload assignments when applicable; however it makes it difficult to require when every student doesn't have access.

Table 37 (continued)

Lack of technology factors

Not enough student PCs
Student level technology
Scheduling - Two computer labs for the entire school
Not enough technology for individual or small groups of students - Their hours would increase tremendously if more technology was available
Availability of computer labs
I do not have a set of student computers, our computer lab has many computers that do not work, my class sizes are too big to use the computers, b/c at least 2 are always not functioning.
There is not a computer for every student in my class. My students need IPads and teachers need a technology support person in each building to assist with the implementation of the iPADS.
Slowness of network
No enough computers. Many of the computers are old and out of date.
Budget cuts at the state level. Underfunding of our school system by the state.
not enough computers within regular classrooms
No money
Inadequate resources or tech based infrastructure, limited access to resources and/or support from students' home environments

Table 38

Technical Factors With Technology

Doesn't work right; forgot how to use it; no time to experiment
Technology department overloaded with support tickets and it takes weeks or months to get help
Technological problems; broken remotes; blown bulbs; lack of understanding of certain programs/tasks; only having one computer for students in the classroom; difficulties in installation of equipment (i.e. smart board isn't bright enough; projector not aligned fully with smart board
I do not have a set of student computers, our computer lab has many computers that do not work, my class sizes are too big to use the computers, b/c at least 2 are always not functioning.
Slowness of network

Table 39

Use of Technology Factors

Doesn't work right; forgot how to use it; no time to experiment
On-site support
Not enough computers (one-to one), not enough confidence in the technology, not enough planning time to grow accustomed to the technology.
Training - both on how to use these items (we have been provided a little of this, though more is needed for some teachers and on some types of technology) and how to effectively integrate them into everyday use in my classroom
Time to learn how to use it and implement.
TIME TO LEARN AND PLAN!
We do not all have interactive white boards. Also, I have never been trained on how to use the document camera.
Technological problems; broken remotes; blown bulbs; lack of understanding of certain programs/tasks; only having one computer for students in the classroom; difficulties in installation of equipment (ie smart board isn't bright enough; projector not aligned fully
with smart board
Not enough technology per student and teachers aren't given enough freedom to create with technology

Table 40

Time Factors

The amount of time
Time to research new uses, time to integrate
Not enough computers (one-to one), not enough confidence in the technology, not enough planning time to grow accustomed to the technology.
Time to learn how to use it and implement
TIME TO LEARN AND PLAN!
Technological problems; broken remotes; blown bulbs; lack of understanding of certain programs/tasks; only having one computer for students in the classroom; difficulties in installation of equipment (ie smart board isn't bright enough; projector not aligned fully with smart board
Not enough technology per student and teachers aren't given enough freedom to create with technology.
Shorter school year and more standards require most efficient use of time.
Time to prepare materials and activities using the technology...time is the big one...not enough hours in the day

Table 41

Incorporation Factors

Time to research new uses, time to integrate
Not enough computers (one-to one), not enough confidence in the technology, not enough planning time to grow accustomed to the technology.
Training - both on how to use these items (we have been provided a little of this, though more is needed for some teachers and on some types of technology) and how to effectively integrate them into everyday use in my classroom
Budget, Amount of time that students are in my classroom, and the software available on the computers other than the reading software provided
The fact that there is only one student use computer in the classroom and getting students at the computer is a challenge to incorporate within lesson plans.
Time to learn how to use it and implement.
Time to learn and plan!
Technological problems; broken remotes; blown bulbs; lack of understanding of certain programs/tasks; only having one computer for students in the classroom; difficulties in installation of equipment (ie smart board isn't bright enough; projector not aligned fully with smart board
Performance scores
Not enough technology per student and teachers aren't given enough freedom to create with technology.

Chapter Summary

The participants in this study included middle school teachers from two districts in Georgia in which at least one of the schools had been recognized for successful implementation of technology into the school by the UGA ETC. UGA ETC recommended these districts to the author based on their participation in education professional development funded by Title IID technology grants and their incorporation of technology resources and technology-based practices into the daily routines, instruction, and management of the classroom by both the students and teachers. The participants mean years of teaching experience was 13.59. The majority of the participants were between the ages of 30 and 50 (89.1%). Among the participants, fifteen point nine percent had a bachelor's degree, 48.9% had a master's degree, 33.0% had a specialist degree and 2.3% had a doctorate.

Participants were asked to rate the effectiveness of nine types of professional development methods for learning educational technology integration skills. The participants perceived peer support or mentoring as the most effective method. This was followed by technology personnel support or modeling and technology integration classes taken for credit hours. Non-credit workshops provided by school district or outside consultants was perceived as the most ineffective method. Time and easy to fit into their schedule was the most chosen reason the participants utilized peer support or mentoring. It was also the most chosen reason for attending non-credit workshops provided by school district or outside consultants. Required by the district or school was the most chosen reason for utilizing technology personnel support or modeling.

Standard multiple linear regression was conducted on each of the nine types of professional development (technology integration classes taken for credit hours, non-credit workshops provided by school districts or outside consultants, drop-in clinics or open computer labs, summer institutes, technology personnel support (modeling), peer support (mentoring), independent online help, reading printed documentation, and learning through trial and error) to evaluate how well participants' age, years of teaching experience, degree level, teaching position, and hours of student classroom technology could be used to predict their effectiveness. The regression equations for each type was not significant which indicated that participants' age, years of teaching experience, degree level, teaching position, and hours of student computer use could not be used to predict teachers' perceptions of the effectiveness of the nine types of professional development. In order to provide teachers with the skills needed to effectively integrate classroom instruction technologies into their lessons, school districts ordinarily have prerequisite training designed to meet the needs of their teachers. Further research into teachers' perceptions of effective technology training methods can provide school district leaders with the information needed to provide more meaningful and effective professional development (Griffin, 2003).

The purpose of this study was to explore teachers' perceptions of professional development activities which result in successful classroom integration of instructional technologies.

CHAPTER 5

CONCLUSIONS, IMPLICATIONS, AND RECOMMENDATIONS

Technological and educational advances are changing the way many schools look and operate. Many students are now entering school with technology skills that far surpass those of their teachers (OECD, 2009; SETDA, 2007). New educational technology standards and student achievement have become pressing issues due to the national emphasis on standards-based accountability.

Advances in technology often require teachers to learn new methods of teaching while trying to keep up with rapidly increasing technological changes. Unfortunately, many teachers report being inadequately trained to utilize instructional technology in their classrooms (Beaudrie & Boschmans, 2004; Bielema, 2000; Broussard, 2009; Griffin, 2003; Holmes, 2006; Latio, 2009). Time and time again teachers are only being trained on how to use instructional technologies instead of how technology can impact learning and teaching (Brown & Warschauer, 2006; Croft et al., 2010; Darling-Hammond et al., 2009; Pass, 2008; Rodriquez, 2000). Teachers' technology training and belief in it are key factors when examining teachers' use of educational technology in their classrooms (Kurt, 2010; Palak & Walls, 2009; U.S. DOE, 2000). Research has validated that sit-and-learn or one-time-only professional development is not the most effective method of professional learning (Baylor & Ritchie, 2002; Becker, 2001; Lawless & Pellegrino, 2007; Rodriquez, 2000; VanFossen, 2001; Wenglinksy, 1998; Willis & Raines, 2001; Zhao & Bryant, 2007). Teachers have shown a need for opportunities to learn from their peers.

