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Site-based technology facilitators: catalysts for achieving teacher technology proficiency in K-12 classrooms

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SITE-BASED TECHNOLOGY FACILITATORS: CATALYSTS FOR ACHIEVING TEACHER TECHNOLOGY PROFICIENCY IN K-12 CLASSROOMS

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DEDICATION

This dissertation is dedicated to my number one fan, my husband. Keith, thanks for cheering me on when I needed motivation, listening to me vent, when I was stressed beyond measure, and helping me put things into perspective as I juggled the dissertation, my career, and non stop health issues. Your love, support, and utmost respect for me as your wife, friend, and partner in life has helped me make this dream come true.

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ABSTRACT

The primary purpose of this study was to investigate the extent to which professional development implemented by a school-based instructional technology facilitator impacted the technology proficiency of teachers in SCHOOLTech sites. A second purpose was to identify the types and frequencies of professional development implemented by school-based facilitators in SCHOOLTech sites, as well as, in five case study sites that had shown increases in teacher technology proficiency. The final purpose was to determine if there was a significant difference in student achievement levels between SCHOOLTech and non SCHOOLTech schools. Investigation was carried out through a within-stage mixed model design requiring the parallel use of both quantitative and qualitative research methodologies throughout various stages of the research (Johnson & Christensen, 2004).

Quantitative study was conducted with 22 SCHOOLTech schools and 29 non SCHOOLTech schools. Results of a teacher technology proficiency survey showed that the percentage increase of teachers reaching technology proficiency from year zero to year two was significantly higher in the experimental schools with school-based facilitators than those without. Analysis of student achievement data indicated higher achievement in the experimental schools than control schools; however the difference was not statistically significant.

Follow-up qualitative case studies were conducted with five SCHOOLTech schools that had more than a 10% increase in teachers achieving technology proficiency. Analyses of multiple data sources indicated that student achievement was significantly improved in three of the five schools. In all five schools, students were reported as being more engaged and motivated to learn. The technology professional development practices that were identified as having the most positive impact on teacher technology proficiency include: one to one interaction with

teachers, integration of technology into the curriculum, needs-based, online resources, and job-embedded professional development.

CHAPTER 1
INTRODUCTION

Technology is a powerful teaching tool that has the potential to lower dropout rates, enhance student achievement; provide access to limitless amounts of educational information, and develop a student's self esteem (Whitehead, Jensen, & Boschee, 2003). Classroom computers are tools with the capability of providing individualized learning experiences and addressing the needs of students with multiple learning styles. A tool, however, is only as effective as its user. The key to effective integration of technology in the educational setting is sustained, on-going professional development that focuses on integration of technology into a standards-based curriculum. Lack of professional development for technology use is one of the most serious obstacles to fully integrating technology into the curriculum (Fatemi, 1999; Wested, 2002; White, Ringstad, & Kelly, 2002; Office of Technology Assessment, 1995; Panel on Educational Technology, 1997).

Linking Technological Literacy and Professional Development

Over the last two decades, the explosion of new and emerging technologies has profoundly impacted the educational system as well as the work force. Society's need for highly skilled workers is amplified by the growing number of graduates who are exiting school systems without the skills needed to survive in an information age (Cetron & Gayle, 1990). Naturally, society turns to education for a solution. School systems have been charged with the responsibility of preparing students to succeed in the technical world. As access to all of these modern technologies becomes increasingly more affordable for educational systems, it would seem that preparing America's youth for today's careers would be an easy task. Contradictory to this belief, educating the future technical work force requires more than access to hardware and software.

Bybee (2001) stated:

> As the public recognizes both the essential role of technology in society and the appallingly low level of technological literacy, the burden of providing a remedy will be placed on education in general and technology education in particular. Meeting the challenge of improving technology education has many facets; and effective professional development for teachers of technology will play an essential role in meeting the challenge and attaining higher levels of technological literacy. (p. 28)

Bybee and Loucks-Horsley (2000) pointed out that the publication of technology literacy standards stresses the fact technology is here to stay. The publication and adoption of standards shows a vested interest in educational technology. In their opinion, these standards along with curriculum reform and adequate teacher professional development will serve as catalysts for change. McKenzie (1999) also commented on the state of technology and professional development in the educational system:

> After two decades of effort and billions of dollars, computers and new technologies remain peripheral to life in the typical American classroom. Except for a hardy group of pioneers who have shown what is possible, the bulk of our teachers lack the support, resources, or the motivation to bring these intruders into the classroom core. These technologies remain, for the most part "outside the walls of the city" like the Greek armies surrounding Troy (p. 1).

The United States Department of Education (2004) noted that access to technology in the learning setting had increased and advances in technology continued to accelerate. However, students of all ages were considered to be far ahead of their teachers in technology skills, technology literacy, and overall understanding of the use of technology in the educational setting (United States Department of Education, 2004).

Accountability: No Child Left Behind

In addition to society's demands on the educational system, an even greater driving force behind technology professional development is accountability. Until recently, technology staff development was often an afterthought. Teachers received "just in case" instead of "just in time" training (Serim, 2003). Training was often disconnected from the curriculum and focused on basic use of the computer. Under the No Child Left Behind Act of 2001(P.L. 107-110) these practices are no longer acceptable. According to the guidelines of this law, a minimum of twenty-five percent of all funds spent on educational technology must be allocated for high quality professional development. Technology and technology professional development has now become an issue with which all school districts must contend. The importance of a district developing a vision for technology use and integration cannot be overstated (Ertmer, 1999).

A 1995 report by the Office of Technology Assessment (OTA, 1995) revealed that an overwhelming majority of teachers felt unprepared to use technology resources. Four short years later a study conducted by Becker (1999) showed that 68% percent of the 2,250 teachers surveyed reported using the Internet for instructional purposes. At the time of the report, 16% of the teachers were beginning to use email to communicate with fellow colleagues and 18% had begun posting information to the World Wide Web. In 2004, 19% of the schools across the United States reported that when it came to using technology, at least half of their teachers were considered beginners (Education Week, 2005). Just a year later, 15% of the public schools in the United States reported that the majority of their teachers still had technology skills at the beginner level (Education Week, 2006).

A comparison of the number of computers in schools from 1984 to 2000 revealed a ratio of one computer for every five public school students in the year 2000 to one computer for every

125 students in 1984 (Johnston, 2001). By 2002, student access to computers increased drastically. The student to computer ratio was 3.8 to 1. However, since 2002, this ratio has not changed. In 2006, the 2005 student to computer ratio was reported by Education Week as still being 3.8 to 1. Becker and Ravitz (2001) found that even though the number of classroom computers had increased over the years, actual use of these systems for instructional purposes is still relatively meager. Furthermore, in classrooms where technology is used on a regular basis, it was not utilized to help students understand sophisticated concepts, solve problems, analyze situations, or develop original works (Doherty & Orlofsky, 2001). Instead, it was used for routine drill and practice activities.

In this age of digital technologies and point and click communication, school districts across the United States have the potential to become global learning centers and classrooms without walls. Educational institutions have the opportunity to create learning environments without limits. The modern marvel of technology has infiltrated the educational setting demanding attention and change. This change will require school systems to take a hard look at current practices and rethink the way in which educational technology resources, support, and professional development are implemented. The number of computers sitting in the classroom will no longer serve as a valid measure of effective technology use in the educational setting. Today, effective use of technology requires systems to address several key issues. McKenzie (1999) noted that school systems must give attention to issues such as funding, information literacy, infrastructure, and technical support in order to move forward with the task of arming students with adequate technical skills. He also stated that in the best of worlds, when these issues are successfully addressed, there is still one major concern: How to effectively integrate technology across the curriculum? Years later, schools systems are still struggling with the issue of how to effectively integrate technology (Butler & Sellbom, 2002; Loveless, 2003).

Factors Influencing Integration

Although many factors may influence the technology integration skills of teachers, research points to some common factors that are key to the success of professional development programs focused on technology integration. Strong leadership that models and promotes the use of technology is one of those factors (Byrom, 2001; Mouza, 2002; OTA, 1995). Another key factor is providing teachers with the resources needed to be successful users of technology. These resources include hardware, software, Internet access, professional development release time, and nonthreatening training environments.

In addition to these key components technology professional development must focus on the activities and lessons that teachers use on a daily basis with the students in their classrooms (Anderson & Becker, 2001; Office of Technology Assessment, 2000). Finally, support from peers is a critical component of effective professional development programs. Teachers need ongoing, job-embedded support, encouragement, and guidance from fellow colleagues during and following the training experience (OTA, 1995). Support should be an integral element of technology professional development, not an add-on (OTA, 1995). Utilization of teachers to train teachers is one way to address this factor. Teacher-to-teacher training can be in the form of coaching, mentoring, group work, and collaboration or directly through a technology specialist or coordinator.

Technology Professional Development Programs and Practices

Technology professional development has been approached from many angles over the last decade. In its earlier stages, sit-and-get, one-time-only workshops were the norm. Training was focused on technical skills, implementation of software or educational programs, and for the most part, not on technology integration. Today, educational systems are recognizing the benefits of integrating technology into a well planned curriculum (Shaw, 2003).

Mouza's (2002) study of The Eiffel Project, a five-year program in which 67 New York City public schools participated, provided teachers with ongoing support to facilitate and encourage the integration of technology into their learning environments. This study resulted in three distinctive findings that positively impacted integration practices: (a) support from the administration, (b) collaboration among teachers, and (c) availability of resources.

Lai, Trewen, and Pratt (2002) conducted a qualitative study to evaluate the effectiveness of technology coordinators as change agents. Results showed that having technology coordinators can promote change in teachers' technology skills' levels. Through ongoing interaction and professional development at the school level, teachers were able to develop technology integrated lessons and become more efficient users of instructional technology tools.

An evaluation of the Challenge 2000 Multimedia Project's professional development program noted that establishing a mentor system and partnering experienced technology users with beginners were key elements of the project (Cole, Simkins, & Penuel, 2002). Byrom and Bingham (2001) also noted that teacher access to individuals who were well versed in the areas of technology and pedagogy was an important factor influencing the effective use of technology in the teaching and learning environment.

The INTech model, a plan for INtegrating TECHnology into the student centered classroom was originally developed and implemented by the state of Georgia. Since its inception, the state of Louisiana has adopted this program, modified it to address the Louisiana State Curriculum Standards, and it has been redelivered to numerous teachers in each of the eight regions across the state. This program is another example of technology professional development that promotes the development of teachers' technical skills within the context of the content (Georgia State Department of Education, 2001). In an evaluation report prepared by the

state, this model was found to be effective in assisting teachers with technology integration and the building of teachers' competency levels.

In Louisiana, INTech is a structured program that shows teachers how to integrate technology into standards based lessons. Teachers participate in 56 hours of technology training that is content rich, promotes higher order thinking and collaboration, and incorporates both the state and national technology standards. A strength of the program is its capacity to immerse teachers in the curriculum while simultaneously learning how to use technology as a powerful teaching and learning tool. Teachers attend the training as part of school based teams working toward a common goal. As teachers progress through the program, they are able to bounce ideas off of each other, plan collaborative technology connected lessons, support each other, and experience the power of technology from the perspective of a student and a teacher.

As effective as the Louisiana INTech model is in developing teachers' technology integration skills and competency levels, it is lacking in the areas of ongoing, job-embedded support and training. Once teachers complete the initial training, they return to school and receive little or no follow-up training and support from an experienced technology using teacher. Teachers who are more secure with their newly acquired skills will attempt technology connected lessons and begin to further develop their skills. However, this is not the norm. Most teachers return to their sites and make minimal progress. The absence of needed instructional and technical support leads to frustration and disappointment. The collaboration, enthusiasm, and confidence gained during their INTech training slowly diminishes.

Realizing the need for school-based technology professional development, the Louisiana Department of Education implemented a professional development model called SCHOOLTech. "The SCHOOLTech program is designed to address school-wide improvement efforts through the effective and expanded use of instructional technology. In particular, SCHOOLTech sites

should develop instructional technology strategies that assist teachers with improving teaching practice and increase student performance." (Louisiana Department of Education, 2005, p. 7) Additionally, each SCHOOLTech school is served by a school-based instructional technology facilitator who designs and models effective technology-based strategies that support and enhance existing curriculum standards (Louisiana Department of Education, 2005).

Statement of the Problem

Many programs and practices exist in the area of technology professional development. Ongoing support for teachers from colleagues and teachers knowledgeable about technology best practices and curriculum have been noted in the research as driving forces behind the capability of teachers to successfully integrate technology into the curriculum. In spite of the fact that professional development opportunities in the area of technology integration exist at the district, state, and national levels, the majority of these trainings do not address teachers' needs once they return to their school sites (Jenson & Lewis, 2001; Mouza, 2002; Tobin & Dawson, 1992). Barriers such as lack of ongoing training and sustained, job-embedded professional development have led to isolated uses of technology, diluted professional development initiatives, and moderate support of technology as a valuable teaching and learning resource (Becta 2003; Ertmer, 1999). In order for educational systems to maximize the benefit of technology as a teaching and learning tool and technology professional development initiatives that promote integration, teachers need to receive ongoing, job-embedded technology professional development. This professional development should offer just in time support, include modeling of technology integrated lessons, and provide teachers assistance in developing technology plans, units, and integrated curricula (Butler & Sellbom, 2002; Mumtaz, 2000; Shamburg, 2004). One way this type of professional development could be implemented, is through the placement of school-based technology facilitators on school campuses.

Providing ongoing, job embedded professional development that focuses on technology integration was and still is an identified need that the LCET has attempted to address through implementation of the SCHOOLTech program which is a school-based professional development model. Although the program is in its sixth year of existence, a comprehensive, in-depth study of the impact the program is having on teacher technology proficiency and student achievement has not been conducted. Even more importantly, the types of professional development practices being utilized by SCHOOLTech facilitators that can be linked to increases in teacher technology proficiency and student achievement in SCHOOLTech sites have not been identified. Identifying these professional development practices is essential so that these practices can be documented and replicated in other schools struggling to increase teacher technology proficiency and impact student achievement through effective technology integration.

Purpose of the Study

This study investigated the effects of professional development provided by school-based instructional technology facilitators on teacher technology proficiency and student achievement. School-based instructional technology facilitator refers to teachers skilled in the areas of curriculum and technology who understand the classroom environment, the demands of teaching, and the importance of engaging students in authentic learning experiences. Their role involves collaborating with classroom teachers, modeling of technology best practices, and providing teachers with ongoing, job-embedded support. Traditional forms of technology professional development are predominately off-site, centered on global objectives, and one-time offerings. Teachers in these trainings are part of large-scale audiences receiving training at generic levels that may be too intermediate or advanced for their present skills base. Likewise, off-site trainings oftentimes do not directly correlate to what is going on in individual teachers' classrooms. In contrast to this, school-based professional development can provide teachers with

personalized training and the follow-up needed to reinforce and fully develop newly acquired skills under the guidance of a skilled technology facilitator who is also a respected fellow colleague.

The purpose of this study was threefold. The first or primary purpose of this study focused on the extent to which professional development implemented by a school-based instructional technology facilitator increased or improved the technology proficiency of teachers in SCHOOLTech sites. A second purpose was to identify the types and frequencies of professional development implemented by school-based instructional technology facilitators in all of the study's SCHOOLTech sites as well as the case study sites that had shown marked increases in teacher technology proficiency. The third and final purpose was to determine if there was a significant difference in the student achievement levels between SCHOOLTech and non SCHOOLTech schools.

Research Questions

The following research questions were addressed in the study:

(1) What is the effect of technology professional development provided by school-based, SCHOOLTech, instructional technology facilitators on teacher technology proficiency?

(2) What types and frequencies of school-based technology professional development were implemented in SCHOOLTech sites?

(3) In SCHOOLTech case study sites that had marked increases in teacher technology proficiency, what types and frequencies of professional development were implemented?

(4) Was there a significant difference in the student achievement levels between SCHOOLTech and non SCHOOLTech schools?

Conceptual Definitions

The following section will provide conceptual definitions for the major variables of the study.

Integration

Technology integration refers to more than just a teacher's use of technology in the classroom. Integration encompasses a teacher's skill level and the use of those skills to enhance teaching and learning (Shaw, 2003). "Integration results from training that goes beyond showing teachers how to simply add technology to what they are currently teaching in the classroom. It requires learning how to select digital content based on the needs and learning styles of students and infusion of that content into the curriculum rather than making it an end in itself," stated Fatemi (1999).

School-based Instructional Technology Facilitator

School-based instructional technology facilitators are teachers skilled in the areas of curriculum and technology who understand the classroom environment and the demands of teaching. Their roles involve collaborating with the classroom teachers, "designing and modeling effective technology-based strategies that support and enhance existing curriculum standards" (LCET, 2005, p. 7), and providing teachers with ongoing, job-embedded support for effective technology integration.

Teacher Technology Proficiency

Teacher technology proficiency refers to the degree or level of proficiency a teacher has achieved in the area of effectively and appropriately integrating technology into the curriculum in order to enhance teaching and student learning. Becoming proficient in the use of technology requires teachers to refine their technology skills, broaden their knowledge of educational technology resources and pedagogy, and actually apply these to teaching and learning.

Significance of the Study

The significance of this study was rooted in both the situated learning and constructivist theoretical perspectives. This study added to the emerging body of research supporting Situated Learning Theory as a theoretical basis for technology instruction. In situated learning environments, “learning normally occurs as a function of the activity, context and culture in which it occurs” (Brown, Collins, & Duguid, 1989). The professional development model analyzed in this study; SCHOOLTech, places value on learning in a positive and supportive community environment that focuses on common goals and provides teachers with meaningful support while learning as a group or team. Teachers from the same cultural "professional" community, which in this study were SCHOOLTech sites, received school-based support and guidance while learning new instructional practices, attended professional development together as a community of learners, supported each other, and practiced new skills together throughout the course of the program and thereafter. In addition to this, they served as role models sharing their newly acquired knowledge, pedagogy, and skills with other colleagues. This adheres to the Situated Learning Theory because learning took place by participating in the practices of a community (Brown et al.). Teachers along with the school-based instructional technology facilitators influenced or “recruited” others to use and integrate technology, were in positions to support and encourage each other, celebrated success and strengths together, and worked through difficulties together as they learned and implemented their newly acquired skills and instructional technology practices.

The theory of Constructivism was also addressed in this study. Teachers in the SCHOOLTech sites were not passive participants in the program; they sought out and used the instructional technology skills and practices that were relevant to their teaching styles, classrooms, and prior experiences. Teachers often initiated their own professional development

activities with their school-based facilitator. Teachers learned new skills "on their own turf" where they had a vested interest in the success of their careers and students' achievement levels. Teachers became engaged in collaborative learning; thus increasing active student engagement in authentic learning experiences, collaborative projects, and self-reflection in the classroom.

Findings from this study provide school systems with empirical data on the impact school-based professional development has on teacher technology proficiency, which includes effective technology integration. This information could aid schools and districts in the development of effective technology professional development programs that focus on integration of technology, are content driven, and could lead to increased levels of student engagement. In a period of local funding shortfalls and substantial cuts to the federal and state technology dollars made available to districts, having knowledge of research based, proven professional development practices that can be replicated at the school level is critical to the ongoing success and continued growth of technology programs across the state of Louisiana. In addition, results could be shared with other states is need of model, replicable, technology professional develop programs and practices.

Another significant impact of this study will be its potential to change current technology training practices that are often off site, one shot, short term workshops allowing little or no transfer of teachers' integration or technical skills to daily instruction, lesson planning, and curriculum development.

Limitations of the Study

The use of mixed methodologies presented limitations to the study. Possible interaction between the experimental and control groups could have had a bearing on the effectiveness of the treatment or participants' attitudes toward the study. Loss of participants due to in-parish, out-of-parish, or out-of-state transfers by teachers or uncontrollable circumstances was also a

limitation of this study. In addition, collection of the data could have been affected by interviewer bias.

The sampling procedure chosen, purposeful sampling, presented the limitation of selecting schools that were given additional funding and support allowing them to provide teachers and students access to educational technology tools and resources. This limited transferability of case study results and generalizability to other schools. However, thick, rich descriptions of the case studies were provided which could increase transferability (Gall, Borg, & Gall, 1996).

A final limitation is generalizability of the results to other learning settings. Due to the sample schools' technical infrastructures, teacher proficiency levels, availability of resources, and local funding structures, it may not be possible to generalize results of this study to other schools and districts.

CHAPTER 2
REVIEW OF LITERATURE

As modern technologies continue to develop and evolve, the educational system finds itself immersed in hardware and software. School systems are no longer concerned with whether or not technology should be used in the classroom, but how it can be used effectively to improve student achievement (Cuban, 2001; Fuller, 2000; North Central Regional Educational Laboratory [NCREL], (1999). The manner in which teachers utilize technology will determine its effectiveness and ultimately its impact on student learning (Iding, Crosby, & Speitel, 2002; OTA, 1995). Therefore, well designed professional development programs that focus on integration of technology into the curriculum are essential (Wested, 2002; White, Ringstad, & Kelly, 2002). Defining this kind of professional development is one of the first steps school systems can take.

Multiple definitions of professional development are available in the literature today and vary across different audiences. While central office personnel see professional development as a formal activity, teachers express a need for more informal interactions with their colleagues that are relevant to daily practice (WestEd, 2000). According to Fullan (1991), professional development includes “the sum total of formal and informal learning experiences throughout one’s career from preservice teacher education to retirement” (p. 326). Grant (1996) expanded the traditional definition of professional development to include the use of technology and its capability to foster teacher growth:

> "Professional development ... goes beyond the term 'training' with its implications of learning skills, and encompasses a definition that includes formal and informal means of helping teachers not only learn new skills but also develop new insights into pedagogy and their own practice, and explore new or advanced understandings of content and

resources. This definition of professional development includes support for teachers as they encounter the challenges that come with putting into practice their evolving understandings about the use of technology to support inquiry-based learning.... Current technologies offer resources to meet these challenges and provide teachers with a cluster of supports that help them continue to grow in their professional skills, understandings, and interests."

Regardless of the definition one chooses, teachers need ongoing, job-embedded professional development that empowers them, strengthens their technology skills, motivates them to use technology, and is tied to the curriculum goals of the school (Anderson & Becker, 2001; NCREL, 1999; Office of Technology Assessment, 2000).

Professional Development and Integration

Integration encompasses a teacher's skill level and the use of those skills to enhance teaching and learning (Shaw, 2003). In the past, lack of technology integration by teachers was blamed on the teacher's inability to adapt new technologies to his or her teaching style (Cuban, 1986). Cuban (2001) and Tobin and Dawson (1992) pointed out that teachers tend to stay with instructional practices and strategies with which they feel most comfortable. In order to promote change and encourage adoption of new classroom practices, teachers must be provided with opportunities to acquire the skills needed to use technology and then apply these skills in the context of the curriculum being taught such as Language Arts or Social Studies. Shaw (2003) also pointed out that a district's success with technology is correlated with the technical skills and practices of its teaching staff, which happens to be directly linked to the type of professional development in which teachers are engaged. In order for technology to positively impact student learning, teachers must be empowered with technical skills and best pedagogical practices in the area of technology integration. Effective integration of technology into instruction can only take

place through the implementation of professional development programs that address instructional design (Nisan-Nelson, 2001). Traditional, large scale workshops where participants are passive learners clocking professional development hours are archaic practices in today's information rich educational systems. Technology professional development in the digital age requires a new approach to adult learning.

Approaches to Teacher Technology Training

Bybee (2001) based his approach to technology training on the five principles of professional development outlined by Loucks-Horsley, Hewson, Love, and Stiles, (1998). He suggested the following principles for teacher technology education. First, the focus of professional development must be the achievement of all students not just those taking technology classes. Secondly, teachers skilled in the area of technology must further develop those skills through participation in meaningful professional development. A teacher's pedagogical content knowledge should include ways to utilize technology in order to create higher levels of student achievement. The third principle addresses the factors that drive student learning and application of these factors to teacher professional development in the area of technology. In other words, professional development opportunities should be designed with a focus on the way teachers teach and students learn. The fourth principle focuses on the content of professional learning. Professional learning must tap into and expand upon a teacher's current technology skill level as well as his or her knowledge of curriculum. Finally, professional development must align with the system's goals, promote student learning, and support standards-based reform.

Expanding further on these five principles for professional development, Bybee (2001) recommended fifteen strategies for technology professional development. Bybee grouped these strategies into five major categories. The categories are as follows: (a) immersion,

(b) curriculum, (c) examining practice, (d) collaborative practice, and (e) vehicles and mechanisms (Loucks-Horsley et al, 1998). Immersion strategies offer teachers the opportunity to engage in the types of problems or projects that students complete. Curriculum covers the integration of technology into lessons as an effective teaching tool allowing teachers to improve their daily teaching practices. Examining practice involves taking a good look at one's own teaching practices in order to refine and adapt teaching strategies through the use of technology. Collaborative practice strategies deal with groups of teachers working together to develop sound technology skills, integration of technology into the curriculum, and working one-on-one with each other to explore new technologies and ways of using these tools in the classroom. The last set of strategies, vehicles and mechanisms, encourages teachers to use resources outside of the classroom such as inservices, workshops, and conferences to strengthen technology skills and become adept at using technology on a daily basis to enhance the curriculum and provide students with meaningful learning experiences.

Rieber and Welliver (1989) suggested another five-step approach to teacher technology training. According to this model, teachers must move through a hierarchy or evolutionary process that consists of the following stages: (a) familiarization, (b) utilization, (c) integration, (d) reorientation, and (e) evolution. The five stages are defined as follows: In the familiarization stage, teachers are beginning to learn how software can be used in various ways within the educational setting. Teachers at this level are impressed by the volume of software available and are in engaged in simple tasks such as creating a test or quiz using a word processing program. Moving into the utilization stage, teachers begin to use technology as an instructional tool. However, teachers at this stage of the process still do not feel comfortable enough to commit to daily use of technology in their lessons. The integration stage is the turning point of the hierarchy. At this level, technology becomes a part of the curriculum and is valued as an

instructional tool. During the reorientation stage, teachers become facilitators of technology and allow students to become more actively involved with technology in the classroom. The last stage of the process, evolution, is continuous. In this stage, teachers move beyond the walls of their own classrooms to work with administrators and district personnel to develop broader technology visions, address areas of concern, and evaluate various types of technology resources.

Professional Development Practices: Collaboration and Support

Training teachers in the effective use of technology presents many challenges. Varying skill levels, interests, learning styles, and time are some of the obstacles that districts are forced to address. In order to address these needs, school systems are utilizing a variety of options.

The Eiffel Project, a five-year program in which 67 New York City public schools participated, is one example of the many strategies being used to promote the effective use of technology in the classroom through meaningful professional development. Mouza (2002) conducted a study which focused on one of the professional development programs implemented by the Eiffel Project in the spring of 2000. The study investigated three questions dealing with teacher learning: (1) How did the Eiffel project affect teacher technological competence?, (2) How did teachers use technology in their classroom during the project period?, and (3) What impact did school contextual factors have on the use of technology in the classroom?

The population of Mouza's study included fifteen teachers who were participating in the Eiffel Program. The experience levels of the participants ranged from one to 34 years and they were housed at six different New York City schools. Three of these teachers were chosen for in-depth case study analysis. Two of the teachers had technology skills in the basic to intermediate range while the third teacher was more proficient and comfortable with the use of technology. All three teachers were African American, teaching in different inner city public

schools, worked in learning environments with varying degrees of technology access, and had different types of support available to them in the school setting. Using an interpretive case study design, Mouza gathered data over a 12-week period using field notes from workshops, classroom observations, interacting with participants, recording teacher responses, interviews, and monitoring collaboration among teachers.

Results of the study were categorized by teacher competence with technology and teacher use of technology in the classroom. After participating in eight hands-on, collaborative workshops, Mouza found that all three of the teachers' technology skills had increased, they were more comfortable with technology, and increased their use of the Internet. However, she did note three major factors that influenced teacher use of technology in the classroom. These factors included: (a) support from the administration, (b) collaboration among teachers, and (c) availability of resources.

Overall, administrative support was viewed as the most influential factor and necessary for successful technology integration by classroom teachers. Of the three teachers closely studied, only one received ongoing support from school administrators. This support was reflected in the willingness of the teacher to experiment with technology, explore various uses of technology, and take risks. Collaboration and support from colleagues at the school level was also an important factor. Again, only one of three teachers received support and maintained a collaborative relationship with other classroom teachers upon return to school. Ironically, this was the same teacher who received administrative support. Finally, access to modern, functional technologies was a critical component of the program. This access included having the actual hardware and software itself, and technical support to keep the equipment functioning properly. Once again, the teacher who had received both administrative and collaborative support also had the most access to technology resources.

Continents away, The International School of Bancock decided to make its professional development program meaningful by eliminating "how-to" workshops and focusing on connections with learning. Basing their model on what Bruce and Levin (1997) called the four learning areas: inquiry, communication, construction, and expression, they managed to correlate technology and learning while at the same time construct a high quality professional development program that resulted in progress.

Wooley (1998) summarized Bancock's vision as centered on immersing teachers in a technology-rich environment that would allow them to experience learning as a student, not as a teacher. This transformation involved a seven-step process. These steps included getting ready, learning about technology, hands-on learning, reflection, application, planning, and ongoing support. The first step required participants to take on their role as learner by participating in a scenario. Once teachers assumed their role as student, they were familiarized with the technology being presented. The third step engaged the adult learners in the investigative process. At this point, teachers resumed their roles as educators and reflected on their own learning experiences. As a fifth step in the process, teachers applied technology to their area of the curriculum and followed up with planning how to best use this tool in their classrooms. Finally, teachers received ongoing support from teacher mentors and teacher technology leaders.

Mulqueen (2001), conducted a study on the Teacher for Interdisciplinary Problem Solving (TIPS) program implemented in Bronx, New York. While participating in this program, teachers were given the support needed to revise existing curricula to include educational technology. The focus of this case study was changes in professional development practices over the two year period of the TIPS program. During the first year of the program, the professional development staff noticed that teachers were not comfortable with the use of technology or the integration of it into daily lessons. During this year, teachers attended six days

of workshops on basic computer skills and applications, were provided with email accounts, and had access to a LISTSERV as a means of ongoing support. The workshops also included discussions, readings, and PowerPoint presentations. After reviewing participants' comments and conducting classroom observations, it was noted that teachers were not resisting change, but felt overwhelmed by the vast amount of newly acquired skills they were expected to utilize. Recognizing these and other concerns that the teachers had, the developers of the TIPS program went back to the drawing board.

Professional development in year two of the TIPS program was approached in a different manner and notable gains in teacher comfort and integration levels were made. Three factors or changes in the structure of the program contributed to its success in year two. First, teachers were involved in the planning process and recognized as professionals. Secondly, the training was flexible and recognized individual learning styles and teachers' schedules. The third factor that brought about productive professional development was providing teachers with opportunities to collaborate, share ideas, and support each other.

Jenson, Lewis, and Smith (2002) studied the role of professional development in the implementation of technology in schools across Canada. Three Canadian professional development programs were examined in order to identify training practices that supported or impeded teachers in their technological development. Data collection consisted of documentary research, onsite visits, workshop observations, and semi-structured interviews with teachers and administrators. Researchers gathered data and constructed descriptive narratives or "vignettes" of the findings in order to understand the variety of approaches used to assist teachers with their technology integration needs, issues, and concerns.

Over a two-year period, 30 schools and 18 school districts from five Canadian provinces participated in this study. Teachers from these schools received training in the Teaching and

Learning in an Information Technology Environment Program (TLITE) offered by the Open Learning Agency. This program used self-directed, collaborative-based learning approaches to promote technology use in the classroom. Teachers involved in the program met face-to-face, online, and with mentors to learn new skills, design lessons, develop projects, and become accountable for technology integration. Large group sessions were also held each summer for collaboration purposes and sharing of pedagogical practices.

As a result of their data collection, the researchers involved in this study outlined some key components that should be considered when planning and implementing technology professional development programs for teachers. Financial and release time incentives should be worked into the planning of any training program, as well as ongoing technological and curricular support. Additionally, trainings should address all competency levels and make teachers feel comfortable. Other key components included allowing teachers to play and discover on their own, offering a combination of online and face-to-face sessions, keeping an activity-based focus, and using technology as part of the activities and lessons that teachers will actually use with their students. A final key factor was sustainability. Professional development programs that deal with technology integration cannot be stand alone, one-time offerings. Training should be ongoing to allow for continued skill development and growth.

In order to examine the effects of electronic models on preservice teachers ideas and self-efficacy regarding technology integration, Ertmer et al. (2003) designed a mixed method study based on the following research questions: a) What effect does observing exemplary technology-using teachers, presented electronically, have on preservice teachers? and b) What effect does observing electronic exemplary technology-using teachers, presented electronically, have on preservice teachers?

The research questions in this study were addressed through a pretest-posttest design used after two 50-minute class sessions in which preservice teachers, in a university setting, viewed a CD-ROM presenting exemplary models of classroom technology use. Using classroom observations and surveys, researchers collected data on 69 students enrolled in the education program and carefully selected 10 for interviews. Quantitative (paired t-tests) and qualitative (pattern seeking) analysis methods were used to determine what if any effect electronic models had on preservice teachers ability to integrate technology.

Over an 11-week period, participants viewed all parts of the electronic instructional tool, VisionQuest. VisionQuest was a CD-ROM that spotlights the effective teaching practices of three model technology teachers. Throughout the 11 week period, data was collected on each module of the VisionQuest CD-ROM, as well as demographic data about the participants.

Analysis of the data supported the hypothesis that electronic models can increase preservice teachers' ideas and self-efficacy regarding technology integration. A two-tailed paired *t*-test revealed a substantial increase in the participants ideas about technology integration (t=8.85; p<.0000) from pre to post survey. Students' judgments of their own ideas of technology integration also increased from a pretest mean of 3.72 to a posttest mean of 4.12. Additionally, interview results proved to be positive. For example, the mean response to the question regarding the relevance of the electronic teacher's activities and modeling was 4.31 on a five-point scale.

Using electronic models to train teachers in the effective use of technology is a possible solution to the growing need for professional development focused on technology integration. Teachers teach by modeling and also learn from the experience. Since it is impossible for teachers to observe other teachers on a routine basis, electronic media may provide teachers with digital mentors that can accessed as needed by teachers learning how to use technology.

Teachers Training Teachers

Pardini (2002) studied the practices of three school systems that implemented district wide technology staff development to identify common themes: Pinellas County Schools, Florida; Clark County School District, Nevada; and Milwaukee Public Schools. Clark County was faced with the challenge of working with 14,000 teachers, while Milwaukee concentrated on approximately 6,500 staff members. Pinellas County employed 7,500 teachers when the study was conducted. In spite of their demographic differences, these school systems embraced three common concepts. Each district delivered staff development in a variety of ways, had teachers teach teachers, and provided teachers with multiple resources outlining how to use technology in day-to-day teaching.

As a practice, these districts offered multiple technology workshops at several different times and locations affording teachers the opportunity to work around busy schedules and find time for technology training. Based on the premise that students learn differently, these districts were compelled to address the varied learning styles of their adult learners. Methods of delivering staff development ranged from introductory classes on various software packages and grade sheet programs to in-depth coursework for recertification credit. These trainings were offered after hours, during the school day, and on weekends. Expanding their staff development initiatives even further, these districts encouraged teacher participation in online classes and promoted distance learning.

Another common thread woven through these three professional development programs was having teachers train teachers. This method helped to build an internal infrastructure that provided “just in time” support in a nonthreatening learning atmosphere. Teachers felt a sense of community and shared in the decision making process.

The final commonality shared by these districts was technology-based lessons.

Providing teachers with technology-based lessons and unit plans that are exemplary, based on state standards, and readily available was a priority for all of these districts. Pardini (2002) found that two of the districts preferred to use online databases as the storage system for their collections, while one district was determined to use human resources.

Cole, Simkins, and Penuel's (2002) report on the Challenge 2000 Multimedia Project's professional development program revealed that teachers need comprehensive, ongoing, systematic professional development. Over the projects six-year period, a variety of professional development activities were utilized. Cole (2000) recognized several elements that supported teacher learning. The first of these elements was support that goes beyond meeting the technical needs of teachers. Although technical support is necessary, it also needs to address classroom management issues that often arise when using technology in the classroom. Making use of teachers who were already skilled in the area of technology integration was also considered an important factor in the success of the project's professional development program. Teachers were comfortable with and learned from their colleagues. Additionally, these teacher leaders served as agents of change, promoters of technology, and provided ongoing support. Other elements that added to the success of the program included providing teachers with training on their own schools campuses, and coordinating training with other professional development taking place on the school campus.

Holland's (2001) study mainly focused on how efforts in technology staff development support teachers in learning and using technology. He also explored whether or not an emphasis on technology could lead to school wide change. The following three assumptions were explored: 1) teachers are at various technology developmental levels of knowledge and use that can be classified as nonreadiness, survival, mastery, impact, and innovation, 2) technology staff

development needs to be based on current professional development best practices, and 3) technology professional development can assist in the development of school reform goals.

The site of this study was a middle school considered to be a technology leader within its district and led by an administrator who strongly supported the use of technology in the classroom. In addition to this, the school employed two full-time technology specialists. Over 90% of the 61 faculty members taking part in this study had completed the district's local technology training program and had computers in their classrooms. Using mixed qualitative methods of survey, field observations, and interviews, Holland determined the characteristics of teachers at each developmental level and gathered information on the kinds of professional development opportunities that best met teachers' instructional technology needs.

The first two assumptions in this study addressed teacher developmental levels. Nonreadiness and survival are on the lower level of the technology developmental continuum. Results showed that teachers at the nonreadiness developmental level resisted computer use and dismissed the value of technology as an educational tool. Eight of the 61participants saw little benefit from the use of technology and nine questioned whether or not technology could be just another education fad. Teachers at the next developmental level, survival, were focused on their own learning and saw teaching with technology as a series of lessons, not part of the curriculum. Results of the study indicated that teachers at the survival level needed professional development opportunities that allowed them to build on their personal knowledge and use of technology, as well as timely support.

Looking at the mastery, impact, and innovation levels, results continued to link certain characteristics with particular developmental stages. Teachers' knowledge and use of technology at the mastery level did not develop consistently across all curriculum areas. Mastery level teachers displayed competence in software applications that were related to their content areas.

Data from the surveys indicated that these teachers desired technology training and peer coaching from more experienced teachers. Teachers working on integrating technology into curriculum and instruction characterized the fourth developmental level, impact. These fifteen teachers viewed technology as an instructional tool, not a separate or add-on curriculum. Teachers at this level were eager for multiple technology professional development trainings and collaborative work with other colleagues. The final and fifth developmental level of this study was innovation. Excluding the two technology specialists, none of the teachers on this campus had reached this skill level.

Data from this study also suggested that the third assumption, technology professional development can assist in the development of school reform goals, was true. Technology professional development cannot be addressed in isolation. It must be planned and carried out within the context of district and state goals.

Data from Holland's study (2001) strongly affirmed the notion that technology professional development requires a human element. Teachers at all levels need timely support from leaders and colleagues, peer coaching, and ongoing professional development.

The Education Development Center's (Center for Children and Technology [CCT], 2002) conducted a study on the Regional Technology Assistance Program (RETA) and its effects on the teaching practices of participants. During the 1999-2000 school year, 2,400 teachers from across the state of New Mexico participated in the RETA program. Both quantitative and qualitative methods were used to collect data from participants. Data collection instruments consisted of 190 pre and post workshop surveys, 170 workshop evaluations, 51 instructor self-assessments, multiple observations, and interviews.

The RETA program consisted of a series of workshops geared towards the needs of teachers and students in high poverty schools in New Mexico. Forty-eight percent of the students

attending school in New Mexico at the time of this study were Hispanic. The dropout rate was 50% and one in every four children was living in poverty. An important component of the RETA program is teachers training teachers. Teachers are encouraged to build collaborative relationships and learning communities to provide each other guidance and support. Workshops were hands-on, curriculum based, and taught by teachers who understand classroom culture, technology, and instructional uses of technology from a constructivist perspective.

Analysis of the data collected was reported as changes in teachers' personal use of computers, changes in teachers' access to computers at school, and increased integration of computers in teaching and learning.

While participating in the RETA program and after its completion, 17% of the teachers started to use email daily, an additional 10% accessed the Web daily, and 7% to 11% used email and the Web for the first time. Before the RETA program, these teachers were not regular users of email and the Internet. Results also showed an increase in the number of teachers who had Internet access at school by the end of the school year. Increases were also seen in the area of technology integration. A survey of 79 teachers revealed that 43% used computers as part of the learning process compared to 24% before participation in the RETA program.

Overall, the RETA program brought about increases in the use of a variety of computer applications, integration of technology into the learning process, collaboration between teachers, designing of curriculum units that incorporated technology, information and resource sharing, and teachers' confidence and motivation levels.

Technology Coordinators as Change Agents

Lai, Trewen, and Pratt (2002) conducted a qualitative study to evaluate the effectiveness of technology coordinators as change agents. Twenty-five principals and 25 technology coordinators from secondary schools in southern New Zealand were the subjects of this study.