In this study, the author adapted survey *Training Methods for Using Instructional Technology* was employed to gain data on teachers' perceptions of professional development which result in successful classroom integration of instructional technologies. This study examined the relationship between teachers' age and their perceptions of professional development activities which result in successful classroom integration of instructional technologies and teachers' degree level and their perceptions of professional development activities which result in successful classroom integration of instructional technologies. It also examined the differences between teachers' years of experience and their perceptions of professional development activities which result in successful classroom integration of instructional technologies and any relationships between the reported number of hours of student classroom technology use and teachers' perceptions of professional development activities which result in successful classroom integration of instructional technologies. The two participating districts in the study were purposefully selected for participation based on the recommendation of the University of Georgia Educational Technology Center (UGA ETC). UGA ETC recommended both districts based on participation in instructional technology professional development funded by Title IID technology grants and their incorporation of technology resources and technology-based practices into the daily routines, instruction, and management of the classroom by both the students and teachers.

Discussion of Findings

The findings were compared to the body of work surrounding technology integration professional development, teacher age and professional development, years of experience and professional development, teacher degree level and professional development, and teachers' perceptions of technology professional development. The overarching research question that guided this study was: What are teachers' perceptions of professional development activities which result in successful classroom integration of instructional technologies? Professional development for successful technology integration regularly originates from a variety of forms such as mentoring, modeling, ongoing workshops, specials courses, structured observations, and summer institutes (Lawless & Pellegrino, 2007; Rodriquez, 2000). These forms of technology integration professional development along with more traditional forms such as workshops, reading printed documentation, and trial and error were used to compile data on teachers' perceptions of professional development activities which result in successful classroom integration of instructional technologies. This study revealed teachers perceptions of the effectiveness of professional development activities which result in successful classroom integration of instructional technologies, with (5) representing very effective and (1) representing very ineffective, in the following order based on mean scores: Peer support or mentoring (4.12), technology personnel support or modeling (3.96), technology integration classes taken for credit hours (3.79), learning through trial and error (3.76), summer institutes that consist of week long (or longer) training during the summer (3.42), reading printed documentation (3.42), independent online help (3.30), drop-in clinics or open computer labs (3.24), and non-credit workshops provided by school district or outside consultants (2.37).

Teachers perceived peer support or mentoring to be the most effective form of professional development which results in successful classroom integration of instructional technologies. Research suggests that peer support or mentoring is a vital tool for both experienced and beginning teachers and that teachers need opportunities to learn from their peers (Croft et al., 2010; Rodriquez, 2000; U.S. DOE, 2000; Wei et al., 2010). Research further states that teachers are unlikely to continue to integrate technology into their instruction without the trust, support and involvement of their colleagues (Robinson, 2011; Speck & Knipe, 2005). Sustained discussion on classroom practices, coaching opportunities, and formal and informal mentoring are essential to that integration (Robinson, 2011; Zepeda, 2010). According to Sparks and Hirsch (1997) an effective plan of learning for teachers is one that is embedded within the school day, offering teacher's time to learn and collaborate, thus improving student achievement and sustaining change over time.

Technology personnel support or modeling was perceived by the teachers to be the second most effective form of professional development which results in successful classroom integration of instructional technologies. Research supports that technical assistance and modeling are very important (Broussard, 2009; Holmes, 2006; Latio, 2009).

In a Texas study with 231 respondents from 21 middle schools, instructional strategies and professional collaboration were described as the type of professional development that most impacted classroom practices (Robinson, 2011). Research supports that both technical personnel support and mentoring are very important (Broussard, 2009; Holmes, 2006; Latio, 2009). Ertmer (2005) reported that teachers' lack of technical skills was a result of a lack of appropriate professional development and hindered their ability to integrate technology successfully. In phase II of a Three-Phase study Wei, Darling-Hammond, and Adamson (2010) reported that some progress is being made by providing increased support and mentoring for teachers.

Teachers perceived non-credit workshops provided by school district or outside consultants to be the least effective form of professional development which results in successful classroom integration of instructional technologies. Research overwhelming supports that this type of sit-and-get or one-time-only professional development is not the most effective training method (Baylor & Ritchie, 2002; Becker, 2001; Lawless & Pellegrino, 2007; Rodriquez, 2000; VanFossen, 2001; Wenglinsky, 1998; Willis & Raines, 2001; Zhao & Bryant, 2007). In contrast, a student by Robinson (2011) indicated that this type of training provided valuable and useable methods and tips to participants. There are questions that remain as to why certain studies would find this type of training helpful and others find it the least effective method. This could be an area of future study.

Teacher Age

The first sub-question for this study was as follows: Does a relationship exist between teacher age and their perceptions of professional development activities which result in successful classroom integration of instructional technologies? Of the 91 respondents who answered the question about age, 7.7% of the respondents were between the ages of 20-29. Thirty-one point nine percent of the respondents were between the ages of 30-39. Thirty-six point three percent of the respondents were between the ages of 40-49. Twenty point nine percent of the respondents were between the ages of 50-59. Three point three percent of the respondents were 60 or older. Regression analysis for each of the nine types of professional development was insignificant and therefore indicated that there was not a relationship between teacher age and their perception of professional development activities which result in successful classroom integration of instructional technologies. These findings were in contrast to Torff & Sessions (2008) study that found a positive correlation between a teacher's age and their perceptions of professional development. This could be because the teachers in the current study were from rural areas in the south and teachers from Torff & Sessions study were from inter city schools in New York. These findings were also in contrast with Inan and Lowther's (2010) study that found a negative correlation between a teachers' age and technology integration. However, they were consistent with Gorders' (2008) study of South Dakota teachers that found no correlation between a teacher's age and their perception and use of technology. Since technology is an every changing entity to any classroom, all teachers, regardless of their age, comprehend the need to learn how to effectively integrate it into their teaching. Many teachers within this current study were employed at schools that were recent winners of TITLE IID technology grants. Technology quickly became a part of their classroom regardless of their age and technology professional development was received by all recipients for a period of two years.

Years of Experience

The second sub-question for this study was as follows: Does a relationship exist between teacher' years of experience and their perceptions of professional development activities which result in successful classroom integration of instructional technologies? Seventy-four of the respondents answered the question about years of teaching. Responses ranged from a minimum of 0 to a maximum of 30 with a mean of 13.59 and a standard deviation of 6.975. Regression analysis for each of the nine types of professional development was insignificant and therefore indicated that there was not a relationship between years of experienced and teachers' perception of professional development activities which result in successful classroom integration of instructional technologies. These findings were consistent with Gorder's (2008) of South Dakota teachers and Tamilenthi & Mohanasundaram's (2011) study of 444 geography teachers, both of which found no correlation between a teachers years of experience and perception of professional development.