These schools were recipients of a two million dollar local community trust fund that was allocated toward the purchase of hardware, software, and wiring. Student populations at these schools ranged from 115 to over 800 students and were considered to be of average economic status. Questionnaires were issued as one method of data collection and resulted in a return rate of 76% for the principals and 72% for the technology coordinators. Additionally, three principals and seven coordinators from eight schools were interviewed. Twenty-one of the participating coordinators were male and four were females.

The coordinators at each school were highly visible and served as technology leaders. The roles of these individuals were described as planner, manager, envisioner, trainer, and technician. Eighty-three percent planned technology initiatives and 89% managed technology projects. Seventy-six percent of the coordinators were actually involved in the writing of the trust fund proposals and implementation of the projects once funding was received. All coordinators were involved in the development of school technology plans, served as trainers, and provided technical support to fellow faculty members.

Results of the study indicated that technology coordinators can have a major impact on the integration of technology on a school campus and serve as agents of change. However, several factors must be addressed before this impact can occur. First, many of them serve as technology coordinators in addition to their teaching responsibilities, which produce heavy workloads and time management issues. Full time technology coordinators are needed to fully integrate technology into the curriculum and promote change. In addition, full time coordinators are better able to build momentum and capacity within a school. Secondly, many coordinators dealt with specific curriculum areas and not the entire curriculum. True technology integration must take place across the entire curriculum if schools are going to make progress and impact student achievement through the use of technology (Lai, Trewen, & Pratt, 2002).

In an effort to promote greater technology integration and overall student achievement in the state's schools, the Mississippi Department of Education developed the Challenging Regional Educators to Advance Technology in Education (CREATE) project. Using grant funding, the district hired an educational technologist to work with four schools during the first year of the program. All four schools participating in the pilot project had poverty rates above 50% and qualified for Title I funding.

As reported by Whitfield and Latimer (2003), the educational technology specialist was a former teacher possessing at least three years of curriculum and classroom experience as well as technically skilled. Additionally, this person was a "people person," outgoing, and willing to take on a challenge. Working intensively at the building level with four core teachers from each site, the specialist found ways to help teachers overcome their fear of technology and be more receptive to change. Professional development sessions were used to develop infused lesson plans, provide technical support, and train teachers how to use technology in the classroom. In addition to this, the technology specialist was available to model technology connected lessons in the classroom and assist additional teachers on campus when time permitted.

According to Whitfield and Latimer (2003), the program was an overwhelming success. In the second year of operation, the program positively impacted a total of 13 schools, 2,533 teachers, and 43,221 students. The Mississippi Department of Education was so pleased with the results of the CREATE program that they listed it as one of the state's approved technology professional development programs.

Both Lai, Trewen, and Pratt's (2002) and by Whitfield and Latimer's (2003) studies yielded positive results and support for the need for school-based technology professional development delivered and supported by school-based coordinators or facilitators. However, the specific types and frequencies of effective professional development implemented by the school-

based facilitator neither the impact of this professional development on teacher technology proficiency were explored. This study investigated these variables, reported replicable findings, and identified model technology professional development practices.

Chapter Summary

Chapter 2 presented a review of the research on technology professional development. Many school systems have moved away from sit and get workshops that teach technology skills in isolation and are now focusing on integration. Teaching technology skills in isolation is quickly becoming a practice of the past. Due to an increase in research on those practices that work best in the area of technology training and years of trial and error, many districts are moving towards an integrated approach that addresses technology and curriculum simultaneously. The push is towards the utilization of technology as a tool to enhance student learning and promote higher levels of achievement.

The literature has outlined some important factors that are key to the success of professional development programs focused on technology integration. Strong leadership that models and promotes the use of technology is one of those factors. Another key factor is providing teachers with the resources needed to be successful as a technology teacher. These resources include hardware, software, Internet access, professional development release time, and nonthreatening training environments. In addition to these key components technology professional development must focus on the activities and lessons that teachers use on a daily basis with the students in their classrooms. Finally, a very integral part of every professional development study reviewed was support from peers. Teachers need the support, encouragement, and guidance of fellow colleagues. Utilization of teachers to train teachers was an integral component of many programs. Overall, teachers responded well to their fellow colleagues and appreciated having access to this type of personal support. Some teacher-to-teacher training was

in the form of coaching, mentoring, and group work, while other forms dealt with collaboration or were directly from a technology specialist or coordinator.

Research supports job-embedded technology professional development that provides teachers with ongoing assistance and support. Offering technology training at the school level and providing teachers with the highest level of support, modeling of technology integration, and technology planning possible may be achieved through the placement of technology coordinators at school sites. These individuals could serve as change agents bringing schools into the forefront of the digital age.

CHAPTER 3
RESEARCH METHODOLOGY

This study utilized a mixed model method (Tashakkori & Teddlie, 1998). Investigation was carried out through a within-stage mixed model design requiring the parallel use of both quantitative and qualitative research methodologies throughout various stages of the research (Johnson & Christensen, 2004). Quantitative and qualitative survey data in conjunction with multiple-case, or comparative case studies (Yin, 2003) allowed the researcher to collect data from more than one perspective on teacher technology proficiency, student achievement, and the overall design of the program under study. A quantitative self-assessment instrument and student achievement data, three qualitative instruments, case study interviews, and triangulation across data elements were utilized to investigate the following research questions.

(1) What is the effect of technology professional development provided by school-based, SCHOOLTech, instructional technology facilitators on teacher technology proficiency?

(2) What types and frequencies of school-based technology professional development were implemented in SCHOOLTech sites?

(3) In SCHOOLTech case study sites that had marked increases in teacher technology proficiency, what types and frequencies of professional development were implemented?

(4) Is there a significant difference in the student achievement levels between SCHOOLTech and non SCHOOLTech schools?

Participants

Before proceeding with this study, permission was obtained from the Louisiana State University's Institutional Review Board and the participating school-based facilitators. The

population from which the sample was chosen consisted of all schools in the state of Louisiana. The unit of analysis for this study was schools. The sample for this study was selected using homogeneous purposeful sampling to intentionally identify sites that presented the researcher with in-depth information about the SCHOOLTech program (Patton, 1990). The sample included 51 schools located in 12 school districts within the state of Louisiana. Twenty-two of the schools served as the experimental group and had been participating in the SCHOOLTech program since the fall of 2004. The remaining 29 schools in the sample comprised the control group. Varying numbers of the sample were used to address the quantitative and qualitative aspects of the study.

SCHOOLTech Program

SCHOOLTech is an instructional technology program managed by the Louisiana Center for Educational Technology (LCET) which is a division of the Louisiana Department of Education. "SCHOOLTech is a school-based program designed to address school-wide improvement efforts through the effective and expanded use of instructional technology. SCHOOLTech sites should develop instructional technology strategies that assist teachers with improving teaching practice and that increase student performance." (Louisiana Department of Education, 2005, p. 7) SCHOOLTech sites also have school-based instructional technology facilitators who work directly with teachers to provide support and professional development focused on technology integration.

The SCHOOLTech program was initially implemented in 2002 and was funded by federal competitive grants through the Title II, Part D Enhancing Education Through Technology (EETT) program which is part of the NCLB Act (2001). SCHOOLTech is one of three EETT competitive grant funded instructional technology programs managed by the LCET.

Applicants had to first qualify to apply for a SCHOOLTech award by meeting the criteria and minimal components outlined in the grant and then submit a comprehensive application.

Applications were reviewed by a team of out-of-state reviewers and possible awardees were required to participate in a face-to-face interview conducted by the review team. Once grant recipients were determined, awards were distributed based on a two-year funding cycle. The two-year funding cycle allowed recipients to fully implement the program and establish sound professional development practices at participating school sites.

The following excerpt from the 2004-2005 EETT Competitive Grant application provides a description of the SCHOOLTech program, explanation of the minimal application requirements, and a summary of the school-based technology facilitator's role (Louisiana Department of Education, 2005, p. 7)

> SCHOOLTech proposals should be designed to address school-wide improvement efforts through the effective and expanded use of instructional technology. In particular, SCHOOLTech schools should develop instructional technology strategies that directly address the needs, goals, indicators, and instructional strategies of the technology plan, as it relates to overall school improvement, to assist teachers to improve teaching practice and to increase student performance. Additionally, SCHOOLTech schools will be served by a school-based instructional technology facilitator who will design and model effective technology-based strategies that support and enhance existing curriculum standards. SCHOOLTech will serve as a catalyst for fundamental change in overall teaching and learning processes while promoting school-based improvement through professional development.
>
> Listed below are minimal components to be considered in applying for a SCHOOLTech grant.
>
> Each LEA will:
>
> - Identify one or more schools that will be a SCHOOLTech school;
> - Select appropriate number of certified teachers to serve as the SCHOOLTech instructional facilitator(s) in the identified schools in either full-time or half-time capacity (a full-time instructional facilitator cannot serve more than two schools);
> - Develop a strong professional development program for teachers and administrators which specifically addresses the needs, goals, indicators and strategies of the school's technology plan, as it relates to overall school improvement. Professional development strategies could 1) focus on content/curriculum (as identified in the Louisiana Content Standards, Benchmarks, and Grade Level Expectations) and the instructional and assessment strategies that are appropriate for the content; 2) promote the development of learning communities for educators; 3) address administrator and teacher

leadership; and 4) evaluate the effectiveness of teaching practices as they relate to increased student performance;
- Enroll district superintendent(s) and principals(s) in LEADTech program or provide documentation that he/she has completed the course; and
- Send a two-person team to a 1-day orientation and training session at LCET during the fall of 2004 and a 1-day meeting during the spring of 2005.

SCHOOLTech Instructional Facilitator(s) will:

- Plan and provide ongoing, sustained, intensive, and high-quality professional development to support the strategies of the school's technology plan, as it relates to overall school improvement and spans a full-academic year;
    - Assist teachers and administrators in implementing new instructional strategies;
    - Include a combination of LCET initiatives, such as, INTech, INTech 2, Making Connections, Online Professional Development, Universal Design for Learning, and Online Database Resources;
- Coordinate training with the appropriate Regional TLTC facilitator; and
- Include professional development strategies that promote the development of learning communities for the educators of the school. (p. 7)

SCHOOLTech facilitators were free to seek out training for personal professional growth as needed, but they also received some consistent training as a group. SCHOOLTech facilitators received two days of professional development trainings a year from the LCET. This training consisted of sharing of best practices, modeling of instructional technology lessons and resources, and overviews of state and regional professional development opportunities that SCHOOLTech facilitators could make available to teachers at their schools. In addition to these two days of training, facilitators attended trainings at their region's Teaching, Learning, and Technology Center and other district, state, or out-of-state professional development as needed.

The LCET also provided each facilitator with access to a SCHOOLTech facilitator's Blackboard site. Through the online Blackboard forum facilitators built a learning community of professionals and support network. Facilitators used the forum to share ideas and high quality instructional technology resources, post model lessons, and highlight best practices. They also supported each other, brainstormed on ways to address teachers having difficulty using technology effectively, shared training schedules, and networked on an ongoing basis.

Quantitative Survey Participants

All 51 schools in the study sample were considered when exploring the quantitative survey data addressing teacher technology proficiency and student achievement levels. The experimental group consisted of 22 SCHOOLTech schools which had been participating in the SCHOOLTech program since fall of 2004. All of the schools received professional development from a school-based SCHOOLTech instructional technology facilitator. In addition to having a school-based SCHOOLTech instructional technology facilitator, another eligibility criterion for participating in the SCHOOLTech program was that a school must have been located in a district that was considered a "high-need local educational agency" or an "eligible local partnership". A district was considered high need if it had a poverty rate of 21% or higher. All schools within the proposed study were located within districts meeting the high need status. Therefore, a high percentage of the student populations in the SCHOOLTech sites and sample were on free or reduced lunch status.

The control group was selected using homogeneous purposeful sampling and consisted of 29 schools located in the same 12 school districts, when possible, or a district within the same region that met the high need status by having a 21% or above poverty rate. Since a one to one match was not possible, all other schools within districts included in the study that had the same or similar characteristics as the experimental SCHOOLTech schools, were included in the control group. Selected control group schools had characteristics similar to the experimental group which included grade level configuration, school size and composition, free and reduced lunch status, teacher technology proficiency level, and School Performance Score (SPS) (Louisiana Department of Education, 2004, 2005, 2006). In contrast, the control group schools did not participate in the SCHOOLTech program nor had a school-based instructional technology facilitator.

Qualitative Case Study Participants

Data on teacher technology proficiency were analyzed and used to identify five SCHOOLTech sites that had the highest gains or improvement in teacher technology proficiency levels over the period from 2004 to 2005. The 2004 results are prior to participation in the SCHOOLTech program, while the 2005 results demonstrate teacher technology proficiency levels after one year of participation in the program. These five schools participated in individual in-depth qualitative case studies that focused on the facilitators' opinions and perceptions of the types and frequencies of professional development they implemented, as well as, what they perceived as the greatest challenges and successes of their programs.

Research Design

The design of this study utilized a mixed model method (Tashakkori & Teddlie, 1998). Quantitative and qualitative data were collected and analyzed allowing the researcher to identify broad SCHOOLTech program trends and further explore the workings of the program at specific school sites through the beliefs, practices, and view points of individual SCHOOLTech facilitators (Creswell, 2002).

Quantitative Research

A quasi-experimental approach was utilized to determine changes in teacher technology proficiency and student achievement levels of the study sample. In the quantitative pretest-posttest design the treatment or independent variable for the experimental group consisted of professional development provided by school-based SCHOOLTech technology facilitators. Teachers in the 22 participating SCHOOLTech sites did not have access to a school-based facilitator in year zero, 2003-2004. Teachers did receive instructional technology professional development from their school-based technology facilitator beginning in the 2004-2005 school

year, referred to as year one, and continued to receive training throughout the 2005-2006 school year, referred to as year two.

The types and frequencies of professional development implemented at each SCHOOLTech site varied based on each school's needs and levels of teacher technology proficiency. Ongoing professional development consisted of, but was not limited to, mentoring, modeling of technology connected lessons, one to one or group lesson planning, exposure to resources, and other trainings or practices deemed necessary to assist teachers in becoming technology proficient and integrating technology into the curriculum. The control group did not receive professional development provided by a school-based instructional technology facilitator.

The Louisiana Teacher Technology Proficiency Self-Assessment (Louisiana Department of Education, 2006) (Appendix A), was administered to determine year two or May 2006 proficiency levels of teachers in both the experimental SCHOOLTech sites and the control group. These results were analyzed and compared with the May 2004 and May 2005 proficiency results of each school to determine changes in teacher technology proficiency over the three year period, as well as, overall impact of the school-based professional development implemented by SCHOOLTech facilitators in the experimental SCHOOLTech sites.

In addition to this, the spring 2004, 2005, and 2006 SPS were compiled and analyzed for each school in the sample to document changes, increases or decreases, in student achievement, from year zero to the end of year two, specifically in the SCHOOLTech sites. School Performance Scores are calculated annually by the Louisiana Department of Education and based on combined results of the state mandated LEAP and IOWA assessments, as well as, other state determined factors.

Quantitative analysis of data collected from the control and experimental groups' schools using the Louisiana Teacher Technology Proficiency Self-Assessment (Appendix A) and School

Performance Scores generated descriptive and inferential statistics. The data were reported in tables and graphs illustrating the overall change, increase or decrease, in these variables over the three year period. Data were analyzed and reported at the group level.

The level of expertise of each school-based SCHOOLTech facilitator varied and could have impacted the types of professional development offered at each school site, thus presenting the researcher with a moderating variable. This moderating variable could have had a secondary impact on the dependent variable teacher technology proficiency and affected the results of the study. In order to account for this possible impact on teacher technology proficiency, the researcher gathered information on the types of professional growth opportunities each of the facilitators had taken advantage of while serving their SCHOOLTech schools, during the qualitative component of the study. This information was outlined in the presentation of each case study though descriptive narratives.

Qualitative Research

Qualitative research methods were employed in the study to allow the researcher to collect in-depth data on five case study sites. According to Yin (2003), investigation of multiple or comparative cases allows the researcher to strengthen the results by replicating patterns.

Using results of the Louisiana Teacher Technology Proficiency Self-Assessment (Appendix A), the researcher identified five SCHOOLTech schools that showed the highest gains in teacher technology proficiency from year zero (2004) to the end of year one (2005) of participation in the SCHOOLTech program. Year zero was prior to participation in the SCHOOLTech program. The identified sites were the subjects of five individual, in-depth case studies.

Based on end of year one results from the Louisiana Teacher Technology Proficiency Self-Assessment (Appendix A) scores from all 34 SCHOOLTech sites that tested 50% or more

of their faculties in years zero and one were analyzed to determine the percent change in teacher technology proficiency. Percent change scores were calculated by subtracting the percent of proficient teachers at each site in year zero from year one. This resulted in 22 schools being considered as case study sites. In order to identify which sites had the highest increases in teacher proficiency, scores were then ranked from highest to lowest. The percent of teachers proficient ranged from -6.32% to 24.44%. A percent increase cutoff score of 10% was used to further define possible case study sites. Once all SCHOOLTech sites that did not have greater than a 10% increase in teacher proficiency at the end of year one were removed, nine possible case study sites remained.

The percent of teachers proficient at the top nine SCHOOLTech schools ranged from 11.66% to 24.44%. Based on the ranking and grade level configurations, one elementary school (PreK-4th), two middle schools (5th-8th), and two high schools (9th-12th) were selected as case study sites. The five sites had an average poverty level of 24.4% and a 79% average free and reduced lunch rate. The average student population was 544 while the faculty size averaged 43 for the case study schools. One of the case study facilitators worked with two of the SCHOOLTech sites that met the case study criteria resulting in five case study schools and four facilitators participating in the case study interviews.

A researcher developed self-reporting instrument, the SCHOOLTech Facilitator Survey (Appendix B) included both open and closed ended questions. This instrument was administered to the experimental group to identify the types and frequencies of school based professional development being implemented by the school-based SCHOOLTech facilitators. The survey also identified challenges and successes of each SCHOOLTech program in addressing teacher technology proficiency and integration of technology into the curriculum. The data were

analyzed and reported using descriptive statistics. This data informed the direction of the five case study interviews.

The five case studies expanded upon and further explored the details of the types and frequencies of school-based professional development facilitators reported as being implemented at their school sites. The use of case studies provided detailed data on the individual approaches to professional development implemented by each case study school-based SCHOOLTech facilitator. Conducting multiple case studies enabled the researcher to identify common and unique professional development practices across the five SCHOOLTech case study sites.

Data collected from the SCHOOLTech Facilitator Survey (Appendix B) was used to determine the scope and direction of the case study interviews. Unstructured one to one phone interviews using open-ended questions were conducted with the SCHOOLTech facilitator from each of the five case study sites. Using open-ended questions in an unstructured interview approach allowed the SCHOOLTech facilitators to freely express and expand upon their self-reported responses. Facilitators were enabled to expound upon their perspectives and opinions on the professional development practices they implemented. They were also able to openly discuss their interactions with teachers at various levels of technology proficiency without being influenced by the perspectives of the researcher (Creswell, 2002). Although the questions changed based on each facilitator's self-report responses, the researcher developed SCHOOLTech Facilitator Interview Protocol (Appendix C) draft questions were used to probe for additional information about individual facilitator's practices and experiences.

This interview approach also yielded responses that generated additional questions about the professional development implemented, ultimately providing the researcher with greater insight into the practices that positively impacted teacher technology proficiency.

Individual interviews were conducted with each of the case study schools' facilitators. Selected case study facilitators were contacted via email. The detailed email made them aware of their increases in teacher proficiency levels, congratulated them on their success with the SCHOOLTech program, outlined the nature of the study, and asked if they would consider participating in a phone interview to share their professional development practices and perceptions of the program. A copy of the Interview Informed Consent (Appendix D) form was attached to the email for their review. All five facilitators responded via email stating they agreed to be interviewed and then mailed a signed hard copy of the consent form to the researcher.

Due to the researcher's position in the educational community it was important to take every precaution possible to ensure that respondents felt able to freely express their opinions and beliefs about their SCHOOLTech programs. Therefore, an experienced external researcher was secured to conduct the phone interviews. The main researcher met with this individual to go over the purpose of the interviews, interview procedures, and the SCHOOLTech Facilitator Interview Protocol (Appendix C).