However, in a path analysis of 1,382 teachers a negative correlation was found between years of experience and technology integration. As years of experience increased, technology integration decreased (Inan & Lowther, 2010). In a 2010 national survey the most highly preferred from of professional development among respondents was fully online followed by workshop format (Dawley, Rice, & Hinck, 2010). Teachers with 0 to 10 years of experience preferred graduate courses while this was the least preferred method of those with more than 10 years' experience. Teachers with more than 10 years of experience preferred fully online courses followed by workshops (Dawley et al., 2010; NCES, 2005). This leads one to wonder how influential growing up with technology in schools/colleges influences how teachers later integrate technology into their classrooms as well as their preferred way to learn technology integration. Drawing conclusions would lead one to find that teachers with less experience would have used more technology in their college classrooms so they would be more likely to use it in their own classrooms when they went into the work force.

Robinson (2002) found that professional collaboration was described as the type of professional development that most impacted classroom practices by most teachers regardless of their years of experience. Professional development related to the needs of diverse and/or middle level learners was perceived to have the most impact by teachers with fewer years of experience and the use of technology in instruction had the most impact on teachers with 15 to 20 years of experience.

Degree Level

The third sub-question for this study was as follows: Does a relationship exist between teachers' degree level and their perceptions of professional development activities which result in successful classroom integration of instructional technologies? Eighty-eight (N=88) of the respondents answered the question about their degree level (Table 8). A Bachelor's degree was earned by 15.9% of the respondents. A Master's degree was earned by 48.9% of the respondents. A Specialist degree was earned by 33% of the respondents and 2.3% of the respondents had earned a Doctorate. Nine of the respondents indicated they had received advanced technology training. Regression analysis for each of the nine types of professional development was insignificant and therefore indicated that there was not a relationship between degree level and teachers' perception of professional development activities which result in successful classroom integration of instructional technologies.

Since both school districts in the study were recipients of Title IID technology grants and two years of technology training it is appropriate that finding of this study were consistent with a study of 300 k-12 teachers on the degree to which they had been trained to use and integrated technology in which no significance was found regarding years of experience and degree level (Gorder, 2008). However, a Ritzhuapt, Dawson, and Carvanaugh (2012) study of 732 teachers from 17 school districts and 107 different schools in Florida, indicated that there was a significant positive effect between a teacher's level of education and use of technology.

Hours of Classroom Technology Use

When teachers are comfortable integrating technology into their lessons the classroom shifts from teacher-center to student centered (Kurt, 2010). As technology is used more efficiently in the classroom, the way educators think about the roles of their students and their own roles change. Technology enriched classrooms support student-centered instruction that allows the teacher to take the role of coach or facilitator (Ertmer & Ottenbreit-Leftwich, 2010; Rodriquez, 2000; Vannatta & Fordham, 2004). The fourth sub-question for this study was as follows: Does a relationship exist between the reported number of hours of student classroom technology use and teachers perceptions of professional development activities which result in successful classroom integration of instructional technologies? A total of 79 respondents answered the question about hours of student technology use. Their answers ranged from 0 hours to 100 hours per week. A total for each option was obtained (Table 22). Technology was used the most hours, a total for all respondents of 252, to learn or practice basic skills (e.g., reading or math skills). Using technology to solve problems, analyze data, or perform calculations was the second highest use of technology with a total for all respondents of 114. The use of technology for creating art, music, movies or webcasts had the smallest number of computer use with a total for all respondents of 26 hours. Regression analysis for each of the nine types of professional development was insignificant and therefore indicated that there was not a relationship between the hours of student classroom technology use and teachers' perception of professional development activities which result in successful classroom integration of instructional technologies.

Conclusions

Evidence from this study suggests that teachers perceive peer support or mentoring and technology personnel support or modeling to be the two most effective forms of professional development activities which result in successful classroom integration of instructional technologies. Non-credit workshops provided by school districts or outside consultants was perceived by teachers to be the most ineffective form of professional development for successful classroom integration of instructional technologies. There is an abundance of literature providing evidence that sit-and-get or one-time-only professional development is not the most effective training method. This study seems to show that teachers need opportunities to learn from their peers. Therefore, school faculties might need to be surveyed more often and their preferences for learning considered when professional development is decided. Professional development must be ongoing with a connection to student learning, include hands-on technology use, and include peer support and mentoring.

Implications for Administrators

One of the greatest challenges confronting school leadership is determining how to best provide professional development for their instructional staff (Pass, 2008). The insights uncovered by this study indicate that teachers perceive peer support or mentoring and technology personnel support or modeling as essential types of professional development for the successful integration of classroom instructional technologies. Research indicates that technology integration to increase student achievement can only be as effective as the teacher's belief in it and willingness to use it (Choy, Wong, & Gao, 2009). Administration may want to consider this information when planning the introduction of new technologies in the classroom. It might be prudent to start with a core group of teachers that learn to use the new technology and then have each of them mentor a different teacher with the support of the technology personnel until the faculty is trained. This might provide the best of both types of learning perceived as optimal by this study.

The findings in this study further solidify the vast body of research indicating that teachers need opportunities to collaborate and learn from their peers. Professional development needs to be ongoing with embedded opportunities for professional learning. It further verifies that non-credit workshops, sit-and-get or one-time-only types of professional development are not perceived by teachers as effective forms of professional development for successful integration of classroom instructional technologies.

Recommendations

The findings of this study indicate that types of professional development required by many school districts on professional development days is perceived by teachers to be the most ineffective method. Recommendation for implementing the results of this study include the following:

1. It is recommended that school districts and or administrators should develop staff development plans that include peer support (mentoring) when implementing new technologies into the classroom. In addition the plan should include opportunities in which technology personnel support provides modeling of the new technologies. Both types of professional development

should be on-going throughout the year and provide opportunities for teachers to collaborate with their peers.

2. Opportunities to collaborate should be provided during the school day as this is the optimal time for this type of learning.

Further Research

Based on the findings of this study, recommendation for further research into this field include:

1. In this study, demographic questions such as age, years of experience, or degree level were not required questions for completion of the survey. It would be interesting to compare the results if the questions were required by all participants in order to complete the survey.
2. Determine why there are some studies that found sit-and-get workshops significantly affected teacher use of technology and others did not.
3. Since this study was done in schools that had received Title IID technology grants, it would be expected that there would be a high use of technology. It would be interesting to see what the survey would have turned out to be if it was distributed to schools that had not received this grant or had older/less technology.
4. Since research indicated that there was a difference between the perceptions of teachers within rural area schools and those in urban schools, it would be interesting to conduct a study that compared these two types of settings.

Dissemination

The finding from this study will be disseminated in a number of ways. This dissertation will be published. An electronic version has also been made available on the Internet.

The researcher will provide the results to the districts of study as required by the districts.

REFERENCES

Abshire, S. (2007). *The impact of Louisiana INTECH professional development on elementary school leaders' perceptions of change and student achievement.* (Doctoral Dissertation). Retrieved from: http://scholarworks.uno.edu/td/836/

Association for Educational Communication and Technology (2001). *The handbook of research for educational communications and technology.* Retrieved from: http://www.aect.org/edtech/ed1/41/41-01.html

Baylor, A. L., & Ritchie, D. (2002). What factors facilitate teacher skill, teacher morale, and perceived student learning in technology-using classrooms? *Computers and Education, 39*, 395-414.

Beaudrie, B., & Boschmans, B. (2004). Infusing technology into mathematic lessons. *Media and Methods, 41*, 10.

Becker, H. J. (2001). *How are teachers using technology in instruction?* Paper presentedat the meeting of the American Educational Research Association. Retrieved from http://www.crito.uci.edu/tlc/FINDINGS/special3/How_Are_Teachers_Using.pdf

Bielema, C. (2000). *Engaging learners with technology.* Retrieved from http://www.umsl.edu/services/ctl/PDFs/IDEA2.pdf

Bingimlas, K.A. (2009). Barriers to the successful integration of ict in teaching and learning environments: A review of the literature. *Eurasia Journal of Mathematics, Science & Technology Education, 5*(3)*,* 235-245.

Blank, R., & de las Alaas, N. (2009*). Effects of teacher professional development on gains in student achievement: How meta analysis provides scientific evidence useful for education leaders.* Washington, D.C.: Council of Chief State School Officers.

Bourgeois, M., & Hunt, B. (2011). Teaching 2.0: Teams Keep Teachers and Students Plugged into Technology. *Journal of Staff Development, 32*(5), 34-37.

Brockmeier, L., & Gibson, N. (2006). *Validation of the principal's computer technology survey*. Retrieved from: http://coefaculty.valdosta.edu/lschmert/gera/volume-7/TechSurv-BrockGib-formatted.pdf

Broussard, C. (2009). Teaching with technology: Is the pedagogical fulcrum shifting? *New York School Law Review, 53*, 903-915.

Brown, D., & Warschauer, M. (2006). From the university to the elementary classroom: Students' experiences in learning to integrate technology in instruction. *Journal of Technology and Teacher Education, 14*(3), 599-621.

Center for Implementing Technology in Education. (CITed) (2009). Strategies for successful professional development to support technology. Retrieved from: http//www.cited.org/index.aspx?page_id=100

CDD, DCF, AHS (2006). *Guide to creating an individual professional development Plan IPDP*. Retrieved from: http://www.brightfutures.dcf.state.vt.us/Literature /Grant/IPDP.pdf

Chapman, D. W., Mahlck, L. O., & United Nations Educational, S. g. (France). International Inst. for Educational Planning. (2004). *Adapting Technology for School Improvement: A Global Perspective*. International Institute for Educational Planning (IIEP) UNESCO.

Cheng, R. W., Shui-fong, L., & Chan, J. C. (2008). When high achievers and low achievers work in the same group: The roles of group heterogeneity and processes in project-based learning. *Journal of Educational Psychology, 78,* 205-221.

Choy, D., Wong, A. L., & Gao, P. (2009). Student Teachers' Intentions and Actions on Integrating Technology into Their Classrooms during Student Teaching: A Singapore Study. *Journal of Research On Technology In Education*, *42*(2), 175-195.

Christensen, R. (1997). Effect of technology integration education on the attitudes of teachers and their students. Unpublished doctoral dissertation, University of North Texas, Denton, TX.

Creswell, J. N. (2009). *Research design*. Thousand Oaks, CA: Sage.

Croft, A., Coggshall, J., Dolan, M., & Powers, E. (with Killion, J.). (2010, April). *Job-embedded professional development: What it is, who is responsible, and how to get it done well* [Issue brief]. Washington, DC: National Comprehensive Center for Teacher Quality. Retrieved from http://www.tqsource.org/publications /JEPD%20Issue%20Brief.pdf

Darling-Hammond, L., Wei, R. C., Andree, A., Richardson, N., & Orphanos, S. (2009). *Professional learning in the learning profession: A status report on teacher development in the United States and abroad*. Dallas, TX: National Staff Development Council.

Davis, P. (1999). How undergraduates learn computer skills: Results of a survey focus group. *T.H.E. Journal, 26*(9), 68-71.

Dawley, L., Rice, K., & Hinck, G. (2010). *Going virtual! 2010: The status of professional Development and unique needs of K-12 online teachers*. White paper prepared for the north American council for online learning. Washington, D.C. Retrieved from: http://edtech.boisestate.edu/goingvirtual/goingvirtual3.pdf

Dawson, K. (2006). Teacher inquiry: A vehicle to merge prospective teachers' experience and reflection during curriculum-based, technology-enhanced field experiences. *Journal of Research on Technology in Education, 38(3), 265-292*.

Dexter, S., & Riedel, E. (2003). Why improving preservice teacher educational Technology preparation must go beyond the college's walls. *Journal of Teacher Education, 54*(4), 334-346.

Duncan, A. (2010, March). *Using technology to transform schools*. Speech presented at the Association of American Publishers Annual Meeting. Retrieved from: http://ed.gove/news/speeches/2010/03/03032010.html?exp=7

Educational Technology Insight (2011). *Why Educational Technology?* Retrieved from: http://edtech.twinisles.com/rb/

Education Week (June, 2011). *Professional Development*. Retrieved from: http://www.edweek.org/ew/issues/professional-development/

Ertmer, P. (2005). Teacher pedagogical beliefs: The final frontier in our quest for technology integration? *Educational Technology Research and Development, 53*(4), 25-40.

Ertmer, P., Bai, H., Dong, C., Khalil, M., Park, S. H., & Wang, L. (2002). *Online professional development: Building administrators' capacity for technology leadership.* Eugene, OR: National Education Computing Conference. Retrieved from: http://www.edci.purdue.edu/ertmer/docs/necco2_tipdoc_paper.pdf

Ertmer, P., & Ottenbreit-Leftwich, A. (2010). Teacher technology change: How knowledge, confidence, beliefs, and culture intersect. *Journal of Research on Technology in Education, 42*(3), 255-284. Retrieved from http://www.edci.purdue.edu

Fink, A. (2006). *How to conduct surveys: A step-by-step guide*. Thousand Oaks, CA: Sage.

Gall, M., Gall, J., & Borg, W. (2007). *Educational research: An introduction.* Boston: Pearson.

George, D., & Mallery, P. (2003). SPSS for Windows step by step: A simple guide and reference. 11.0 update (4th ed.). Boston, MA: Allyn & Bacon.

Georgia Department of Education (2011). Georgia department of education formative analysis for CLASS Keys. Retrieved from: http://www.gadoe.org/DMGetDocument.aspx/06%20Formative%20Analysis%204122011.doc?p=6CC6799F8C1371F638FFA88D5867A6E8C1698A5F4CDDD53BC22A2D64E6AB96DB&Type=D

Gorder, L. (2008). A Study of Teacher Perceptions of Instructional Technology Integration in the Classroom. *Delta Pi Epsilon Journal, 50*(2), 63-76.