All interviews were conducted in the researcher's office. Interviews began with the interviewer introducing herself and making the interviewees feel relaxed by congratulating them on their specific marked increase in teacher technology proficiency scores. Then, the purpose of the interview was restated and the general process that would be followed was outlined. Interviewees were assured that any comments made during the interview would remain anonymous when data were reported, and reminded to speak freely. Permission to record the interviews was sought and granted and then the SCHOOLTech Facilitator Interview Protocol (Appendix C) was followed in sequential order using an unstructured, open-ended interview approach. Additional probing and emergent questions were explored as the interviews progressed

and when warranted. Each interview lasted approximately 30 minutes. Upon completion of each interview, the audio tape was transcribed using Microsoft Word.

The interview documents were analyzed using Creswell's (2002) constant comparative analysis method. This method of analysis allowed for review of smaller units of data to identify emerging themes and patterns in each case study interview and across all five case studies. Following Creswell's five step process, the researcher reviewed the interview data by reading through each case study several times to divide the data into segments of information and begin identifying themes. Segments of information with meaningful codes were identified resulting in 13 codes that were collapsed into five major categories once overlapping and redundant codes were eliminated. Using the five prominent codes that emerged, themes were created and narrative descriptions were used to summarize, present, and triangulate the data.

Triangulation of results from the five phone interviews along with data from the two self-reports, SCHOOLTech Facilitator Report (Appendix B) and SCHOOLTech Grant Report (Appendix E), and the School Technology Survey (Appendix F) allowed the researcher to address validity of the data collected.

The SCHOOLTech Grant Report (Louisiana Department of Education, 2006) (Appendix E) was completed by each SCHOOLTech grant administrator, provided additional data on the overall progress of the program's goals, and the administrator's perceptions on how the program had impacted teacher technology proficiency and student achievement.

The School Technology Survey (Appendix F) (Louisiana Department of Education, 2006) self-report was completed by all schools in the state receiving federal technology funding. A school technology coordinator responded to the survey. For purposes of this study, targeted information on the five case study schools' overall perspectives' of teacher, student, and administrator technology proficiency, types of professional development implemented, and

general school infrastructure and instructional technology practices were extracted from the report and used to create rich thick descriptions of each case study, as well as, in the data triangulation process.

Procedures

The study initiated in the spring of 2006. However, schools in this study had participated in the SCHOOLTech program and received professional development from their school-based SCHOOLTech facilitators since the fall of 2004. The study concluded during the fall of 2006. Table 3.1 below summarizes the key phases of this study.

Table 3.1
Research Study Phases

Research Study Phases	
Phase	Description
Analyzed existing data	Analyzed quantitative results of experimental and control groups' year zero, prior to SCHOOLTech (2004) and year one (2005) teacher technology proficiency self-assessment and school performance score data and compiled descriptive statistics
Reviewed submission procedures for online Teacher Technology Proficiency Self-Assessment, SCHOOLTech Grant self-reports, and School Technology Survey	Met via CVC with SCHOOLTech program administrators to review procedures for completing online Teacher Technology Proficiency Self-Assessment, SCHOOLTech Grant self-reports, and School Technology Survey
Conducted quantitative research	• Administered online quantitative technology proficiency self-assessment instrument to study sample to determine each school's year two (2006) teacher technology proficiency levels • Analyzed quantitative results of the study samples' Teacher Technology Proficiency Self-Assessment and School Performance Scores from years zero to two (2004 to 2006) to determine overall impact of SCHOOLTech program on teacher technology proficiency and changes in student achievement levels over three year period

(Table 3.1 continued)

Identified case study sites and conducted qualitative research	• Used results of existing data analysis to identify five SCHOOLTech schools with highest gains in teacher technology proficiency from years zero (2004) to one (2005) • Administered researcher developed, online, SCHOOLTech Facilitator Survey to facilitators and SCHOOLTech Grant Report to coordinators to determine the types and frequencies of professional development implemented, their perceptions of the program's impact on student achievement, successes and challenges • Analyzed results of SCHOOLTech Facilitator and Grant self-reports and compiled descriptive statistics on the types and frequencies of school-based professional development implemented • Conducted five individual facilitator phone interviews to gain an in-depth understanding of individual programs and the types and frequencies of school-based professional development they reported on the SCHOOLTech Facilitator Survey • Administered online School Technology Survey to experimental group to determine each school's overall level of technology proficiency, integration, and practices • Analyzed and compiled results of experimental groups' School Technology Survey on overall school technology proficiency levels, integration, and practices • Analyzed qualitative interview data using the constant comparative method and triangulated data with results of the two SCHOOLTech self-reports and School Technology Survey • Qualitative data from the SCHOOLTech self-reports and School Technology Survey were analyzed using content analysis methods
Summarized results	• Summarized findings in discussion, implications, and suggestions for future research

Outcome Measures

The outcome measures or dependent variables for this study were teachers' technology proficiency and student achievement levels. Measurement of these variables was achieved through the use of the following six instruments or measures: (1) Louisiana Teacher Technology Proficiency Self-Assessment (Appendix A), (2) SCHOOLTech Facilitator Survey (Appendix B), (3) SCHOOLTech Facilitator Interview Protocol (Appendix C), (4) SCHOOLTech Grant Report (Appendix E), (5) School Technology Survey (Appendix F), and (6) School Performance Scores. Each of these instruments is described in the following section.

Louisiana Teacher Technology Proficiency Self-Assessment

Teacher technology proficiency refers to the degree or level of proficiency a teacher has achieved in the area of effectively and appropriately integrating technology into the curriculum in order to enhance teaching and learning. Data on this dependent variable were collected and measured using the Louisiana Teacher Technology Proficiency Self-Assessment (Appendix A) instrument (Louisiana Department of Education, 2006).

This quantitative instrument was created by a group of researchers from the Southwest Educational Development Laboratory (SEDL) for the Louisiana Center for Educational Technology, a division of the Louisiana Department of Education. The instrument is based upon the International Society for Technology in Education's (ISTE) National Educational Technology Standards for Teachers (NETS-T) and is designed to measure K-12 teachers' perceptions of their ability to meet the ISTE technology standards and performance indicators.

The six standards assessed by the instrument included: (1) technology operations and concepts, (2) planning and designing learning environments and experiences, (3) teaching, learning, and the curriculum, (4) assessment and evaluation, (5) productivity and professional practice, and (6) social ethical, legal, and human issues (ISTE, 2002). Each standard was defined

through a series of items or questions that required teachers to respond either to the frequency of use or difficulty they had in addressing the skill or tools outlined in the item. According to SEDL (2005), "Different sets of items were selected to define six different technology standards. Some items were used more than once to define a standard." (p. 3).

The instrument included fifty items that were assessed by two different 5-point Likert scales. Scale one consisted of the following five responses and was used to answer item numbers 1 through 45: Never, Seldom, Sometimes, Frequently or Almost. The last five items on the assessment were rated using scale two which included the responses of Not at All, With Great Difficulty (Always Need Help), With Some Difficulty (Usually Need Help), With Little Difficulty (Sometimes Need Help), and Easily (Rarely Need Help). Questions 46 through 50 on the assessment were bolded and italicized to remind respondents that responding to these items required use of scale two.

Developers of the proficiency assessment, Southwest Educational Development Laboratory (SEDL) (2005) outlined the scoring process as follows:

> The reliability and validity measures for the standards could support scoring and reporting at that level. Our recommendation then was the development of a criterion-referenced, raw score interpretation based on a minimum proficiency threshold established at the 70th percentile for each standard. Minimum proficiency at the standard level would be "met" by meeting or exceeding the raw score equivalent corresponding to the 70th percentile level. Proficiency for the entire self-assessment would be "met" only by meeting or exceeding the raw score equivalent required of every standard. This design ensures that all standards are given equal consideration when determining overall technology proficiency (pg. 6).

The two year validation process conducted by SEDL involved working with content and evaluation experts, focus groups, and the LCET staff to develop an initial instrument. A pilot of the draft instrument and exploratory and confirmatory factor analyses were conducted to select the assessment items included in the final instrument. After field testing the final instruments a second confirmatory factor analysis was conducted to establish validity and reliability. Finally, a third analysis was conducted to conduct a comparison of the reliability and validity of the initial and revised instruments. Scores from the six standards were found to be reliable and ranged from .89 to .93. Validity coefficients ranged from .78 to .96 (SEDL, 2005).

SCHOOLTech Facilitator Survey

The researcher developed self-reporting instrument, the SCHOOLTech Facilitator Survey (Appendix B) consisted of both open and closed ended type questions designed to gather information on each school-based facilitators' opinions and perceptions on the types and frequencies of technology professional development being implemented at each SCHOOLTech site, the background and experiences of each school-based facilitator, and what they believed were the greatest challenges and successes of their individual programs. The survey consisted of 28 questions organized into four major sections. These sections were (1) facilitator demographic information; (2) site information; (3) activities and professional development; and (4) program and progress effectiveness. Data gathered from this instrument informed the direction and foci of the five SCHOOLTech case study interviews and was used in the triangulation process.

Question 13 asked respondents to provide data on the frequency of implementation at their school site of 19 different types of professional development activities. The 19 professional development activities listed on the survey were sub-questions 13a through 13s under question 13. The survey frequency scale included daily, weekly, monthly, occasionally, and never. In order to analyze the facilitators' responses and determine the frequencies of each type of

professional development activity, the response scale was coded as follows: 1=Daily; 2=Weekly; 3=Monthly; 4=Occasionally; and 5=Never. Coded data were entered into SPSS and descriptive statistics were generated. Table 3.2 provides a description of each of the professional development activities addressed in the survey.

Table 3.2
Description of Technology Professional Development Activities on SCHOOLTech Facilitator Survey

Item	Activity	Description of Technology Professional Development Activity
13a	InClass Modeling	Modeling lessons and practices in teacher's classroom.
13b	1:1 Mentoring	Facilitator mentoring individual teacher based on needs.
13c	Group Mentoring	Facilitator mentoring a group of teachers based on needs.
13d	Teacher to Teacher	Tech savvy teacher mentoring a less tech savvy teacher.
13e	1:1 Collaborative Planning	Facilitator collaboratively planning with a teacher.
13f	Group Collab. Planning	Facilitator collaboratively planning with group of teachers.
13g	Extended Day	Professional development outside of regular school hours.
13h	Job-Embedded	Professional development during school day.
13i	TLTC	Professional development through regional training center.
13j	District Site	Professional development through district training center.
13k	Online Resources	Professional development focused on online resources.
13l	Making Connections	Use of online Making Connections tools and resources.
13m	Blackboard	Use of Blackboard to deliver professional development.
13n	Class Website	Professional development on building class website.
13o	School Website	Professional development on building school website.
13p	Electronic Portfolio	Professional development on building electronic portfolios.
13q	Comprehensive Curriculum	Professional development on technology and curricula.

(Table 3.2 continued)

13r	Tech Connected Lessons	Professional development on lesson plan building.
13s	Technical Support	Provide technical support to teachers

SCHOOLTech Facilitator Interview Protocol

The SCHOOLTech Facilitator Interview Protocol (Appendix C) consisted of eight closed and open ended questions. This instrument was utilized to assist the researcher in gaining a more comprehensive view of the types of professional development implemented at each SCHOOLTech site by exploring the personal opinions and perceptions of the five case study SCHOOLTech facilitators. Questions were developed based on facilitators' responses on the SCHOOLTech Facilitator Survey (Appendix B).

SCHOOLTech Grant Report

The SCHOOLTech Grant Report (Louisiana Department of Education, 2006) (Appendix E) consisted of 25 open and closed ended questions. The report addressed the following three sections and associated item numbers: (1) general grant information (#1-8); (2) SCHOOLTech program effectiveness (# 9-13); and (3) EETT goal reporting (# 14-25). This online, self-report was used to obtain an end-of-the-year status report on the grant and district grant coordinators' opinions and perceptions of the overall success of the grant, its impact on teacher technology proficiency and student achievement at participating school sites, and a performance update on progress made towards meeting the indicators outlined in the grant. District grant coordinators were also asked to identify what they perceived to be the biggest successes and challenges of the program. Data collected from this instrument were used in the triangulation process to verify the SCHOOLTech facilitators' perceptions of the program's impact on teacher technology proficiency and student achievement, successes and challenges of the program, and best practices.

School Technology Survey

A fourth instrument used to collect data on teacher technology proficiency, the professional development implemented at SCHOOLTech sites, and an overall snapshot of each school's technology program was the School Technology Survey (Louisiana Department of Education, 2006) (Appendix F). School technology coordinators completed the survey for the study's participating schools. This survey yielded data that were triangulated with other qualitative data collected. This survey was also developed by the LCET and presented data on the overall status of each school's technology program.

A total of 61 open and closed ended questions were included in the survey and address the following eight focus areas: (1) school demographics (no item #s); (2) instructional and technical support (items # 1-14); (3) student learning (items # 15-19; (4) educator technology proficiency and practice (items # 20-25); (5) school administrator technology proficiency and practice (items # 26-35); (6) classroom integration and effective practice (items # 36-40); (7) communication and community outreach (items # 41-49); and 8) planning and funding (items # 50-60). Validation data was not available on this instrument.

School Performance Scores

The second dependent variable in the study was student achievement. Student achievement was measured at the school level by analyzing the School Performance Scores (SPS) of each case study school in the sample over the three year period from May 2004 to May 2006 to document gains or losses in SPS. Results from May 2006 were analyzed and compared to the May 2004 scores to determine if the number of students scoring at the state required achievement levels had increased or declined after two years of participating in the SCHOOLTech program. School Performance Scores are public information and published

annually in each school's official School Report Card. This information is accessible via the Louisiana Department of Education's website.

Data Analysis

Quantitative Data Analysis

Quantitative data analysis involved the use of descriptive and inferential statistics to answer research questions dealing with teacher technology proficiency and student achievement. The researcher input results of the Louisiana Teacher Technology Proficiency Self-Assessment into the Using Statistical Package for the Social Sciences (SPSS) program to determine group means and standard deviations for both the control and experimental groups. An ANCOVA was conducted to compare teacher proficiency data for year zero to year two results in order to determine if there was a significant difference in teacher technology proficient between SCHOOLTech and Non SCHOOLTech schools after receiving professional development from a school-based facilitator for two years. Teacher proficiency data were also analyzed at each the primary, elementary, middle, and high school levels using an ANCOVA to determine if there was a significant difference in teacher proficiency at the SCHOOLTech and non SCHOOLTech schools by level.

Using SPSS, a *t*-test was conducted to determine if there was a significant difference in the number of teachers who scored proficient on each of the six standards between year zero and two of program participation. Results were presented in tables and descriptive narratives.

School Performance Score data were also analyzed using SPSS. An independent *t*-test was conducted to determine if there was a significant difference in the year zero (2004) and year two (2006) SPS between SCHOOLTech and Non SCHOOLTech schools.

The data were cleaned to ensure that atypical data was not entered due to input errors by the researcher or participants. Data cleaning was accomplished by running a descriptive analysis

using SPSS which allowed for the identification of atypical data. Descriptive tables and graphs depicting the technology proficiency levels of teachers from the 22 SCHOOLTech and 29 Non SCHOOLTech schools were constructed.

Qualitative Data Analysis

Qualitative data collected from the two SCHOOLTech self-reports (Appendices B and E), School Technology Survey (Appendix F) and SCHOOLTech Facilitator Interview Protocol (Appendix C) were analyzed using constant comparative analysis. This method of analysis allowed the researcher to review smaller units of data in detail and identify broad, emerging themes and patterns across the five case studies and from multiple data sources (Creswell, 2002). Creswell recommends the following steps when conducting constant comparative analysis.

- Review collected data in its entirety to obtain an overall picture or understanding
- Divide the data into segments of information and begin identifying themes
- Clearly label segments of information with meaningful codes
- Eliminate overlapping or redundant codes
- Use the most prominent codes that emerge to create themes
- Create narrative descriptions and visuals from the findings

Utilizing Creswell's (2002) five steps, the researcher identified common types and frequencies of professional development implemented at the five case study sites and constructed thick, rich narratives describing the findings along with detailed visual displays.

Validity and Credibility

A mixed model method design was utilized in the study requiring the researcher to address issues of credibility and validity for both the quantitative and qualitative methodologies employed. The issues of experimental validity, threats to internal validity, construct and external validity and trustworthiness of qualitative methods were addressed. Experimental statistical

validity was addressed by having a sample size of 22 for the experimental group and 29 for the control group. These group sizes exceeded the recommended sample size of 15. Standard procedures for data collection were utilized which also reduced threats to statistical validity.

Internal threats to validity, maturation and instrumentation, were addressed in the following ways. The balanced selection of schools at the same grade levels for both the control and experimental groups helped to control maturation threats. Instrumentation threats to internal validity were addressed by using step-by step procedures for administration of the pre and post surveys, which were the exact same instrument. Procedures were discussed in detail will all district level personnel responsible for administering the instruments at a compressed video meeting in order to ensure consistency of administration.

The quantitative data collection instrument, the Louisiana Teacher Technology Proficiency Self-Assessment (Appendix A) (Louisiana Department of Education, 2006) is a validated instrument used by the Louisiana Department of Education to determine the annual technology proficiency levels of teachers. Over a two year period, a mixed method approach was used by a research group external to the Louisiana Department of Education to confirm the validity and reliability of the instrument.

Trustworthiness had to be considered in order to address quality issues of the qualitative methods being proposed in this study. The four criteria of trustworthiness are credibility, transferability, dependability, and conformability. Credibility and dependability were addressed through triangulation of results of the two SCHOOLTech Reports (Appendices B and E), School Technology Survey (Appendix F) (Louisiana Department of Education, 2006) and case study interviews. Different district personnel completed these surveys allowing the researcher to gain multiple and comparable perspectives and sources of evidence on teacher technology proficiency and professional development practices at the SCHOOLTech sites. Thick, rich descriptions of

the types and frequencies of professional development implemented at all of the schools and the five SCHOOLTech case study sites, as well as, any models or best practices identified, allow for transferability or implementation of these practices in other districts across the state. The final criterion of trustworthiness, conformability, was addressed through making strong connections to the literature.

Chapter Summary

Chapter 3 described the research design and methodologies used in the study. Both quantitative and qualitative methods were utilized to explore answers to the research questions presented. Through administration of the validated, quantitative self-assessment instrument described, quantitative data were collected and then analyzed using appropriate statistical procedures. The self-reports, technology survey, and case study interviews yielded qualitative data that were analyzed using constant comparative analysis and ultimately triangulated to ensure trustworthiness.

CHAPTER 4
RESEARCH RESULTS

This study was conducted to determine if there was a significant difference in teacher technology proficiency between SCHOOLTech schools where teachers received technology professional development from a site based technology facilitator and non SCHOOLTech sites. This chapter presents both the quantitative and qualitative results of data analyses conducted for the study. Results of the study are presented in the following sections of this chapter: (1) descriptive statistics for survey sample, (2) descriptive and inferential statistics for survey instruments, (3) qualitative case studies, (4) case study summary, and (5) summary of results.

Descriptive Statistics for Survey Sample

The sample for this study was drawn from 51 schools located in 12 Louisiana school districts. All of the districts had a 21% or higher poverty level. Of these 51 schools, 22 made up the composition of the experimental group for this study and 29 were part of the control group.

The experimental group was selected from the group of SCHOOLTech schools located across the state of Louisiana. A total of 34 SCHOOLTech sites existed and completed the survey instruments included in this study. This represents 100% of the SCHOOLTech sites within the state. For the purposes of this study only those SCHOOLTech sites who administered the Louisiana Teacher Technology Proficiency Self-Assessment (Appendix A) to 50% or more of their faculty in years zero and one of the SCHOOLTech program were included in the study sample. This resulted in 22 or 64.7% of the SCHOOLTech sites participating in the study.

The remainder of the sample schools explored in this study, 29 schools, comprised the control group. When possible, the control group was selected from all other schools located in the same high poverty school districts as each SCHOOLTech school. However, as outlined in Table 4.1, it was necessary to identify schools outside of the home district of some of the

SCHOOLTech schools to select matching control group schools. All of the control group schools did come from districts that had schools participating in the SCHOOLTech program, but their sites may not have tested 50% or more of their faculty, thus were not part of the experimental group. The 29 control group schools were selected based on characteristics similar to the experimental group which include grade level configuration, school size and composition, free and reduced lunch status, School Performance Score, and came from districts that had other schools participating in the SCHOOLTech program. In contrast, the control group schools were not SCHOOLTech program participants and did not have a school-based technology facilitator.