Gray, L., Thomas, N., & Lewis, L. (2010, April). *Educational technology in US. Public schools.* Retrieved from: National Center for Educational Statistics: http://nces.ed.govlPubsearch/pubsinfo.asp?pubid=2010034

Griffin, D. (2003). Educators' technology level of use and methods for learning *technology integration*. (Doctoral Dissertation). Retrieved from: http://digital.library.unt.edu/ark:/67531/metadc4325/m1/1/high_res_d/dissertation.pdf

Griffin, D., & Christensen, R. (1999). Concerns-Based Adoption Model Levels of Use of an Innovation *(CBAM-LOU)*. Adapted from Hall, Loucks, Rutherford, & Newlove (1975). Denton, TX: Institute for the Integration of Technology into Teaching and Learning.

Groff, J., & Mouza, C. (2008). A framework for addressing challenges to classroom technology use. *AACE Journal, 16*(1), 21-46.

Grossman, T., Hirsch, E. (2009). *State policies to improve teacher professional developmen*t.[Issue Brief]Washington, D.C.: NGA Center for Best Practices.

Grunwald and Associates. (2010). *Educators, technology and 21st-century skills: Dispelling five myths.* Retrieved from Walden University, Richard W. Riley College of Education website: from www.WaledenU.edu/fivemyths

Hall, G. E., & Rutherford, W. L. (1974). *Concerns Questionnaire. Procedures for Adopting Educational Innovations/CBAM Project.* R&D Center for Teacher Education, University of Texas at Austin.

Hardy, M. (2008). It's TIME for technology: The technology in mathematics education project. *Journal of Computers in Mathematics and Science Teaching, 27*(2), 221-237. Retrieved from: Ebscohost Eric database.

Holmes, M. H. (2006). Integrating the learning of mathematics and science using interactive teaching and learning strategies. *Journal of Science Education and Technology, 15,* 247-253.

Hutchison, A. (2009). A national survey of teachers on their perceptions, challenges, and uses of informational and communication technology. A dissertation presented to the graduate school of Clemson university. Retrieved from: etd.lib.clemson.edu/.../Hutchison_clemson_0050D_10169.pdf

IES National Center for Education Statistics (2002). Chapter 7: Technology integration. Technology in Schools: Suggestions, tools and guidelines for assessing technology in elementary and secondary education. Retrieved from: #http://nces.ed.gov/pubs2003/tech_schools/chapter7.asp

Inan, F. A., & Lowther, D. L. (2010). Factors affecting technology integration in K-12 classrooms: a path model. *Educational Technology Research and Development, 58*(2), 137–154.

International Society of Technical Educators. (2009). International Society of Technical *Educators National Educational Technology Standards for Administrators*. Retrieved from: http://cnets.iste.org/administrators/a_stands.html

Jacobsen, D. M., & Lock, J. V. (2004). Technology and teacher education for knowledge era: Mentoring for student futures, not our past. *Journal of Technology and TeacherEducation, 12*(1), 75-100.

Johnstone, B. (2008, March/April). More than processing: Word in math. *Connect,* 22-25.

Kachadourian, C. (2006). *Individual professional development plans (I-Plans): An innovative approach to educator recertification in Rhode Island*. Retrieved from: http://www.ride.ri.gov/educatorquality/DOCS/General_Documents/PPT/brief%20 I Plan%2011-28-06.ppt#256,1,Individual Professional Development Plans (I-Plans)

Kay, R. H. (2006). Evaluating Strategies Used to Incorporate Technology into Preservice Education: A Review of the Literature. *Journal of Research on Technology in Education*, *38*(4), 383-408.

Kay, R. H., & Knaack, L. (2009). Assessing learning, quality, and engagement in learning objects: The learning object evaluation scale for students (LOES-S). *Educational Technology Research and Development,* 57, 147-168.

Kramer, B. S., Walker, A., & Brill, M. B. (2007). The underutilization of Internet and communication technology-assisted collaborative project-based learning among international educators: A Delphi study. *Educational Technology Research and Development, 55*(5), 527–543.

Kurt, S. (2010). Technology use in elementary education in Turkey: A case study. *New Horizons In Education, 58*(1), 65-76.

Lancaster, S.A. (2006). Time, support and follow-up: The keys to successful professional development. *International Journal of Instructional Technology and Distance Learning, 3*(9), 43-55. Retrieved from: http://69.36.77.223/Journal/Sep_06/Sep_06.pdf#page=47

Latio, G. W. (2009). Examination of factors that influence computer technology use for classroom instruction by teachers in Ohio public high schools (Doctoral dissertation, Ohio University, 2009). *Dissertations Abstracts International, 1-229.*

Lawless, K. & Pellegrino, J. (2007, December). Professional development in integrating technology into teaching and learning: Knowns, unknowns, and ways to pursue better questions and answers. *Review of Educational Research, 77*(4), 575-614.

Linn, M.; Slotta, J.; Baumgartner, E. (2000). *Teaching high school science in the Information age: A review of courses and technology for inquiry-based learning*. Retrieved from: http://www.mff.org/pubs/HSscience.pdf

Lowther, D. L., Inan, F. A, Strahl, D., & Ross, S. M. (2008). Does technology integration "work" when key barriers are removed? *Educational Media International,45,* 195-213.

Mardis, M. A. (2007). From one-to-one to one-to-many: A study of the practicum in the transition from teacher to school library media specialist. *Journal of Education for Library and Information Science, 48*(3)*, 218–235*.

McDaid, K. (2008). Professional standards and professional learning: A position paper. University of Western Sydney. Retrieved from: http://www.merga.net.au/documents/MERGA33_McDaid.pdf

McGrath, J. (2010). The All-Digital Classroom: Full Speed Ahead! *School Business Affairs,76*(3), 18.

Mehlinger, H. D. (1997, June). *The next step: Electronic schoo*l. Retrieved from: http://www.unesco.org/education/educprog/lwf/doc/portfolio/opinion13.htm

Mehlinger, H. D., & Powers, S. M. (2002). *Technology & teacher education: A guide for educators and policymakers.* Boston, MA: Houghton Mifflin.

Mills, G. E. (2003). *Action research: A guide for the teacher researcher*. Upper Saddle River, NJ: Pearson Education.

Moersch, C. M. (1995). *Levels of Technology Implementation Questionnaire*. Corvallis, OR: Learning Quest.

National Center for Educational Statistics. (2005, August). *Characteristics of public school teachers' professional development activities: 1999-2000*. Retrieved from: http://nces.ed.gov/pubs2005/2005030.pdf

National Center for Research on Teaching and Learning. (2005). *Learning to walk the Reform talk: A framework for professional development for teachers*. Retrieved from: http://ncrtl.msu.edu/

National Council for the Accreditation of Teacher Education (NCATE). (2008) *Professional standards for the accreditation of teacher education institutes*. Washington, D.C.: NCATE.

National Education Association. (2009). *Integrating with school improvement*. Retrieved from http://www.keysonline.org/about/csi/professional_development /integrating_SIP.html

National Education Association. (2010, March). *The status of the American public school teacher.* 2005-2006. Retrieved from http://www.nea.org/assets/docs/HE/2005 06StatusTextandAppednixA.pdf

National Staff Development Council. (2008). *Definition of professional developmen*t. Retrieved from: http://www.learningforward.org/standfor/definition.cfm

No Child Left Behind Act of 2001, Pub. L. No. 107-110, 107 cong. (2002).

North Central Regional Education Laboratory. (2000). *Critical Issue: Providing professional development for effective technology use*. Retrieved from: http://www.ncrel.org/drs/areas/issues/methods/technlgy/te1000.htm

OECD. (2009). *Creating effective technology and learning environments: First results from TALIS*. Executive summary. Paris, France: Author.

Ottenbreit-Leftwich, A. T., Glazewski, K. D., Newby, T. J. & Ertmer, P. A. (2010). Teacher value beliefs associated with using technology: Addressing professional and student needs. *Computers & Education, 55*, 1321-1335.

Palak, D., & Walls, R. T. (2009). Teachers' beliefs and technology practices: A mixed methods approach. *Journal of Research on Technology in Education, 41*, 417-441.

Pallant, J. (2010). *SPSS survival manual: A step by step guide to data analysis using SPSS 4th edition.*New York, NY: Open University Press.

Pass, R. (2008). *Attempting to improve teaching and learning through technology: An examination of a professional development initiative in a rural junior high school.* (Doctoral Dissertation) Retrieved from http://gradworks.umi.com/33/15/3315889.html

Pate, E., & Thompson, K. (2003). Effective professional development: What is it? In G. Andrews, & V. Anfara, Jr. (Eds.), *Leaders for a Movement* (pp. 123-143).Westerville, OH: Information Age.

Perkins, R. (2011). Using research-based practices to increase response rates of web based surveys. *Educause Quaterly*. Retrieved from http://www.educause.edu/EDUCAUSE+Quarterly/EDUCAUSEQuarterlyMagazineVolum/UsingResearchBasedPracticestoI/230534

Rakes, G. C., & Casey, H. B. (2002). An analysis of teacher concern toward instructional technology. *International Journal of Instructional Technology, 3*(1), 124-132. Retrieved from: http://www.ascilite.org.auiajetJijetJv3nllrakes/index.html

Research for Better Schools. (2005). *Technology professional development for teachers: Enhancing teacher quality*. Retrieved from: http://www.rbs.org/Publications/Category-Detail/Publication-Detail/191/printstyle--true/productid--26/

Ritzhaupt, A. D., Dawson, K., & Cavanaugh, C. (2012). An investigation of factors influencing student use of technology in K-12 classrooms using path analysis. *Journal of Educational Computing Research, 46*(3). Retrieved from http://baywood.metapress.com/link.asp?id=972t6qv475615511

Robertson, K. (2011). *Promoting meaningful uses of technology in a middle school.* A dissertation presented to Arizona State University. Retrieved from: http://repository.asu.edu/attachments/56597/content/Robertson_asu_0010E_10502.pdf

Robinson, L. (2002) *Perceptions of preservice educators, inservice educators, and professional development personnel regarding effective methods for learning technology integrations Skills*. A dissertation presented to University of North Texas. Denton, TX.

Robinson, M. (2011). *Middle school teachers' perceptions of professional development experiences*. A dissertation presented to Western Carolina University. Retrieved from: http://libres.uncg.edu/ir/wcu/listing.aspx?id=7875

Rodriquez, G. (2000). *Critical issue: Providing professional development for effective technology use.* North central regional educational laboratory. Retrieved from: http://www.ncrel.org/sdrs/areas/issues/methods/technlgy/te1000.htm

Royer, R. (2002). Supporting technology integration through action research. *The Clearing House,* 233-237.

Salazar, D., Aguirre-Muñoz, Z., Fox, K., & Nuanez-Lucas, L. (2010). On-line professional learning communities: Increasing teacher learning and productivity in isolated rural communities. *Journal of Systemics, Cybernetics & Informatics, 8*(4), 1-7.

Schoepp, K. (2005). *Barriers to technology integration in a technology-rich environment*. (Masters Thesis). Retrieved from: http://www.eric.ed.gov/PDFS/ED490211.pdf

Sivin-Kachala, J., & Bialo, E. (2000). *2000 research report on the effectiveness of technology in schools* (7th ed.). Washington, D.C.: Software and Information Industry Association.

Sparks, D., & Hirsch, S. (1997). *A new vision for staff development*. Alexandria, VA: Association for Supervision and Curriculum Development.

Sparks, D., & Loucks-Horsley, S. (1989, Fall).[Copyright: National Staff Development Council, 1989]. Five models of staff development. *Journal of Staff Development 10*(4), 40-55.

Speck, M., & Knipe, C. (2005) *Why can't we get it right? Designing high-quality professional development for standards-based schools* (2nd ed.). Thousand Oaks, CA: Corwin Press.

State Education Technology Directors Association. [SETDA] (2007). *Maximizing the impact: The pivotal role of technology in a 21st century education system*. Retrieved from: http://www.setda.org/c/document_library/get_file?folderId=191&name=P21Book_complete.pdf

Strudler, N. B., McKinney, M. O., Jones, W. P., & Quinn, L. F. (1999). First-year teachers' use of technology: Preparation, expectations, and realities. *Journal of Technology and Teacher Education, 7*(2), 115-129.

Sue, V., & Ritter, L. (2011) *Conducting online surveys*. Thousand Oaks: Sage.

Sun Associates. (2010). *Best practices in technology integration*. Retrieved from: http://www.sun-associates.com/tlresources.html

Tamilenthi, S. & Mohanasundaram, K. (2011). An analysis of perception and perspectives of geography teachers with reference to professional development. *World Journal of Science and Technology 2011, 1*(5), 96-104.

Toprakci, E. (2006). Obstacles at integration of schools into information and communication technologies by taking into consideration the opinions of the teachers and principals of primary and secondary schools in Turkey. *E-journal of Instructional Science and Technology*. Retrieved from: http://www.ascilite.org.aul/ajet/ejist/docs/vol9_no1/papers/commentary/toprakci.pdf

Torff, B., & Sessions, D. (2008). Factors associated with teachers' attitudes about professional development.*Teacher Education Quarterly*, *35*(2), 123.