Table 4.1
Descriptive Statistics for Participating Districts (*n*=12)

District	Percent Poverty Level	Number of SCHOOLTech Schools	Number of Non SCHOOLTech Schools[a]	Total Schools
District A	35.0	1	3	4
District B	24.0	1	3	4
District C	24.0	4	2	6
District D	37.0	2	1	3
District E	30.0	1	1	2
District F	24.0	2	2	4
District G	34.0	1	2	3
District H	25.0	2	2	4
District I	25.0	1	0	1
District J	26.0	5	9	14
District K	24.0	1	4	5
District L	25.0	1	0	1

[a] All other schools in the same SCHOOLTech district or SCHOOLTech districts with similar characteristics served as control group schools.

. Of the fifty-one schools participating in the study, 15.7% were primary schools with a pre-kindergarten to fourth grade student body, 43.1% were elementary schools with grade spans ranging from kindergarten to sixth grade, 15.7% were middle schools housing sixth through eighth graders, and 25.5% were high schools consisting of grades nine through twelve. All school sites had high free and reduced lunch rates; 75% for SCHOOLTech schools and 76% for non SCHOOLTech schools. The average poverty level of the SCHOOLTech sites was 27.2% while the non SCHOOLTech sites had an average poverty level of 27%. Student and teacher populations at each school site varied. The average student enrollment and teacher counts for the 22 SCHOOLTech sites were 230 and 16, respectively. At the 29 non SCHOOLTech sites, student enrollments averaged 270 while the average number of teachers per school was 19. The mean School Performance Score (SPS) for year one and two, respectively, for the SCHOOLTech schools was 77.1 and 80.8 while the SPS score for the non SCHOOLTech sites was 76.8 for year one and 79.8 for year two. For year two, the SCHOOLTech schools SPS was 81.2 and 80.4 for the non SCHOOLTech schools. A final characteristic that was reviewed for both groups was student access to computers. The SCHOOLTech schools average student to computer ratio was 2.53 to 1 while the non SCHOOLTech schools had an average ratio of 2.55 to 1. Descriptive statistics for the 51 participating school sites can be viewed in Table 4.2

Table 4.2
Descriptive Statistics for Demographic Characteristics of Total Sample Schools (*N*=51)

Characteristic	**SCHOOLTech**		**Non SCHOOLTech**		**Total**
	Frequency	**%**	**Frequency**	**%**	
School Type					
Primary (PK-4)	5	–	3	–	8
Elementary (K-6)	7	–	15	–	22
Middle (6-8)	4	–	4	–	8
High (9-12)	6	–	7	–	13

(Table 4.2 continued)

Total Schools (*N*=51)	22	–	29	–	51	
Average Free/Reduced Lunch	–	75.0	–	76.0	–	–
Average Poverty Level	–	27.2	–	27.0	–	–
Average Student Enrollment	230	–	270	–	–	–
Average Faculty Size	16	–	19	–	–	–
Year Zero Average SPS [a]	–	77.1	–	76.8	–	–
Year One Average SPS [a]	–	80.8	–	79.8	–	–
Year Two Average SPS [a]	–	81.2	–	80.4	–	–
Average Student/Computer Ratio	2.53:1	–	2.55:1	–	–	–

[a] SPS represents the mean state reported School Performance Score for each group.

Descriptive Statistics for Demographic Characteristics of SCHOOLTech Facilitators

Analysis of the demographic data submitted by the study's 22 SCHOOLTech facilitators for questions one through seven on the SCHOOLTech Facilitator Survey (Appendix B) is presented in Table 4.3. Ninety-five percent of the responding facilitators were female and five percent were male. Overall, the majority of SCHOOLTech facilitators, 72.8% had two to four years of experience as a SCHOOLTech facilitator. Prior to serving in this position, 16 of the 22 facilitators were classroom teachers. This represents 63.7% of the facilitators studied. From and educational standpoint, 50% of the SCHOOLTech facilitators held a Baccalaureate degree while the remaining 50% had earned additional educational endorsements or held a Master's or higher degree. All of the facilitators were full time staff members dedicating 100% of their time to the SCHOOLTech program. Fifty-five percent of the facilitators served two SCHOOLTech sites within their districts. The remaining 45% of the SCHOOLTech facilitators worked with only one SCHOOLTech school.

Table 4.3

Descriptive Statistics for Demographic Characteristics of SCHOOLTech Facilitators (*n*=22)

Characteristic	Frequency	Percentage of Total
Gender		
Male	1	0.05
Female	21	0.95
Years as SCHOOLTech Facilitator		
0-1	5	22.7
2-4	16	72.8
4-6	1	04.5
Position Prior to SCHOOLTech Facilitator		
Teacher	14	63.7
Educational Coordinator	5	22.7
Technical Support Staff	2	09.1
Other	1	04.5
Education/Degree Level		
Baccalaureate degree	11	50.0
Masters degree	4	18.2
Plus 30	2	09.1
Facilitator Endorsement [a]	5	22.7
Status as SCHOOLTech Facilitator		
Full Time Facilitator	22	100.0
Served 1 SCHOOLTech School	10	45.0
Served 2 SCHOOLTech Schools	12	55.0

[a] State level Educational Technology Facilitator endorsement added to teacher's certification

Descriptive and Inferential Statistics for Survey Instruments

Results of the Louisiana Teacher Technology Proficiency Self-Assessment (Appendix A) SCHOOLTech Facilitator Survey (Appendix B), and School Performance Scores were analyzed and descriptive statistics were computed. Depending on the measure, some or all of the outcomes are reported as frequencies, means, minimum and maximum percents, standard deviations, mean differences, and total or cumulative percentages. Outcomes of the data analyses are presented in the follow subsections: (1) Louisiana teacher technology proficiency self-assessment, (2) school tech facilitator survey, and (3) school performance scores.

Louisiana Teacher Technology Proficiency Self-Assessment

The online, quantitative Louisiana Teacher Technology Proficiency Self-Assessment (Appendix A) was used to collect data on teacher technology proficiency at the control and experimental group schools in order to determine if there was a significant difference in teacher proficiency between the two groups prior to participating in the SCHOOLTech program, and at the end of years one and two. Years zero and one data were already available and year two data was collected through this study. The instrument is based upon the International Society for Technology in Education's (ISTE) National Educational Technology Standards for Teachers (NETS-T) and is designed to measure K-12 teachers' perceptions of their ability to meet the ISTE technology standards and performance indicators. The instrument included 50 items assessed using a 5-point Likert scale. The six ISTE standards assessed by the instrument include technology operations and concepts, planning and designing learning environments and experiences, teaching, learning, and the curriculum, assessment and evaluation, productivity and professional practice, and social ethical, legal, and human issues (ISTE, 2002). Table 4.4 includes a summary of the assessment items aligned to each of the six standards.

Table 4.4
Summary of Louisiana Teacher Technology Proficiency Self-Assessment Items by Standard

Standards	Item Numbers [a]	Total Items
1 – Concepts	18, 33, 41, 46, 47, 48, 49, 50	8
2 – Planning	1, 13, 14, 16, 19, 32, 34, 35, 43, 45	10
3 – Teaching	3, 10, 13, 16, 17, 30, 36, 39, 44	9
4 – Assessment	5, 16, 21, 22, 31, 34, 37, 42	8
5 – Productivity	5, 6, 8, 11, 13, 23, 25, 27, 28, 35, 37, 38	12
6 – Ethical	2, 4, 7, 9, 12, 15, 20, 24, 26, 29, 32, 40	12

[a] Assessment items may be aligned to more than one standard.

As outlined in Table 4.4, standard one on the teacher proficiency self-assessment, technology operations and concepts was addressed by 8 of the 50 items included on the assessment. Ten items addressed standard two, planning and designing learning environments and experiences, while nine items were aligned to standard three, teaching, learning and the curriculum. Standard four, assessment and evaluation, was addressed in the assessment by eight items. Standards five, productivity and professional practice, and six, social ethical, legal, and human issues were both assessed through the alignment of 12 items each on the instrument.

Since the overall purpose of this study was to determine the types and frequencies of professional development implemented by site-based technology facilitators in SCHOOLTech schools that showed the highest increases in teacher technology proficiency from year zero, before implementing the SCHOOLTech program, to the end of year two, proficiency data was analyzed at the school level and not at the individual teacher level. The cumulative percent of teachers proficient on each standard and overall percent of teachers proficient at the school level in years zero and two were used for the purposes of this study.

Teacher proficiency on the instrument was determined by following the developer's scoring process. "Minimum proficiency at the standard level would be "met" by meeting or exceeding the raw score equivalent corresponding to the 70th percentile level." (SEDL, 2005) At the standard level, a teacher's answers were summed and then converted to a standard score. If the standard score was greater than or equal to the proficiency score then the respondent was proficient on the standard being assessed. In order for a teacher to be deemed technology proficient, a passing scored had to be obtained on all six standards.

Proficiency for the entire self-assessment would be "met" only by meeting or exceeding the raw score equivalent required of every standard." (SEDL, 2005) This design ensures that all standards are given equal consideration when determining overall technology proficiency.

The mean percent of teachers proficient on each standard along with the mean and cumulative mean differences from year zero to year two for the study sample can be viewed in Table 4.5.

Table 4.5
Descriptive Statistics by Standards for SCHOOLTech and non SCHOOLTech Schools (*N*=51)

	SCHOOLTech (*n*=21)				**Non SCHOOLTech (*n*=29)**				**Cumulative**
	Year Zero	**Year Two**	***M* Diff[a]**	***SD***	**Year Zero**	**Year Two**	***M* Diff[a]**	***SD***	***M* Diff[b]**
Standard 1	63.49	80.00	16.51	9.80	64.83	75.19	10.36	11.16	6.15
Standard 2	36.01	59.60	23.59	17.30	40.21	52.08	11.87	18.37	11.72
Standard 3	36.32	55.18	18.86	16.10	37.92	46.70	8 .78	18.58	10.08
Standard 4	28.69	49.95	21.26	15.10	31.07	42.01	10.94	18.54	10.32
Standard 5	22.04	46.74	24.70	17.40	23.36	39.15	15.79	18.92	8.91
Standard 6	35.44	57.09	21.65	15.50	34.53	47.40	12.87	16.71	8.78

[a] Mean difference score computed by subtracting the year zero school standard mean from year two school standard mean.
[b] Cumulative mean difference computed by subtracting non SCHOOLTech mean difference score from SCHOOLTech mean difference score.

A rank of the cumulative mean difference scores on Table 4.5 shows the largest difference in percent of teachers proficient on a single standard at the SCHOOLTech schools over that of the non SCHOOLTech schools was 11.72% on standard two, planning and designing learning environments and experiences. This was followed by a 10.32% mean difference on standard four, assessment, and evaluation. A 10.08% mean difference was noted on standard three, teaching, learning, and the curriculum. The trend continues with the mean differences of 8.91% on standard five, productivity and professional practice and 8.78% on standard six, social ethical, legal, and human issues. The final standard in the ranking is one, technology operations and concepts, with a mean difference score of 6.15%.

In order to determine if the increase in the percent of teachers proficient on each standard at the SCHOOLTech schools over that of the non SCHOOLTech schools was significant, an independent *t*-test was conducted. The assumption of equal group variance was tested and it was concluded that the groups tested had equal variance on each of the standards. Levene's Test for equality of variance resulted in the following significance levels for each standard (Standard 1 p=.46; Standard 2 p=.89; Standard 3 p=.47; Standard 4 p=.34; Standard 5 p=.47; and Standard 6 p=.67). Results of the *t*-test showed that there was a significant difference in teacher technology proficiency between SCHOOLTech and non SCHOOLTech schools on standards two (t=2.31; p=.03) and four (t=2.13; p=.04) at the .05 significance level. Although standards one (t=2.05; p=.05) and three (t=2.03; p=.05) were at the .05 significance level, since the p values were not less than .05, the difference could not be considered statistically significant. The difference in teacher technology proficiency on standards five (t=1.73; p=.09) and six (t=.92; p=.06) was found not to be significant.

Quantitative data from the Louisiana Teacher Technology Proficiency Self-Assessment (Appendix A) were analyzed and used to determine if their was a significant difference between

the teacher technology proficiency scores of SCHOOLTech and non SCHOOLTech sites. Table 4.6 summarizes the descriptive and inferential statistics for the overall teacher technology proficiency level at the SCHOOLTech and non SCHOOLTech schools.

Table 4.6
Descriptive and Inferential Statistics for Teacher Technology Proficiency of SCHOOLTech and non SCHOOLTech Schools (*N*=51)

	Teacher Proficiency								
	SCHOOLTech				**Non SCHOOLTECH**				
	Min %	**Max %**	***M***	***SD***	**Min %**	**Max %**	***M***	***SD***	***M* Diff[a]**
Year Zero	5.0	37.0	16.90	9.5	0.00	54.0	18.56	10.9	-1.66
Year Two	15.0	63.0	35.40	11.2	0.00	59.0	27.97	13.8	7.43
Total Schools (*N* =51)		*n* = 22					*n* = 29		

[a] Mean difference score computed by subtracting mean non SCHOOLTech proficiency score from mean SCHOOLTech proficiency score.

During initial data exploration, data were cleaned by removing any schools that did not fully complete the teacher technology proficiency self-assessment which led to missing scores on one or more of the six standards. This resulted in a total of 51 schools' self-assessments being analyzed. Twenty-one of the schools were SCHOOLTech sites while 29 were non SCHOOLTech sites.

Within SCHOOLTech schools in year zero, prior to implementation of the SCHOOLTech program, the minimum percent of teachers proficient was five percent and the maximum percent of teachers proficient was 37%. The overall mean number of teachers proficient in year zero for SCHOOLTech schools was 16.90 (*SD*=9.5). Following the implementation of the SCHOOLTech program the minimum percent of teachers proficient was 15% and the maximum number proficient was 63% with an overall mean teacher proficiency of 35.40 (*SD*=11.2). For the non SCHOOLTech schools in year zero, the minimum number of teachers scoring proficient was zero percent and the maximum number was 54%. The overall

year zero mean teacher proficiency for non SCHOOLTech sites was 18.56 (*SD*=10.9). At the end or year two for non SCHOOLTech schools, once again the minimum number of teachers proficient was zero percent with a slight increase to 59% for the maximum number of teachers proficient. The overall mean number of teachers proficient in the non SCHOOLTech schools at the end of year two was 27.97 (*SD*=13.8).

The mean teacher proficiency level for SCHOOLTech schools after two years of receiving professional development from a site-based technology facilitator was 35.40% as compared 16.90% before participation in the program. The difference between the SCHOOLTech and non SCHOOLTech schools overall mean number of teacher proficient in year two was 7.43% compared to -1.66 prior to participation in the program.

An ANCOVA was conducted to determine if there was a significant difference between SCHOOLTech and non SCHOOLTech teacher technology proficiency at the end of year two. Proficiency scores from year zero were used as a covariant controlling for any preexisting conditions. The independent variable was schools and the dependent variable was teacher technology proficiency at the end of year two of program participation. The assumption of equal group variance was tested and it was concluded that the groups tested had equal variance on the dependent variable (p=.28). Interaction effects were tested and it was determined that the assumption of homogeneity of regression was met (p=1.42). The data were also determined to be independent and normal. Therefore, the necessary assumptions for using ANCOVA were present. There was sufficient evidence to suggest that there was a significant difference at the .05 level in teacher technology proficiency between SCHOOLTech and non SCHOOLTech schools in year two when controlling for preexisting conditions (F=4.68; p=.036).

Analysis of the data reported on each standard showed the SCHOOLTech schools' mean proficiency levels on all six standards increased at a higher rate from year zero to year two of

participation in the SCHOOLTech program than those of the non SCHOOLTech schools. As a result, all of the cumulative mean difference scores were positive and supported the results of the ANCOVA which stated that there was a significant difference in the teacher technology proficiency levels between SCHOOLTech and non SCHOOLTech sites. The cumulative mean difference scores, which reflect the overall percent increase of teacher technology proficiency scores of SCHOOLTech schools over non SCHOOLTech schools for each standard were as follows: Standard 1 (M=6.15); Standard 2 (M=11.72); Standard 3 (M=10.08), Standard 4 (M=10.32); Standard 5 (M=8.91); and Standard 6 (M=8.78).

Teacher technology proficiency results were also analyzed by school level. For each level, an ANCOVA was conducted and descriptive statistics generated to determine if there was a significant difference between the teacher technology proficiency levels of SCHOOLTech and non SCHOOLTech schools at the primary, elementary, middle, and high school levels. At the primary level, the mean percent of technology proficient teachers at the SCHOOLTech schools increased a total of 22.2% from 9.80% to 32%, from year zero to the end of year two. At the end of year two, the primary SCHOOLTech schools mean percent of teachers proficient increased by 1.33% over that of the non SCHOOLTech schools. However, statistical analysis of the results at the .05 significance level did not yield a significant difference in teacher technology proficiency between the control and experimental groups at the primary level (F=.162; p=.704).

Likewise at the elementary level, the mean percent of teachers proficient also increased from year zero to year two. At the SCHOOLTech schools, a total gain of 18% was achieved as the percent of proficient teachers increased from 16.57% in year zero to 34.57% at the end of year two. However, a significant difference between the elementary SCHOOLTech and non SCHOOLTech schools' teacher technology proficiency levels was not recognized after two years of receiving professional development from a SCHOOLTech facilitator. (F=.910; p=.352).

At the middle school level, the mean number of teachers proficient at the SCHOOLTech schools increased from 20.75% to 45.75% at the end of year two. This resulted in a 25% increase in the mean number of teachers proficient. The middle SCHOOLTech schools showed a mean increase of 28.50% over the non SCHOOLTech schools by the end of year two. There was enough evidence to suggest a significant difference in the teacher technology proficiency levels between the control and experimental groups at the middle school level (F=33.55; p=.002).

At the high school level, the mean percent of teachers proficient by the end of year two increased by a total of 14.67%, from 19.83% to 34.50%. The SCHOOLTech high schools' teacher proficiency scores were also higher than the non SCHOOLTech schools at the end of year two. An overall 3.50% gain in the mean percent of technology proficient teachers was noted at the end of year two. However, there was not enough evidence to suggest a significant difference in teacher proficiency levels between the SCHOOLTech and non SCHOOLTech high schools after two years of receiving professional development from a school-based SCHOOLTech facilitator (F=1.35; p=.272).

Table 4.7
Descriptive and Inferential Statistics for Teacher Technology Proficiency of SCHOOLTech and non SCHOOLTech Schools by Levels (N=51)

	Teacher Proficiency								
	SCHOOLTech				Non SCHOOLTECH				
	Min %	Max %	*M*	*SD*	Min %	Max %	*M*	*SD*	*M* Diff[a]
Primary									
Year Zero	5.0	20.0	9.80	6.3	12.0	13.0	12.67	0.58	-2.87
Year Two	15.0	46.0	32.00	11.6	25.0	38.0	30.67	6.66	1.33
Elementary									
Year Zero	5.0	37.0	16.57	11.5	0.0	54.0	19.20	13.4	-2.63
Year Two	26.0	54.0	34.57	10.4	0.0	59.0	29.00	18.0	5.57

(Table 4.7 continued)

Middle									
Year Zero	6.0	29.0	20.75	10.1	15.0	35.0	25.25	9.3	-4.50
Year Two	37.0	63.0	45.75	11.9	13.0	20.0	17.25	3.0	28.50
High									
Year Zero	8.0	29.0	19.83	7.9	8.0	25.0	16.00	6.3	3.83
Year Two	23.0	42.0	34.50	6.4	25.0	38.0	31.00	4.9	3.50
Total Schools (N =51)			n = 22				n = 29		

[a] Mean difference score computed by subtracting mean non SCHOOLTech proficiency score from mean SCHOOLTech proficiency score.

SCHOOLTech Facilitator Survey

The SCHOOLTech Facilitator Survey (Appendix C) allowed for the collection of general demographic information on each of the SCHOOLTech facilitators, the types and frequencies of professional development they implemented and their opinions and perceptions on what were the greatest challenges and successes of the program. The survey consisted of 28 items which included both open and closed ended type questions organized into four major sections. The sections were facilitator demographic information, questions 1 through 7, site information, questions 8 and 9, activities and professional development, questions 13a through 13s and 14 through 23, and program and progress effectiveness, questions 24 through 28. A summary of the data analyses for questions 1 through 9 were presented in the Descriptive Statistics for Demographic Characteristics of SCHOOLTech Facilitators section of this chapter.

Figure 4.1 graphically illustrates the mean frequency of implementation of the 19 professional development activities at all 22 SCHOOLTech schools. The mean of each type of frequency was computed by dividing the sum of each frequency percent (daily, weekly, occasionally, never, and weekly) across all activities by the total number of activities, 19.