Tucker, B. (2009). Beyond the babble: Technology and the future of student assessment. *Education Sector*. Retrieved from: http://www.educationsector.org/publications/beyond bubble-technology-and-future-student-assessment

U. S. Department of Education, Office of Educational Research and Improvement. (2000). *Teachers' tools for the 21st century: A report on teachers' use of technology.* Retrieved from: http://nces.ed.gov/pubs2000/2000102.pdf

U. S. Department of Education. (2008). *Technology, education, reform, and goals, 2000 archived information* [Fact sheet]. Retrieved from: nhttp://www.ed.gov/pubs/EdReformStudieslEdTechioverview.html

U. S. Department of Education. (2010a). *Enhancing education through technology (ed-tech) state programs*. Retrieved from: http://www2.ed.gov/programs/edtechlindex.html

U. S. Department of Education. (2010b). *Fiscal year 2009-2011 President's budget state tables for the US. Department of Education*. Retrieved from: http://www2.ed.gov/aboutloverviewlbudgetlstatetables/index.html

U. S. Department of Education. (2010c). Office of Educational Technology. *Transforming American education learning powered by technology: National educational technology plan 2010*. Retrieved from: http://www.ed.gov/sites/default/files/netp2010.pdf

U. S. Department of Education. (2010d). Office of Planning, Evaluation and Policy Development. *A blueprint for reform: The reauthorization of the Elementary and Secondary Education Act.* Retrieved from: http://www2.ed.gov/policy/elsec/leg/blueprint/blueprint.pdf

U. S. Department of Education (2012). *RESPECT program proposal*. Retrieved from http://www.ed.gov/blog/wp-content/uploads/2012/02/RESPECT_Program.pdf

Utecht, J. (2008). Evaluating technology use in the classroom. *The thinking stick.* Retrieved from: http://www.thethinkingstick.com/evaluating-technology-use-in-the classroom/

VanFossen, P. J. (2001). Degree of Internet/WWW use and barriers to use among secondary social studies teachers. *International Journal of Instructional Media, 28*(1),57-74.

Vannatta, R., & Fordham, N. (2004). Teacher dispositions as predictors of classroom technology use. *Journal of Research on Technology in Education, 36*(3), 253-271. Retrieved from http://eec.edc.org/cwis_docs/NEWS_ARTICLES_JOURNALS /Assessment_in_Ed/vanetta.pdf

Wei, R. C., Darling-Hammond, L., & Adamson, F. (2010). *Professional development in the United States: Trends and challenges.* Dallas, TX: National Staff Development Council.

Wenglinsky, H. (1998). *Does it compute? The relationship between educational technology and student achievement in mathematics*. Princeton, NJ: Policy Information Center.

Whitehead, B. M., Jensen F. N. D., & Boschee, F. (2003). *Planning for technology: A Guide for school administrators, technology coordinators, and curriculum leaders*. Thousand Oaks, CA: Corwin.

Williams, L., Atkinson, L., Cate, J., & O'Hair, M. (2008). Mutual support between learning community development and technology integration: Impact on school Practices and student achievement. *Theory into practice*, *47*(4), 294-302.

Willis, E., & Raines, P. (2001). Technology and the changing face of teacher preparation. *Contemporary Issues in Technology and Teacher Education* [Online serial], *1*(3). Retrieved from: http://www.citejournal.org/vol1/iss3/currentpractice/article1.htm

Wozney, V. (2006). Implementing computer technologies: Teachers' perceptions and practices. *Journal of Technology and Teacher Education, 14*(1), 173-207.

Wylie, C. (2008). *Tight but loose: Scaling up teacher professional development in diverse contexts.* Retrieved from: http://www.ets.org/Media/Research/pdfRR-08-20.pdf

Zepeda, S. (2010). *Professional development: What works.* Larchmont, NY: Eye on Education.

Zhao, Y., & Bryant, F. (2007). Can teacher technology integration training alone lead to high levels of technology integration? A qualitative look at teachers' technology integration after state mandated technology training. *Electronic Journal for the Integration of Technology in Education, 5*, 53-62.

APPENDIX A

APPROVAL TO USE SURVEY FROM GRIFFIN

- Fwd: Re: Survey Use

_Lisa Blackmon

To leesers327@hotmail.com

Date: Fri, 1 Jul 2011 15:54:49 -0700
From: dgriffin4@prodigy.net
Subject: Re: Survey Use
To: lblackmo@elbert.k12.ga.us

Lisa,
You are welcome to use the instruments. Please let me know if I can be of any further assistance.

Good luck!
Dr. Darlene Griffin

From: Lisa Blackmon <lblackmo@elbert.k12.ga.us>
To: dgriffin4@prodigy.net
Sent: Fri, July 1, 2011 7:55:21 AM
Subject: Survey Us

Dr. Griffin:

I am currently a doctorate student at Georgia Southern University and would like permission to use your survey, with modifications, for my study on the types of professional development that foster successful integration of classroom instructional technologies in schools.

Thank you in advance.

Lisa Blackmon
GSU Doctorate student

APPPENDIX B

TRAINING METHODS FOR LEARNING EDUCATIONAL TECHNOLOGY

Training Methods for Learning Educational Technology Integration Skills 2

Training Methods for Learning Educational Technology Integration Skills

1. How many years have you been teaching?

2. What is your age?

- 20 - 29
- 30 - 39
- 40 - 49
- 50 - 59
- 60+

3. What is your degree level?

- Bachelors
- Masters
- Specialist
- Doctorate

4. Have you received any advanced technology training (for example an M.Ed or Ed.S in Instructional Technology)

- Yes
- No

5. What is your current teaching position?

- Content Area Teacher (Math, Language Arts, Science, Social Studies, Reading)
- Special Educaiton
- Connections (Art, Band, PE, Key Board, etc)

Training Methods for Learning Educational Technology Integration Skills 2

6. What types of technology do you have available in your classroom?

- [ ] Student computers
- [ ] One-to-One Computers
- [ ] Interactive Whiteboard
- [ ] Student Response Systems
- [ ] Document Camera
- [ ] Digital Camera
- [ ] Video Camera
- [ ] Ipod

Other (please specify)

7. What types of technology do you use in your classroom?

- [ ] Student computers
- [ ] One-to-One Computers
- [ ] Interactive Whiteboard
- [ ] Student Response Systems
- [ ] Document Camera
- [ ] Digital Camera
- [ ] Video Camera
- [ ] Ipod

Other (please specify)

Training Methods for Learning Educational Technology Integration Skills 2

8. Please rate how effective you believe each training method to be for learning educational technology integration skills

	Very Effective	Effective	Ineffective	Very Ineffective	Not Experienced
Technology integration classes taken for credit hours	○	○	○	○	○
Non-credit workshops provided by school district or outside consultants	○	○	○	○	○
Drop-in clinics or open computer labs	○	○	○	○	○
Summer institutes (Week long (or longer) training during the summer)	○	○	○	○	○
Technology personnel support (modeling)	○	○	○	○	○
Peer support (mentoring)	○	○	○	○	○
Independent on line help (Technology help that is obtained on-line from outside sources)	○	○	○	○	○
Reading printed documentation	○	○	○	○	○
Learning through trial and error	○	○	○	○	○

9. Why did you attend the learning methods that you attended (select all that apply).

	Location of the training	Fits with your learning style preference	Time - easy to fit into your schedule	Required by your district/school	Best method for learning the technology skills	It was the only training available	Other
Technology integration classes taken for credit hours	☐	☐	☐	☐	☐	☐	☐
Non-credit workshops provided by school district or outside consultants	☐	☐	☐	☐	☐	☐	☐
Drop-in clinics or open computer labs	☐	☐	☐	☐	☐	☐	☐
Summer institutes	☐	☐	☐	☐	☐	☐	☐
Technology personnel support (modeling)	☐	☐	☐	☐	☐	☐	☐
Peer Support (mentoring)	☐	☐	☐	☐	☐	☐	☐
Independent on line help	☐	☐	☐	☐	☐	☐	☐
Reading printed documentation	☐	☐	☐	☐	☐	☐	☐
Learning through trial and error	☐	☐	☐	☐	☐	☐	☐

Training Methods for Learning Educational Technology Integration Skills 2

10. How many hours per week do you estimate that your students use technology while in your class for each of the following?