Weekly and monthly implementation of all19 professional development activities addressed were dominant methods of contact with teachers at SCHOOLTech sites as noted by a mean frequency of 25.36% each. Occasional offerings of all types of professional development ranked second in frequency at 23.92% followed by a daily implementation rate of 15.79%. The frequency at which the professional development activities listed were rated as never implemented by SCHOOLTech facilitators was 9.57%.

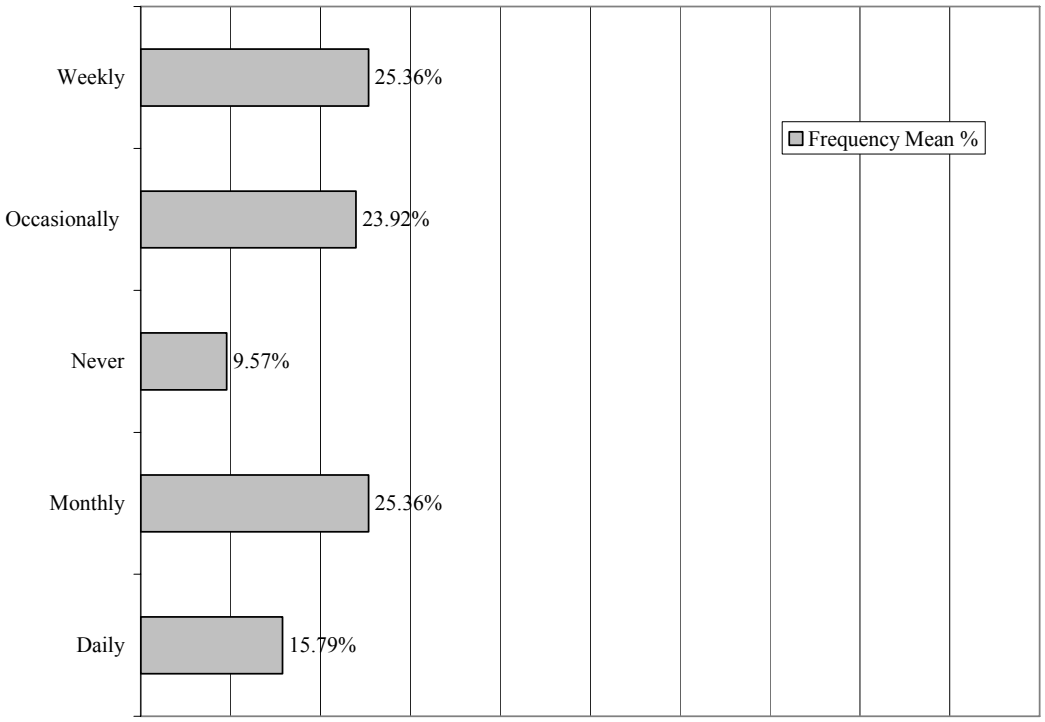

Figure 4.1 Mean Frequency of Implementation of Professional Development Activities at SCHOOLTech Schools (n = 22)

General patterns can be noted in the results. Thirteen of the 19 professional development activities addressed in the survey were implemented daily by SCHOOLTech facilitators. This represents 68% of the activities. Activities that were not implemented daily involved large groups and offsite training as well as the use of Blackboard. Eighteen or 95% were implemented both monthly and occasionally. With the exception of technical support, which was reported as implemented daily, the remaining 18 activities were implemented monthly and occasionally.

Twelve activities received one or more never ratings by different facilitators which represents 63% of the professional development activities. Offsite trainings, use of any online resources or tools such as Blackboard, training on website development, and electronic portfolios were reported as never implemented. With the exception of offsite trainings at the TLTC and district sites, seventeen or 89% of the activities were implemented weekly. A comprehensive list of the frequency and frequency percent of implementation of the 19 professional development activities at the 22 SCHOOLTech sites is outlined in Table 4.8

Table 4.8
Types and Frequencies of Professional Development Implemented at SCHOOLTech Schools

Item	Type	Frequency [a]									
		Daily		Monthly		Never		Occasionally		Weekly	
		f [b]	% [c]	*f*	%	*f*	%	*f*	%	*f*	%
13a	InClass Modeling	5	22.73	7	31.81	0	0.00	1	4.55	9	40.91
13b	1:1 Mentoring	8	36.36	2	9.09	0	0.00	1	4.55	11	50.00
13c	Group Mentoring	0	0.00	14	63.64	0	0.00	2	9.09	6	27.27
13d	Teacher to Teacher	6	27.27	5	22.73	0	0.00	3	13.64	8	36.36
13e	1:1 Collab. Plan	5	22.73	9	40.91	1	4.55	1	4.55	6	27.26
13f	Group Planning	4	18.18	9	40.91	0	0.00	2	9.09	7	31.82
13g	Extended Day	0	0.00	8	36.36	1	4.55	9	40.91	4	18.18
13h	Job-Embedded	1	4.55	11	50.00	2	9.09	5	22.73	3	13.63
13i	TLTC	0	0.00	8	36.36	7	31.82	7	31.82	0	0.00
13j	District Site	0	0.00	4	18.18	8	36.37	10	45.45	0	0.00
13k	Online Resources	4	18.18	3	13.64	2	9.09	6	27.27	7	31.82
13l	Making Connections	0	0.00	1	4.55	1	4.55	14	63.63	6	27.27
13m	Blackboard	0	0.00	1	4.55	6	27.27	11	50.00	4	18.18
13n	Class Website	4	18.18	6	27.27	1	4.55	9	40.91	2	9.09

(Table 4.8 continued)

13o	School Website	1	4.55	6	27.27	2	9.09	8	36.36	5	22.73
13p	Electronic Portfolio	1	4.55	1	4.55	8	36.36	7	31.81	5	22.73
13q	Comp. Curriculum	4	18.18	4	18.18	1	4.55	2	9.09	11	50.00
13r	Tech Conn. Lessons	2	9.09	7	31.82	0	0.00	2	9.09	11	50.00
13s	Technical Support	21	95.45	0	0.00	0	0.00	0	0.00	1	4.55
Total Frequency		66		106		40		100		106	
Total Activities		13		18		12		18		17	

[a] The cumulative frequency of each row 13a through 13s is 100% which represents the sum of the daily, monthly, never, occasionally, and weekly percents for each item.
[b] Frequency count represents the number of SCHOOLTech sites out of 22 implementing each activity.
[c] Frequency percent was computed by dividing the frequency count by 22, the number of SCHOOLTech sites.

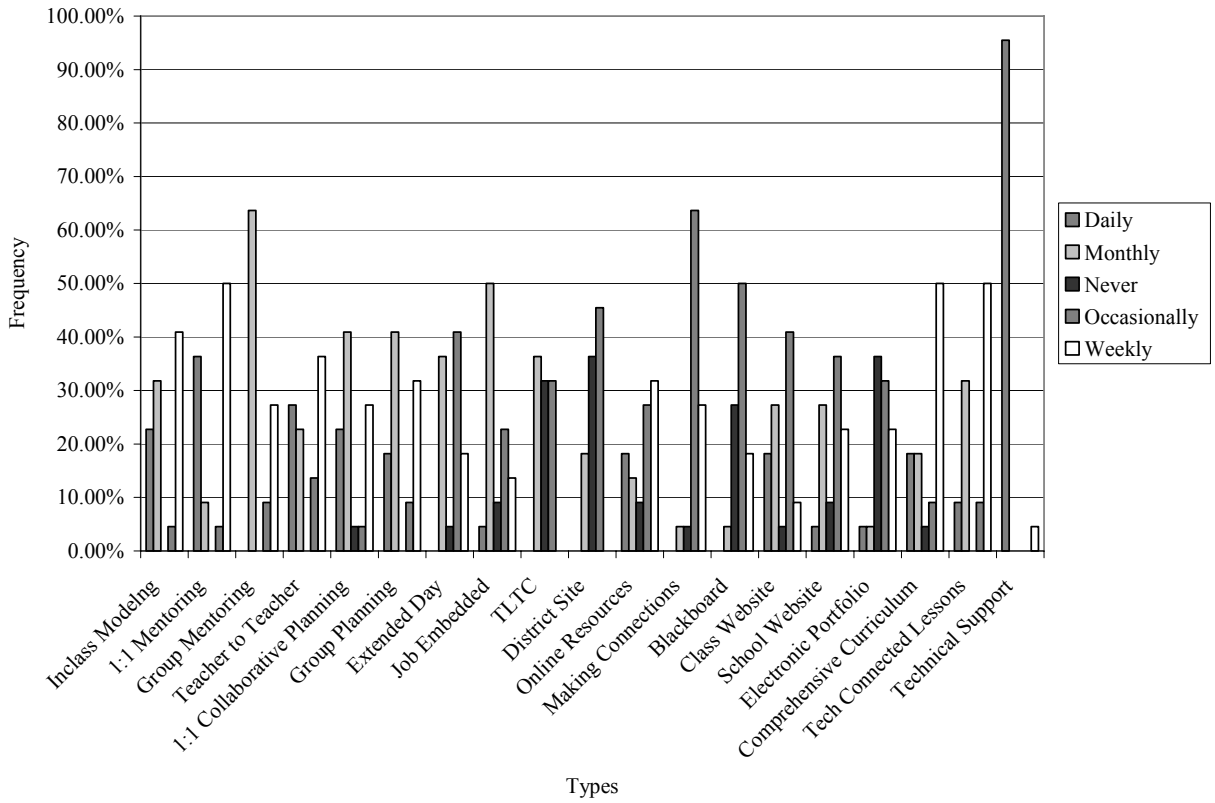

Figure 4.2 Types and Frequencies of Professional Development Implemented at SCHOOLTech Schools

Figure 4.2 provides a graphical representation of the facilitators' implementation of all 19 professional development activities by type and frequency. Daily, monthly, never, occasional, and weekly implementations of activities are represented in a self-explanatory bar graph format.

An analysis of the implementation of the 19 professional development activities at the primary, elementary, middle, and high school levels was also conducted on the SCHOOLTech facilitators' survey responses. Findings showed that middle school facilitators implemented the professional development activities at a higher mean daily frequency, 28.95%. Primary, elementary, and high school facilitators' mean daily implementation of all 19 activities was very similar, 13.68%, 12.78% and 11.40%, respectively. Monthly implementation was a dominant method of interaction with teachers at both the middle, 39.47%, and primary, 30.53% schools. Elementary SCHOOLTech facilitators' mean monthly implementation was 23.31% followed by high schools at 16.67%.

The mean frequencies at which facilitators reported never implementing the 19 professional development activities were 12.63% for primary schools, 10.53% for both middle and high schools, and 6.77% for elementary SCHOOLTech schools. Mean occasional implementation of the activities received the highest rating, 31.58%, from the high school facilitators followed by 21.05% at the primary schools. Elementary SCHOOLTech facilitators reported a 19.55% mean occasional implementation of the professional development activities while the middle schools had a 15.79% mean frequency of implementation. Finally, the mean weekly frequency of implementation of all 19 professional development activities was 37.59% for elementary sites, 28.95% at the high schools, 22.11% for primary schools, and 5.26% at the middle schools. Figure 4.3 graphically illustrates the mean frequency of implementation of all 19 professional development activities by the primary, elementary, middle, and high school levels.

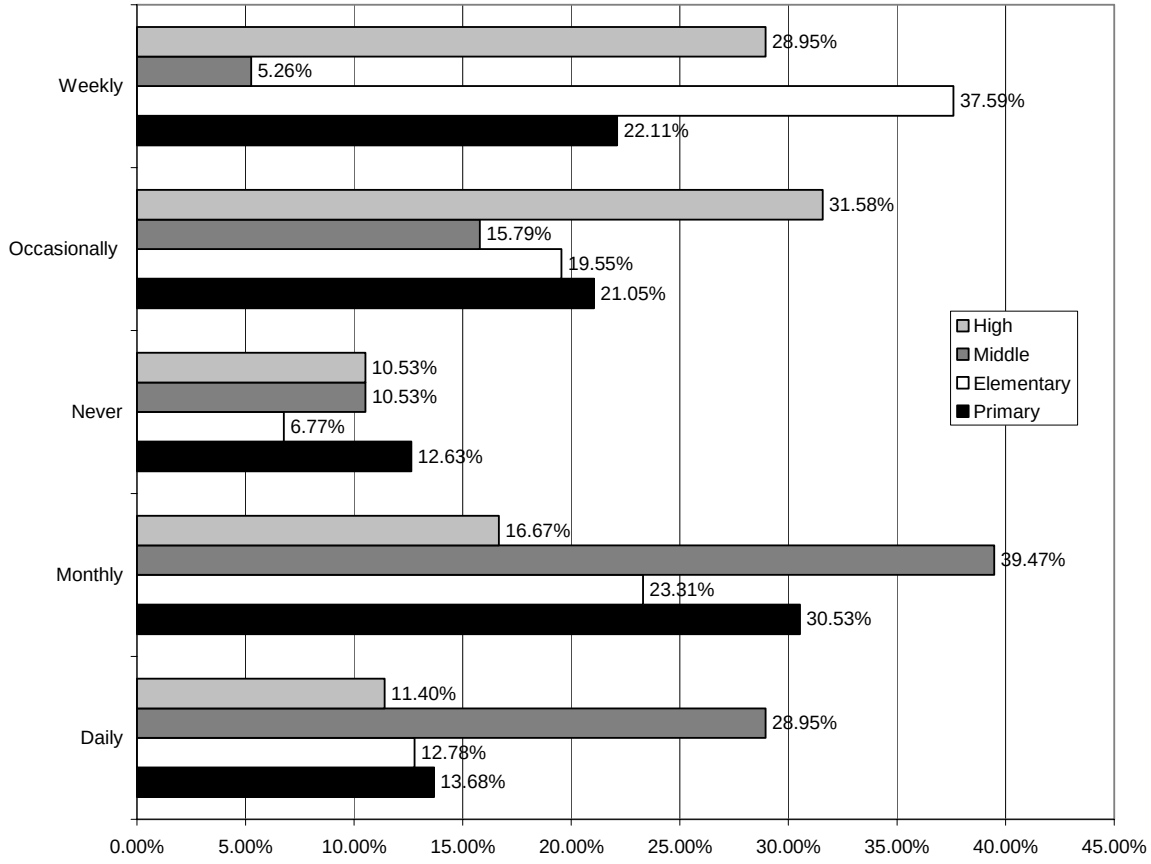

Figure 4.3 Mean Frequency of Implementation of Professional Development Activities at SCHOOLTech Schools by School Levels

Figure 4.4 graphically illustrates the mean frequency of implementation of all 19 professional development activities at the 5 case study SCHOOLTech schools. Overall, the facilitators reported implementation of all19 activities was occasional with a mean frequency of 31.58%. Monthly implementation of the activities had a mean frequency of 28.42% and never, 15.79%. The mean frequency at which activities were implemented weekly was 14.74%. Daily implementation of the 19 professional development activities had a mean frequency of 9.47%.

Daily implementation covered 5 or 26% of the professional development activities. InClass modeling, one to one mentoring, teacher to teacher mentoring, one to one collaborative planning, and technical support were reported as occurring daily at the case study sites. Fourteen

of the 19 activities were implemented monthly. This represents 74% of the activities addressed in the survey. Except for offsite trainings, use of Blackboard, electronic portfolios, and website development all others were reported as implemented on a monthly basis. Activities that received a never rating made up 53% of the responses. These included extended day, job embedded, offsite trainings, Blackboard, website development, and electronic portfolios. Occasional offerings at the five case study sites addressed 15 or 79% of the professional development activities. The four activities that were not reported as implemented occasionally included group mentoring, collaborative planning, offsite trainings, and electronic portfolios. Weekly implementation was carried out on 10 or 52% of the activities. Those not addressed weekly included extended day, off site trainings, use of Making Connections and Blackboard, website development, electronic portfolios, and technical support.

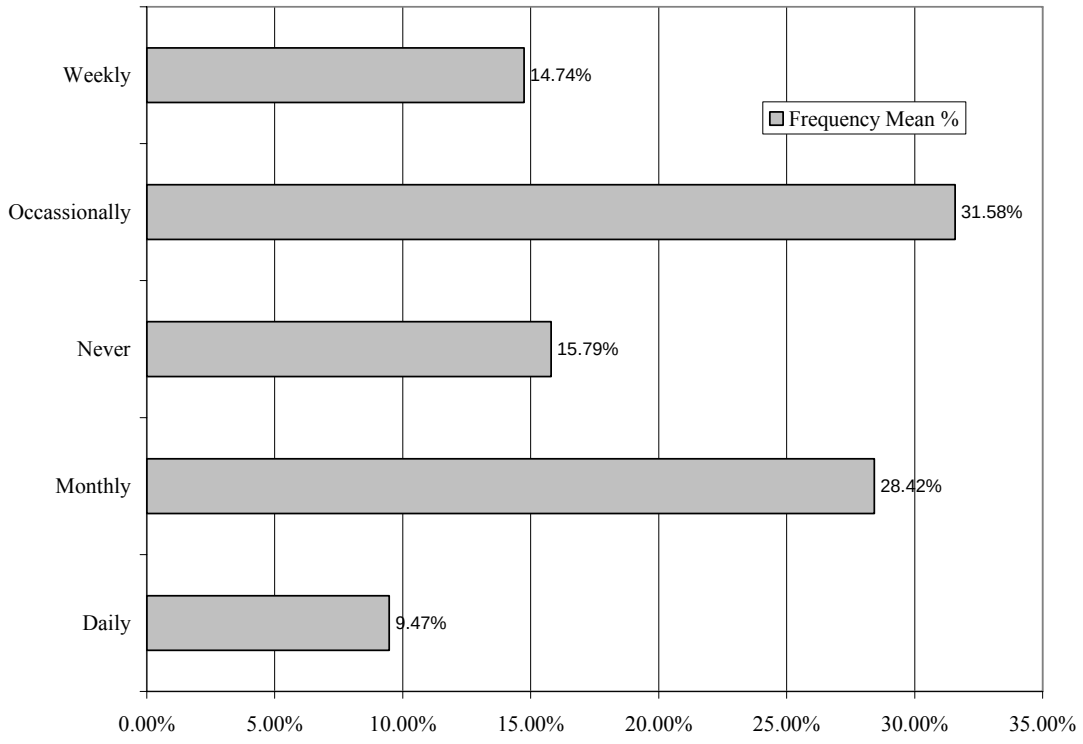

Figure 4.4 Mean Frequency of Implementation of Professional Development Activities at SCHOOLTech Case Study Schools (*n*=5)

A comparison of the most frequently implemented professional development activity per frequency (daily, monthly, never, occasional, weekly) at all 22 SCHOOLTech sites versus that of the case study sites revealed both differences and similarities. Both groups' facilitators reported that technical support was part of daily interaction with the teachers. Likewise, facilitators from both groups identified group mentoring as the most frequent monthly professional development implemented. In contrast, offsite professional development at district labs was never implemented at the case study sites while electronic portfolios were given a never rating for the entire SCHOOLTech group. The groups differed on the occasional professional development implementation as well. The 22 SCHOOLTech schools reported that use of Making Connections was occasional, but the case study sites rated Blackboard as an occasional activity. Both groups agreed that assisting teachers with technology connected lesson planning occurred weekly.

School Performance Scores

Independent *t*-tests were conducted to determine if there was a significant difference in the School Performance Scores between SCHOOLTech and non SCHOOLTech schools at the end of years one and two. Annual scores showed that while both groups increased their SPS at the end of years one and two, the SCHOOLTech schools out performed the non SCHOOLTech schools in both years. The mean difference between the SCHOOLTech and non SCHOOLTech SPS scores at the end of year zero was .35. At the end of year one, this increased to a mean difference of 1.03. By the end of year two, the mean difference between the two groups' SPS was somewhat less at .73, but still showing that the SCHOOLTech group's student achievement levels were higher than that of the non SCHOOLTech group. However, results of the *t*-test revealed there was not sufficient evidence to suggest a significant difference at the .05 level in student achievement between SCHOOLTech and non SCHOOLTech schools at the end of year two as compared to year zero (p=.863). It should be noted that in year two, the state made

adjustments to its accountability system which created the need to provide schools with a Transition and Growth School Performance Score for the 2005-2006 school year. For purposes of this study, each schools' year two Growth SPS was utilized. Table 4.9 summarizes the descriptive statistics for both groups' School Performance Scores.

Table 4.9
Descriptive Statistics for School Performance Scores of SCHOOLTech and non SCHOOLTech Schools (*N*=51)

	School Performance Scores				
	SCHOOLTech		**Non SCHOOLTECH**		
	M	***SD***	***M***	***SD***	***M* Diff**[a]
Year Zero	77.13	14.11	76.78	14.45	.35
Year One	80.83	14.44	79.80	13.89	1.03
Year Two[b]	81.17	13.98	80.44	16.25	.73
Total Schools (*N*=51)	*n* = 22		*n* = 29		

[a] Mean difference score computed by subtracting mean non SCHOOLTech SPS score from mean SCHOOLTech SPS score for each year.
[b] Each schools' Growth SPS, not Transition SPS, was utilized for year two.

Qualitative Case Studies

Five case studies were conducted to further explore the types and frequencies of professional development implemented at SCHOOLTech schools with the largest increases in the percent of technology proficient teachers after one year of participating in the program. A summary of the descriptive statistics for school type and teacher technology proficiency at the case study sites for years zero, one, and two of participation in the SCHOOLTech program is presented in Table 4.10. All schools showed an increase in teacher technology proficiency after years one and two of participating in the program. In year zero prior to receiving professional development from their site-based technology facilitators, the mean percent of teachers proficient was 20.01%. After year one, the percent of teachers proficient increased to 35.21%. This reflects a change of 15.20%. At the end of year two, the mean percent of teachers proficient at the five

case study sites was 37.64%. From year zero to year two, the percent of teachers proficient increased by 17.63%.

Table 4.10
Descriptive Statistics for Teacher Technology Proficiency of SCHOOLTech Case Study Schools by School Level (*N*=5)

		Teacher Proficiency			
	Type	**Year 0** ***M*** **%**	**Year 1** ***M*** **%**	**Year 2** ***M*** **%**	**Y2-Y0 Total % Diff** [a]
School 1	Middle	24.49	41.67	38.90	14.41
School 2	Elementary	19.57	33.33	32.70	13.13
School 3	High	7.69	19.35	36.40	28.71
School 4	Middle	24.14	37.04	43.80	19.66
School 5	High	24.14	44.68	36.40	12.26
Mean % Increase		20.01	35.21	37.64	17.63

Total Schools (*N* =5)

[a] Total difference score computed by subtracting mean year zero SCHOOLTech proficiency score from year two score.

General demographic information on each case study schools' students, teachers, proficiency levels, technology infrastructure, and site-based facilitators were analyzed and are presented by case. Data from questions one through seven on the SCHOOLTech Facilitator Survey (Appendix B), the SCHOOLTech Grant Report (Appendix E) and questions from several sections of the School Technology Survey (Appendix F) were analyzed and used to create descriptive statistics and rich narratives on each case study site. The following section numbers and names of the School Technology Survey (Appendix F) were utilized in the descriptions: section numbers 2) instructional and technical support; 3) student learning; 4) educator technology proficiency and practice; 5) school administrator technology proficiency and practice; and 6) classroom integration and effective practice. Unless information is specifically

labeled as year one, the description of each school's educational technology characteristics was generated from data collected at the end of year two.

Based on responses to the SCHOOLTech Facilitator Interview Protocol (Appendix C), a summary of each school's site-based facilitator's interview is also included at the end of each narrative. The individual practices, perceptions, and opinions of each facilitator are presented here to provide a comprehensive view of each case study school. Since case study Schools 1 and 2 had the same facilitator, a summary of the interview is presented after School 2's narrative. A comprehensive summary and of all case studies is addressed in the Case Study Summary section.

School 1 Case Study

School 1 was a middle school located in an historical district of southeast Louisiana. Serving 492 students and a faculty of 39 teachers, School 1 had a 24% poverty level. School 1 was one of nine schools located in its district and had a 90.24% free and reduced lunch status. Gender, grade placement, and race demographics of School 1 are outlined in Table 4.11.

Table 4.11
Descriptive Statistics for Demographics of School 1

Demographic		Percent
Gender		
	Female	51.02
	Male	48.98
Grade Placement		
	Fourth	2.43
	Fifth	23.58
	Sixth	23.58
	Seventh	27.85

(Table 4.11 Continued)

Eighth	22.56
Race	
Asian	.20
Black	85.98
Hispanic	.61
White	13.21

School 1 School Performance Score

Academically, this school had a School Performance Score of 63.6 in year zero prior to participation in the SCHOOLTech program, 71.2 at the end of year one, and 80.1 after two years of participating in the SCHOOLTech program. Exceeding its year one growth target of 5.1 points with a 7.6 gain, it was eligible for state accountability award funds. Its growth label changed from Minimal Academic Growth in year zero to Exemplary Academic Growth in year one. Therefore, School 1 was able to move out of Academic Assistance at the end of year one. For year two, School 1 was again successful, exceeded its growth target of 4.6, and increased its SPS by 5.3 points to 80.1. It kept its growth label of Exemplary Academic Growth and again received an accountability reward.

School 1 Infrastructure and Technical Support

On the School Technology Survey (Appendix F) School 1 rated its infrastructure and technical support as advanced tech in year zero, prior to the SCHOOLTech program, and in year two. At the end of year two, a wireless network was available within the school district and utilized by this school. The school had 2.4 students to every one computer ratio. Students and teachers in School 1 had access to a total of 207 computers of which 128 were internet ready. Sixty-two of the internet accessible computers were located in classrooms while the remainder

was in one of the four stationary or mobile lab settings. Printers, computer projectors, digital cameras, scanners, Smart Boards, large TV monitors, and DVD players were also utilized in teaching and learning processes.

School 1 Student Use of Technology

School 1 reported that students were at the developing tech level at the end of both years zero and two. In both years, the Louisiana K-12 Educational Technology Standards were addressed across the curriculum and although students were not participating in structured online courses, students used technology to problem solve, conduct online research, create multimedia projects, and as productivity tools.

School 1 Educator Technology Proficiency and Practice

On teachers' instructional and professional growth practices, School 1 reported that release time for teachers to participate in technology professional development, plan lessons collaboratively, and observe each other were strategies implemented to build teacher technology proficiency. In addition, teachers were also given access to exemplary technology lessons. School 1 reported that most teachers used technology to provide students with rich learning experiences and collaborated with other educators online. Half of the teachers used technology for student multimedia projects and electronic portfolios, to personally participate in online courses, and to enhance their own productivity in managing routine tasks and communicating with parents. It was also reported that School 1's teachers did participate in professional development opportunities offered by the state, regional training centers, district, and school. The highest participation rates were, eighty-two percent completed Louisiana INTech K-6 and 28% experienced the Making Connections training.

Overall, teachers were rated as advanced tech in year zero and year two. In year zero, 24.49% of the teachers were deemed technology proficient after completing the self-assessment

instrument. After two years of participating in the SCHOOLTech program, a total of 38.90% of the teachers were technology proficient. Overall, the number of proficient teachers on the faculty increased by 14.41%.

School 1 Classroom Integration and Effective Practices

A review of the responses on the classroom integration and effective practices section revealed that students used technology in writing daily, weekly in science, and at least monthly in reading, mathematics, and social studies. In the areas of using technology to promote inclusion of special needs students, provide guidance to teachers to ensure the use of technology across all grades and content areas, and the development of policies to ensure all students have access to technology resources to support learning, the school reported that considerable progress had been made in these areas. An overall rating of advanced tech was reported in years zero and two on this section of the survey.

School 1 Summary

In summary, in years zero and two, School 1 was rated as advanced tech on infrastructure and technical support, educator technology proficiency and practice, and classroom integration and effective practice. In contrast, the students were rated as developing tech both years. School 1 also made marked gains in its achievement scores from year zero prior to participation in the SCHOOLTech program to the end of year two. School 1's SPS increased in both years one and two and its growth label went from Minimal Academic Growth to Exemplary Academic Growth.

School 2 Case Study

Seven hundred twenty-three students and 60 teachers were served by School 2. An elementary school, School 2 had a 91.29% free and reduced lunch status and resided in the same historical district as School 1. The district had an overall poverty level of 24%. Demographics of School 2 are outlined in Table 4.12.

Table 4.12
Descriptive Statistics for Demographics of School 2

Demographic		Percent
Gender		
	Female	46.75
	Male	53.25%
Grade Placement		
	PreK	2.90
	Kindergarten	22.82
	First	21.16
	Second	17.98
	Third	18.40
	Fourth	16.74
Race		
	American Indian	.14
	Asian	.41
	Black	89.35
	Hispanic	.83
	White	9.27

School 2 School Performance Score

School 2 was labeled as Recognized Academic Growth at the end of both years one and two of the SCHOOLTech program. Meeting and exceeding its growth target of 5.4 points by making a 7.9 point increase at the end of year one, this school went from being in Academic Assistance and having a growth label of Minimal Academic Growth to being eligible for an

accountability reward. Its SPS of 61.2 in year zero increased to 69.1 at the end of year one. School 2's student achievement results for year two also showed positive gains. At the end of year two, this school surpassed its growth target of 5.9 points and grew 7.6 points making it again eligible for an accountability reward. School 2's SPS was again 69.1 at the end of year two. This is due to changes the state made in its accountability system. However, School 2 was still considered to have made positive gains in student achievement, had recognized growth, and was not labeled as a school in Academic Assistance.

School 2 Infrastructure and Technical Support

With an infrastructure and technical support that was rated as developing tech in years zero and two, School 2 was in a district with a wireless network and had made a total of 186 computers available to students. Student to computer ratio at this school was 3.9 students to every computer. Of these computers, 159 were able to access the internet including 80 that were located in classrooms. School 2 did report having three computer labs and approximately 25 classroom computers that were not connected to the internet. Additional technologies that were utilized at the school included computer projectors, printers, scanners, digital cameras, Smart Boards, and large TV monitors.

School 2 Student Use of Technology

Students at this school were at the developing tech level for year zero and year two. The Louisiana K-12 Educational Technology Standards were addressed in all subject areas. Technology was used by students as a productivity tool, to create multimedia projects, and to collect data and enhance learning. It was reported that occasionally, students would use technology to conduct online research and engage in problem solving.

School 2 Educator Technology Proficiency and Practice

Release time to plan collaboratively, observe other teachers, attend technology trainings, and access to technology connected lessons were strategies used by this school to positively impact teacher technology proficiency. School 2 reported that all of its teachers used technology to enhance their own classroom management. Most teachers utilized technology to participate in online courses and communicate with other educators. Half of the teachers had students use technology to create multimedia projects and maintain electronic portfolios. Teachers at School 2 participated in the state's INTech training. However, local offerings of INTech, Making Connections, and Online Database trainings had higher participation rates. Basic technology and email skills training were also offered locally. Teachers at School 2 received a developing tech rating for years one and two. Before implementing the SCHOOLTech program, this school reported that 19.57 percent of the teachers were technology proficient. At the end of year two, this percent increased by 13.13% to a total of 32.70% teachers proficient.

School 2 Classroom Integration and Effective Practices

In both years zero and two, a rating of developing tech was also given on the classroom integration and effective practices section for School 2. Students used technology daily in reading and writing. Weekly use of technology was noted in mathematics, science, and social studies. It was noted that some progress had been made in using technology to mainstream special needs students and establishing policies to provide all students access to technology. Efforts to ensure that the school uses technology across all grades and content areas were reported as just beginning.

School 2 Summary

To summarize School 2's educational technology characteristics, it was consistently rated as developing tech for years zero and two in the areas of infrastructure and technical support and

educator technology proficiency and practice. A rating of developing tech was also given for classroom integration and effective practice and students for both years. School 2 also made marked gains in its achievement scores from year zero prior to participation in the SCHOOLTech program to the end of year two. In year zero, School 2 was in Academic Assistance. By the end of year two, this school was out of Academic Assistance and had a growth label of Recognized Academic Growth.

Facilitator Interview School 1 and School 2

The same SCHOOLTech facilitator worked with case study Schools 1 and 2. This individual served as site-based facilitator during both years of the program and had a total of two years experience as a facilitator. Prior to her position as facilitator, she was a classroom teacher and had earned a Bachelor's degree in education. She was working on, but had not completed the requirements to earn, the Educational Technology Facilitator endorsement at the time of this study.

During the interview, it was evident the facilitator at Schools 1 and 2 took great pride in staying abreast of effective educational technology practices so she could bring these skills and techniques back to the teachers at her SCHOOLTech sites. She participated in several of the state's technology professional development face to face and online trainings, as well as, local offerings. Concerning her own professional development, she stated,

> I made sure I registered and attended those trainings to further my knowledge and bring it back to my teachers. Oh, I did, I've done just about everything- INTech 2 Science, INTech 2 Social Studies, regular INTech, Scholastic Keys, once again like I said, Proficiency Express, I've done Gale Group, Worldbook Online, Word in the classroom, I've done just about everything.

Regarding the time at which professional development was implemented at Schools 1 and 2 the facilitator replied, "Usually planning periods and also sometimes before and after school as well." When asked to describe the most effective type of professional development implemented

at both of her SCHOOLTech sites, she replied, “Basically, I’ll be honest, I’ve done a whole lot more one on one things. A lot of my teachers have different needs.” The interviewee explained further by stating the following about teachers’ needs, “Some are very proficient with technology so they need help with different things and some have real basic skills”.

This facilitator identified classroom modeling and mentoring as the most effective professional development implemented to positively impact teacher technology proficiency. “I’ll go in, teach the lesson for the first two hours. The teachers learn how to use the software and they pick it up and I monitor.” Modeling of various educational software packages was a common activity implemented at Schools 1 and 2. “Most of the modeling I’ve done…I pretty much use all the software I possibly could. I’ve done quite a lot with Timeliner…reading for meaning…, Inspiration…I’m very familiar with that one too so we’ve used that a lot.” Modeling of lessons in teachers’ classrooms was also noted as the one practice that could be replicated in other schools to positively impact teacher technology proficiency.

Prior to implementation of the SCHOOLTech program, Schools 1 and 2 were in corrective action and had not met their annual growth targets. Although the facilitator stated that the SCHOOLTech program alone did not make the difference, when asked if the SCHOOLTech program had a positive impact on student achievement, the facilitator responded, “I’d have to say that it does a pretty good job.”

In closing, this facilitator noted that having the majority of the teachers at Schools 1 and 2 get motivated to do more with technology was the single biggest success of the program. “I have quite a number of them that have gone in and done INTECH training who would have never had done it originally.” Motivating and engaging veteran teachers was cited as the biggest challenge of the program. In the facilitators own words, “Getting older teachers to buy into it.”

"You know, they are number one afraid of a computer, and secondly … it just doesn't work for me all of the time." "But, with my help…they look at it more now as a tool than an obstacle."

School 3 Case Study

School 3, a high school, was located in a thriving and fast growing district in southeast Louisiana. Within the 24% poverty district, School 3 was one of 32 schools, located in a predominately rural town, and had a 79.04% free and reduced lunch status. The school had a student body of 334 ninth through twelfth students and employed 32 teachers. Demographic statistics for School 3 are presented in Table 4.13.

Table 4.13
Descriptive Statistics for Demographics of School 3

Demographic		Percent
Gender		
	Female	49.10
	Male	50.90
Grade Placement		
	Eighth	2.40
	Ninth	32.34
	Tenth	16.77
	Eleventh	33.82
	Twelfth	14.67
Race		
	Asian	.90
	Black	79.94
	White	19.16

School 3 School Performance Score

Prior to implementation of the SCHOOLTech program, School 3 had a SPS of 60.0 and a growth label of Minimal Academic Growth. This placed School 3 in the first level of Academic Assistance. A 1.1 point gain increased its SPS to 60.2 at the end of year one. Falling short of its 5.5 growth target, School 3 only increased its SPS by 0.2 points and was again placed into Academic Assistance. This resulted in School 3 maintaining its performance label of Minimal Academic Growth. The school was not eligible for academic reward funds. Unfortunately, this trend continued in year two. At the end of year two, School 3 only increased its SPS by 0.2 points and did not come close to meeting its required 5.8 growth target. Its SPS was 65.7 resulting in a Minimal Academic Growth label which moved it into the second level of Academic Assistance.

School 3 Infrastructure and Technical Support

A rating of developing tech was given in year zero for School 3. However, the infrastructure rating increased one level to advanced tech at the end of year two. In year two, a total of 228 instructional computers were available to students and teachers on School 3's campus. Two hundred eleven of these computers were internet ready with 51 being specifically located in classrooms, 38 stationed in the library, and others in one of the three lab settings. Sixty-eight of the internet ready computers were setup in specialized lab settings used for business or other defined coursework. Mobile computers carts stored 54 computers capable of accessing the web through the district's wireless network. Fifteen computers were also located in classes across the campus, but were not used to access the internet. School 3 had a 5 students to computer ratio. In addition, an array of technologies was made available to students and teachers to enhance the learning environment. These technologies included digital cameras, printers,

scanners, Smart Boards, large TV monitors, GPS units, digital graphing calculators, and digital video recorders.

School 3 Student Use of Technology

School 3's students ended year zero with an early tech rating and increased their skills by two levels to the advanced tech level at the end of year two. Students were enrolled in distance education and secondary computer education courses such as Computer Applications, Desktop Publishing, and Web Mastering. It was noted that students frequently used technology to conduct online research. Use of technology to create multimedia projects, engage in problem solving, or as productivity tools was occasional. The K-12 Educational Technology Standards were integrated into the learning experiences of students in all areas of the curriculum.

School 3 Educator Technology Proficiency and Practice

Educator technology proficiency and practice was reported at the developing tech level in year zero and at the advanced tech level for year two. In year two, it was reported that teachers were given time to collaboratively plan, observe each other, participate in technology professional development, and had access to exemplary technology connected lessons. Most of the teachers used electronic portfolios with the students. Technology was also used as part of their daily routine to manage administrative tasks, classroom management, and to enhance student assessments. Half of the teaching staff had students engaged in learning experiences such as online research, used technology to communicate with colleagues, and advanced their own professional knowledge through participation in online courses. Forty percent of the teachers had completed Louisiana INTech 7-12 and 78% had participated in training focused on the state's Making Connections program. It was reported that structured technology integration training offered by the school was minimal.

The percent of teachers technology proficient in year zero was 7.69%. After receiving professional development from a site-based facilitator for two years, the number of teachers proficient increased to 36.40%. This was a substantial 28.71% gain from year zero to two.

School 3 Classroom Integration and Effective Practices

On the classroom integration and effective practices rubric, School 3 received a rating of developing tech in year one and advanced tech in year two. Technology was integrated into and used by students in mathematics on a daily basis. In reading and social studies, students used technology weekly. Monthly use of technology by students in math and science was reported for School 3. It was also reported that efforts had begun and some progress had been made in using technology to promote the inclusion of special needs students, getting guidance from the school on the integration of technology across all grades and subject areas, and in the development of policies addressing access to technology for all students.

School 3 Summary

Overall, School 3's ratings showed an increase from developing tech to advanced tech in all areas. Unlike Schools 1 and 2, School 3 was placed in Academic Assistance for not meeting its school performance score growth target in years zero and one. At the end of year two of the SCHOOLTech program, School 3 was still in Academic Assistance.

Facilitator Interview School 3

Facilitator 3 had two years of experience as a SCHOOLTech facilitator and a total of six years of experience overall as a school-based facilitator. At the time of School 3's SCHOOLTech facilitator interview, the facilitator proudly announced that upon taking the position she enrolled in an Educational Technology Master's program and had just completed all of her coursework. Facilitator 3 found her coursework very timely and applicable to her work as a site-based facilitator as evident by this comment,

> I found it extremely beneficial because the courses I was taking was real life for me. My final project that I had to do was extremely successful; we developed an online student newspaper. I worked in conjunction with the English teacher here and we initiated the technology components there and our students well exceeded our expectations in their compositions and use of the tech, so that was very beneficial.

In addition to earning a higher degree, her own professional development was addressed by successfully completing INTech, "I have taken advantage of every training offered by our parish", and attending professional technology focused conferences.

When asked to identify the most effective professional development implemented to impact teacher technology proficiency, the reply was,

> They initiated job-embedded professional development, early dismissal across the parish. Every 2 weeks we get dismissed an hour early and we were supposed to do job embedded professional development. So every 2 weeks to keep up with my grant responsibilities the teachers had to come and meet with me one hour of their professional period every two weeks. I grouped them by discipline. When I did the small groups I felt like I had to work harder to be sure that I gave them something to make it worth while, that they gave up their professional period.

In response to the question, could you describe any inclass modeling or mentoring you conducted, School 3's facilitator said,

> I went in often when we first started using Inspiration and Timeliner. I went into several of my classes and provided instruction for the students on using Timeliner and Inspiration. I was also in my classes helping with Publisher, because you know, our teachers were not as proficient in Publisher. They are more proficient in Word and Excel, a little antsy about Publisher. So when I first did trading cards and stuff I actually went into the classrooms and did the technology component of that lesson.

On the topic of the SCHOOLTech program's impact on student achievement, Facilitator 3 stated, "We have not had a major increase in our SPS. To say that I have seen a major improvement on LEAP and GEE scores I can't say that has happened." However, she did go on to say that, "I do know that my students are more technology proficient. They utilize it, they've become dependent on it."