Prepare written text (e.g. word processing, desktop publishing)	
Create or use graphics or visual displays (e.g., graphs, diagrams, pictures, maps)	
Learn or practice basic skills (e.g., reading or math skills)	
Conduct research (e.g., Internet searching, using reference materials on CD-ROM)	
Correspond with others (e.g., students, teachers, experts) via email, network, or Internet	
Contribute to blogs or wikis	
Use social networking websites	
Solve problems, analyze data, or perform calculations	
Conduct experiments or perform measurements	
Develop and present multimedia presentations	
Create art, music, movies, or webcasts	
Develop or run demonstrations, models, or simulations	
Design and produce a product	
Total of all the above	

11. What local/system factors support the use of technology in your classroom?

12. What factors do not support the use of technology in your classroom?

APPPENDIX C

COLLEGE OF EDUCATION

DEPARTMENT OF LEADERSHIP, TECHNOLOGY, AND HUMAN DEVELOPMENT

COVER LETTER TO PARTICIPANTS

My name is Lisa Blackmon and I am a doctorate student at Georgia Southern University in the department of leadership, technology and human development. This research is being conducted as partial fulfillment of the requirements for the degree: doctor of educational leadership. The purpose of this research is to determine Georgia middle school teachers' perceptions of professional development activities that result in successful integration of emerging instructional technologies in schools. The goal is to provide district personnel data that may be utilized when planning for more effective technology professional development.

Participation in this research will require approximately 15 minutes of your time and include completion of an online Survey Monkey anonymous survey about your years of teaching experience, stages of technology adoption, level of technology use, and your perceptions and use of professional development for emerging instructional technologies. A spread sheet of the information that you and other participants provide will be created. The spread sheet will not contain any identifiable information that might jeopardize your confidentiality. Information will be password protected and stored by Survey Monkey until deleted three years from the completion of the study.

There are no more than minimal risks involved for the participants in this study. The research will be conducted in a commonly accepted educational setting involving education practices. The participant is in no more than minimal risk of criminal or civil liability. There is no more than minimal risk of damage to the participants' financial standing, employability, or reputation.

There are no individual benefits for participation in this study. The benefits to society include the addition to the body of knowledge related to K-12 leadership. By providing effective professional development and meeting the needs of teachers, school districts will be able to provide teachers with the skills to successfully integrate emerging instructional technology into the classroom. In order for school districts to provide this effective professional development additional research is needed into teachers' technology learning practices.

Participants have the right to ask questions and have those questions answered. If you have questions about this study, please contact the researcher, Lisa Blackmon at 706-825-4543 or the researcher's faculty advisor, Dr. Russell Mays at 912-478-5605. For questions concerning your rights as a research participant, contact Georgia Southern University Office of Research Services and Sponsored Programs at 912-478-0843.

Participation in this research is voluntary. There is no penalty for deciding not to participate. You may end your participation at any time by notifying Lisa Blackmon or not returning completing the online anonymous survey. You do not have to answer any questions that you do not want to answer.

You must be 18 years of age or older to consent to participate in this research study. If you consent to participate in this research study and to the terms above, please sign your name and indicate the date below.

You will be given a copy of this consent form to keep for your records. This project has been reviewed and approved by the GSU Institutional Review Board under tracking number H__________.

Title of Project: Teachers' Perceptions of Professional Development Activities Which Result In Successful Integration of Emerging Instructional Technologies.

Principal Investigator: Lisa Blackmon
3058 Kohl Road
Elberton, GA 30634
706-283-5712
lb02317@georgiasouthern.edu

Faculty Advisor: Dr. Russell Mays
College of Education
Room 3104
P.O. Box 8131
Department of Leadership, Technology, and Human Development
Georgia Southern University
Statesboro, GA 30460-8131
912.478.5605
rmays@georgiasouthern.edu

_______________________________ _______________________
Investigator Signature Date

APPPENDIX D

SCHOOL DISTRICT 1 LETTER OF APPROVAL

[redacted]

[redacted]

January 13, 2012

Lisa Blackmon
Elbert County Middle School
1108 Athens Tech Rd
Elberton, GA 30635

Dear Ms. Blackmon:

Your request to approve your study titled "Professional Development for the Successful Implementation of Emerging Instructional Technologies" was received and reviewed by the Research Review Committee. I am pleased to notify you that your request is approved.

If you publish and/or present the findings of this study, you must include the following statement:

> The [redacted] County Public Schools approved the conduct of this study. However, this approval is not an endorsement of the design of the research or the methodology used. Nor does the [redacted] County Public Schools endorse the findings of this study.

I am sure that you will work closely with [redacted] to ensure that your research activities are not intrusive to the middle school instructional programs in [redacted] County. In addition, you must maintain the confidentiality of the teacher information you receive.

I would appreciate receiving a copy of your findings and recommendations.

Please let me know if I can be of assistance.

Sincerely,

[redacted]

Director of Testing and Research

cc [redacted]

Be There

In Pursuit of Excellence

[redacted] County Public Schools

Equal Opportunity Employer

APPPENDIX E

SCHOOL DISTRICT 2 EMAIL OF APPROVAL

Lisa Blackmon - RE: Survey Approval

From: [redacted]
To: Lisa Blackmon <lblackmo@elbert.k12.ga.us>
Date: 11/14/2011 5:15 PM
Subject: RE: Survey Approval

That will be fine.

[redacted]
Principal
[redacted] County Middle School
[redacted]

From: Lisa Blackmon [mailto:lblackmo@elbert.k12.ga.us]
Sent: Monday, November 14, 2011 5:13 PM
To: [redacted]
Subject: Survey Approval

Ms. Levine.

My name is Lisa Blackmon (I worked with [redacted]. I am currently working on my dissertation for my doctorate in Education Leadership from Georgia Southern. I was given your information from Dr. Wiggins at GAETC. I am asking for approval to administer on-line surveys to the teachers at [redacted] Middle School. These surveys will not be administered until late winter (hopefully sometime between December and February), however I need approval as soon as possible.

The purpose of this study is to determine how educators prefer to learn technology integration skills and the training methods they most frequently utilize to provide the education community with justifiable data on the need for alternatives to training teachers.

Teachers will be asked to complete an online questionnaire that will take approximately 15 minutes to complete. This evaluation will ask general questions about technology integration training preferences, your utilization of them and your technology level of use.

Please let me know if you are willing to let your staff participate and if there is anything else I need to do in order to get it approved.

Thank you for your help,

Lisa Blackmon
Elbert County Middle School

file://C:\Documents and Settings\lblackmo\Local Settings\Temp\XPgrpwise\4EC14C9BE... 1/27/2012