Working with teachers based on their individual needs was cited by the interviewee as a professional development activity that should be replicated at others schools in order to positively impact teacher technology proficiency. In her own words,

> I think the thing that became most beneficial to them were the things that we did when we weren't in the professional development. They would just be available, open the door, my teachers would walk in and say, hey I'm doing this and I want to do something technology but I don't know. I said okay give me the design. I'd go online do some research and then bring it to them. And then we would work one on one and develop that lesson.

The single biggest success that the facilitator at School 3 shared was actually two pronged. She noted the program's impact on students and teachers.

> It is awesome; our kids that come from a low socioeconomic community do not get exposed to the biggest and best of everything. They are benefiting from the grant by what we are able to offer them**.** The motivational aspect, to see my teachers rely on it and rely on me that is a good thing that I'm not sitting here taking up space wondering what I do.

The most challenging aspect of the grant at School 3, according to the facilitator was, "Getting those teachers who have really been teaching 20 something years, seeing that retirement at the back door saying I'm not changing."

Before closing the interview, Facilitator 3 passionately proclaimed that her experience as a site-based facilitator was rewarding both personally and professionally. The facilitator to teacher relationships established proved to be beneficial to all parties, including students. She and the teachers were somewhat dismayed by the fact that a site-based facilitator would no longer be working on campus once the grant ended. "All I can tell you is it was wonderful personally and professionally. The saddest part is we don't have it again. Even my teachers say, you did all this and then you fade back into the background."

School 4 Case Study

One of 37 schools situated in a southeastern Louisiana school district, School 4 was a middle school serving 575 students and 34 teachers. Of the five case study schools, this school was located in the highest poverty district. The district had a 26% poverty level and 59.83% of the student body was on free and reduced lunch. Table 4.14 outlines the demographics of School 4's student population.

Table 4.14
Descriptive Statistics for Demographics of School 4

	Demographic	Percent
Gender		
	Female	48.00
	Male	52.00
Grade Placement		
	Fifth	23.48
	Sixth	25.39
	Seventh	24.52
	Eighth	26.61
Race		
	Asian	.17
	Black	13.40
	Hispanic	1.39
	White	85.04

School 4 School Performance Score

Academically, School 4 met and exceeded its SPS growth target consecutively, for years zero through one and was not a school in Academic Assistance. In year zero its SPS was 99.7 with a growth label of Recognized Academic Growth. Meeting and exceeding its growth target of 2.0 points, its SPS increased by 8.7 points to 108.4 at the end of year one. School 4's year one label was Exemplary Academic Growth and it received accountability reward funds for both years zero and one. Although it only grew 0.2 points and did not exceed its 2.0 growth target in year two, School 4 had an SPS of 104.2 and was labeled Minimal Academic Growth. This growth was sufficient enough to keep it from slipping into Academic Assistance, but it was not eligible for reward money.

School 4 Infrastructure and Technical Support

Overall, this district had an aggressive technical infrastructure which included wireless network capability and was in line with the advanced tech rating given to School 4 in years zero and two. The school had 166 computers on site which resulted in a student to computer ratio of 3.5 students to every computer. One hundred thirty-seven of these were connected to the internet and a total of 102 computers, internet and non-internet accessible, were located in classrooms. Sixty of the internet ready computers were available to students in a lab setting. Projectors, scanners, digital cameras and video recorders, Smart Boards, text editors, large TV monitors, probes, digital calculators, GPS units, flex cams, and audio systems were additional technologies located throughout the school.

School 4 Student Use of Technology

In spite of the technology available, students were rated at the developing tech level for both years. Technology was used by students to problem solve, create multimedia presentations,

conduct online research, do some self-directed learning, and work on collaborative reports. The K-12 Technology Standards were addressed in all the core subject areas.

School 4 Educator Technology Proficiency and Practice

Teachers at School 4 were given a rating of advanced tech for years zero and two. Providing teachers with release time to plan lessons collaboratively, attend trainings, and conduct peer observations were strategies implemented at this case study site. Giving teachers access to technology lessons was also a strategy used to impact teacher technology competency. Most teachers used technology for assessment, to collaborate with other educators online, and to positively impact their classroom management skills. Half of the teachers used technology to enhance students learning through online research, multimedia projects, and authentic learning experiences. While a few teachers had participated in various state professional development trainings, 100% of the teachers had completed I-Safe internet training and the Making Connections training. In addition, 82% had successfully completed the state's Effective Instructional Technology online course. At the close of year two, 43.80% of the teachers were technology proficient at School 4. This was a 19.66% increase over the 24.14% of teachers that were proficient in year zero.

School 4 Classroom Integration and Effective Practices

In the areas of classroom integration and effective practices, School 4 was labeled as advanced tech both years. Weekly use of technology took place in all major subject areas and writing. Efforts had begun to promote the use of technology to include all students into mainstream classes and subjects and progress was being made. Considerable progress had been made by the school to provide guidance to teachers in the use of technology across all grade levels and content areas, as well as, in developing policies to ensure that all students had access to appropriate technologies.

School 4 Summary

To summarize School 4, it received an advanced tech rating in all areas but student learning for years zero and two. The infrastructure, teachers, administrators, and teaching practices were all considered to be at the advanced tech level. In contrast, student learning was rated at the developing tech level for both years. This school was very successful in reaching its annual SPS growth target for years zero and one. It did not reach its year two growth target, but did receive a Minimal Academic Growth label and avoid being placed in Academic Assistance.

Facilitator Interview School 4

Facilitator 4 noted in the interview that upon taking the position as site-based facilitator, she set out to attend as many workshops as possible to strengthen her capacity to assist teachers with developing their own technology skills. She specifically pointed out that the I-Safe, GPS Unit, and Google Earth trainings were beneficial. This facilitator had a total of two years of experience as a school-based facilitator and had earned the Educational Technology Facilitator endorsement.

When asked which professional development implemented was the most effective at both of the SCHOOLTech sites she served, she referred to an online resources training. “Probably the best professional development would have been the online resources, Gale Group and World book. I took them into both of the sites [this facilitator served two SCHOOLTech sites] and showed them the activities that were already available for the kids.” Overall, this facilitator identified whole group training as the most effective training done to positively impact teacher technology proficiency. “I did a workshop on using PowerPoint and also visual perception, teaching them how to use PowerPoint effectively.”

The interviewee’s description of any inclass modeling or mentoring she did included the following, “I’ve done modeling of lessons on just about everything we have from PowerPoint to

using Microsoft Word to create newsletters, and all the different software we have like Kidspiration and Inspiration." The impact inclass modeling had on students was also explained.

> Just being able to do model lessons with the kids, just making trading cards or making slide show presentations, and the teachers are just in there to watch me, helped the kids grasp a better understanding of how to use those things.

The facilitator at School 4 felt the SCHOOLTech program had a positive impact on student achievement and had this to say.

> I think it did a really good job especially for the LEAP kids and this year with the I-LEAP because we did a lot of things, researching on the internet and I would not let them just copy and paste. They had to rewrite everything in their own words.

When asked to identify a professional development practice that could be recommended for replication at other schools, an example of a curriculum integration activity was given.

> I used a template for trading cards in a lot of different subjects. You can use it in just about any subject and it is very easy to do. I've done it for a certain explorer that they are studying in social studies. I've done it for characters that they are reading in a novel. I've done it for states in social studies. It is in PowerPoint, it is something anybody can do.

Getting teachers and students acquainted with and using educational online resources was noted as the most successful site-based practice implemented. "Getting them involved with Gale Group and Worldbook Online. Getting the kids off of Yahoo and Google and getting them to go into the sites and keeping them safe and away from all of the junk on the internet." The challenge for this facilitator was trying to schedule time to work with eighth grade teachers' during instructional time. "They are so focused on the LEAP and so focused on what they need to cover, and it is real hard for them to give up their teaching time for me."

School 5 Case Study

Located in the same high poverty, 24%, district as Schools 1 and 2, School 5 was a high school with a student population of 597 students and faculty of 52 teachers. School 5 was one of two high schools in its district, which was home to a total of nine schools. This school's free and

reduced lunch status was 74.04%. Table 4.15 summarizes the demographic characteristics of School 5.

Table 4.15
Descriptive Statistics for Demographics of School 5

Demographic		Percent
Gender		
	Female	53.77
	Male	46.23
Grade Placement		
	Eighth	3.18
	Ninth	32.66
	Tenth	24.29
	Eleventh	18.43
	Twelfth	21.44
Race		
	Asian	.17
	Black	65.66
	Hispanic	.84
	White	33.33

School 5 School Performance Score

Successfully earning a growth label of Exemplary Academic Growth and accountability reward funds in year zero, School 5 had an SPS of 72.8. However, in year one it fell short of reaching its 4.4 point growth target by only increasing its SPS by 0.9 points. The resulted in a growth label of Minimal Academic Growth, and an SPS of 73.7 at the end of the first year of the

SCHOOLTech program. It was no longer eligible for reward funds and placed in Academic Assistance. Bouncing back in year two, School 5 exceeded its 4.9 point growth target by 2.1 points and grew a total of 7.0 points. Its year two SPS was 80.8 earning it a label of Recognized Academic Growth and accountability reward funds. School 5 was not considered as a school in Academic Assistance at the end of year two.

School 5 Infrastructure and Technical Support

The technical infrastructure of this high school was given a developing tech rating in year one prior to the SCHOOLTech program and again after two year of participating in the program. The school provided students with access to 231 computers and had a 2.6 student to computer ratio. Two hundred two of these computers were able to access the internet on the district's wireless network. Forty-eight of the 231 computers were placed in classrooms while the remainder was utilized in stationary and mobile lab settings. Many instructional settings were also equipped with digital cameras, printers, scanners, Smart Boards, digital calculators, and large TV monitors.

School 5 Student Use of Technology

Students in School 5 were at the developing tech level in year one and two, and did take advantage of distance learning courses through the state virtual school and other agencies. Students were also enrolled in secondary computer education courses such as computer literacy and applications, desktop publishing, and web mastering. It was reported that students used technology to communicate with peers, for problem solving, multimedia projects, and online research. Technologies were also utilized as productivity tools. The state's technology standards were addressed across the curriculum.

School 5 Educator Technology Proficiency and Practice

Teachers' technology proficiency and practice ratings increased from developing tech in year one to advanced tech in year two. This school also allowed teachers time to participate in technology professional development, work collaboratively with teachers to plan lessons, observe other teachers, and provided teachers with access to exemplary technology lessons as ways of building teachers technology proficiency skills. All teachers used technology to improve classroom management. Half were reported as using technology to enrich students' learning through engaged projects and alternate forms of assessment. Louisiana INTech 7-12 was the only professional development opportunity with a notable participation rate. Twenty-eight percent of the teachers had completed this training. Other trainings had minimal to no participation. Prior to the SCHOOLTech program, 24.14% of School 5's teachers were proficient. At the end of year two 44.68% of the teachers obtained technology proficiency. The number of teachers proficient increased by 20.54%.

School 5 Classroom Integration and Effective Practices

The developing tech level was selected as a rating on the school's integration and practices rubric for both years zero and two. Overall, students used technology monthly in reading, writing, mathematics, and science. Technology was occasionally integrated into social studies. Efforts had begun and some progress had been made to develop policies to ensure that all students had access to technology and to infuse technology across all grades and content areas. The same effort had been made in promoting the use of technology to include all students, regardless of learning style or disability, in the general classroom setting.

School 5 Summary

To summarize School 5's ratings, three of its four ratings were developing tech for years zero and two. The infrastructure, students, and classroom practices were all at the developing

tech level. Only the teachers increased from developing tech to of advanced tech after two year of being in the SCHOOLTech program. Academically, the school went from surpassing its SPS growth target in year zero to slipping into Academic Assistance at the end of year one. A push in the right direction during year two moved School 5 out of Academic Assistance and earned it a Recognized Academic Growth label.

Facilitator Interview School 5

The facilitator at School 5 had a total of four years of experience as a school-based facilitator. Facilitator 5 reported that she participated in professional development offerings as much as possible to develop her own skills on a continuous basis.

> Well, I go to anything that I have not taken that the TLTC's offer, … I had already done INTech K-6 and INTech 7-12, … INTech 2 Science and INTech 2 Social Studies. Myself and I took a team of teachers through with me from my schools and I think that helped because we went through together and worked together.

Although this facilitator served two SCHOOLTech sites, only one met the criteria to become a case study site. When asked to explain any professional development that was implemented and effective at both sites, the interviewee responded that trainings were different based on teacher proficiency levels and needs.

> It really wasn't the same at the two schools, because I didn't offer any of the same trainings. Well, I didn't do the same thing at both schools, so it would be difficult for me to say because I am responsible for a PreK - 8 school and they're very advanced in the use of technology so what they need from me is to offer things like web development. They were more advanced than my high school. Those teachers, many of them had been INTech trained, but they weren't using technology at all so I had to do basic things like Microsoft Word.

Regarding the most effective professional development implemented to positively impact teacher technology proficiency, Facilitator 5 stated that one on one interaction with teachers had the most substantial impact. In her opinion, "The thing that worked best was not so much the professional development after school but the one on one in the classroom." Inclass modeling

was noted as an important method of reaching teachers. “I regularly went in to demonstrate all the things they learned at INTech when they got to that in their regular curriculum.” When asked who chose the focus of the inclass visit, the response was, “I never chose, if they asked me to come in.” Teachers stated their needs and this facilitator would plan her interaction with the teachers based on their individual needs.

It was this facilitator’s belief that the SCHOOLTech program has a strong positive effect student achievement. She commented, “Both of my schools met their goals. I think it has made a big difference in the performance of our children. So we found that the best thing it did for our kids was motivate them.”

The most effective professional development that this facilitator recommends be replicated in other schools was one on one interaction. She commented that she would, “Meet with them on some kind of regular basis, … That was the most effective practice was having things individualized.”

The single biggest success identified as a result of implementing the SCHOOLTech program and having teachers receive professional development from a site-based facilitator was being able to motivate teachers to develop their technology skills and commonality in that process. “I think that was the most effective thing about SCHOOLTech was that it got everybody on board. It got everybody understanding that they could do this.” This facilitator’s perception of the most challenging part of the program was having to schedule her time between two schools.

Facilitator 5 wrapped up her interview by saying this about her site-based facilitator experience,

> It was one of the best experiences I ever had as a teacher. I always knew I was good at technology but I just didn’t know, I always did it in my classroom, but I didn’t realize the scope and the depth of what I could offer kids and how I could motivate them until I was

> in this position. And I've said this a hundred thousand times, if and when I go back to the classroom as a teacher I will be a hundred times better because of this experience.

Case Study Summary

Data gathered from the six instruments utilized in this study allowed the researcher to gain insight into the case study sites' SCHOOLTech programs and the types and frequencies of professional development implemented. Respondents included teachers on the technology proficiency instrument, school-based facilitators responded to the facilitator survey and participated in interviews, district grant coordinators completed the district grant report, a school technology coordinator completed the technology evaluation survey, and school performance scores were generated by the state department. This summary presents a comprehensive view of the case study sites' generated from triangulation of data across all instruments.

Experience of Case Study Facilitators

All case study facilitators were female and had two to four years of experience serving as a SCHOOLTech facilitator. In addition, all of the case study facilitators were classroom teachers prior to working with the SCHOOLTech program. One of the case study facilitators had earned a Master's degree in Educational Technology. A second facilitator was working on the Educational Technology Facilitator endorsement and another had completed all the requirements and earned the endorsement. The five SCHOOLTech case study facilitators were full time and dedicated 100% of their time to the program.

Effective Types of Professional Development Implemented

Table 4.16 identifies the major themes resulting from the constant comparative analysis (Creswell, 2002) of all data collected. One to one interaction consists of both modeling of technology connected lessons and pedagogy within teachers' classrooms and mentoring teachers. During the coding process it was noted that various forms of facilitator to teacher contact were

interchangeably described or reported on the instruments. Therefore, they were collapsed under the single theme of one to one interaction with a noted frequency of 69 occurrences across data sources. The integration of technology into and across the curriculum was another prominent theme that emerged with a frequency of 43 occurrences. Professional development based on teachers' needs and often times informal or unplanned was identified 24 different times within the data. This was seen as an important method of contact with teachers. Online resources, was a viable training that took place with the teachers based on 24 references in respondents' answers. The final theme was job-embedded professional development that occurred during the school day, teachers' planning periods, or designated professional development days that was clearly identifiable and noted 29 times in the data.

Table 4.16
Qualitative Data Coding Frequencies

Codes	**Occurrences**
One to One Interaction	69
Curriculum Integration	43
Needs Based	24
Online Resources	24
Job-Embedded	29

One to One Interaction

One to one interaction at the case study sites was the most prevalent professional development activity cited by the respondents. One to one interaction included modeling of lessons in teachers' classrooms, mentoring teachers, and lesson planning. All facilitators strongly supported one to one interaction and independently stated that it was the most effective approach when trying to positively impact teachers' technology proficiency skills. One facilitator said, "I would probably have to say the work in the classroom. I taught a lesson and they learned from

me teaching the lessons and then they pick it up and do it." Grant coordinators also supported this type of professional development. When asked, to describe any best practices implemented at their SCHOOLTech sites, grant coordinators responded, "Having a full time facilitator support teachers and model technology lessons in the classroom" and "Having that onsite support … to help teachers and students use technology as part of the teaching and learning process."

The following comments from the facilitators also supported various forms of one to one interaction. "I regularly went in to demonstrate all the things they learned at INTech when they got to that in their regular curriculum" and "One to one mentoring because that is pretty much what I do everyday." Another facilitator responded,

> So we sit down and design and I found that was really beneficial because the professional development that you do it works, and they get ideas, but just like in any session they get it and they say great. Then they come to me and say, 'Okay, this lesson you showed me, it is good but where can I use it. 'Then the two of us would sit down and say okay where are you in your lesson, what are you doing, and here is what we can do with it. It is that kind of stuff; it is being there for that kind of one on one I found to be the most beneficial professional development.

Responses reported by the school coordinators showed that one to one planning does take place in the form of teacher collaboration and lesson planning at the schools. Further supporting one to one interaction; site-based facilitators reported inclass modeling and one to one mentoring as two professional development activities that were implemented daily to interact with teachers at their SCHOOLTech sites.

This comment about one to one interaction in the classroom shows how important a professional development method it was to the facilitators and teachers when it came to making an impact on teacher technology proficiency. Actually walking teachers through technology connected lessons step-by- step was very beneficial. "The integral thing was to go in there and do it with them and hold their hand through it the first couple of times at least."

Curriculum Integration

Integration of technology into the curriculum was another dominant theme noted in the analysis of data. Facilitators reported in their interviews and on the facilitator survey that use of technology across the curriculum was a focus of teacher professional development when addressing teacher's technology skills. Facilitators would help teachers to plan student activities and lessons using technology within specific subject areas or across the curriculum. One facilitator would provide her teachers with trading card or newsletter templates as a method of getting students and teachers comfortable with and using technology in the classroom. She commented,

> The products that I have seen used most through all the disciplines; trading cards and the brochures in Publisher. Those have been the products utilized through the disciplines and utilized frequently. You know I have several teachers that have capitalized on the newsletters but, the activity they took and ran with was the trading cards. I was able to with the math department, show them how to do it with shapes, measurements, and formulas. With my sciences, I did it with elements and stuff like that. Social studies, I did famous people. English, we did characters in a story.

Responses such as these also supported curriculum integration as frequently used, effective, professional development implemented at the SCHOOLTech cases study schools. "We took the Comprehensive Curriculum, we looked at it and there are so many tech connections especially in the math and language arts" and

> Well, I never do technology for technology sake. It had to be, well, what you are already teaching. Last year, before we were full Comprehensive Curriculum, they'd tell me what they were teaching and I'd say okay, let me show you three or four things that I have that could really help to get this point across in less time and more effectively. And then they could choose and we'd plan from there.

One interviewee shared a success story she experienced with a teacher at her school who began integrating technology into social studies. She explains the classroom teachers transformation as follows,

> She had a story, it was a social studies class, but she would have them do a storybook and the kids would actually write it and draw it and it was hand designed. Now she uses PowerPoint and Publisher and they actually create a digital book and the final product is better.

Others facilitators spoke of assisting teachers with integrating technology into science and writing. "I've done reading for meaning, which they absolutely loved, and I actually used that in a science classroom as opposed to a reading class because they needed to learn the whole sequencing and so on and so forth" and "Now I will say there is a writing lab there. A computer writing lab that they use for 4th grade and I've gone in there quite a number of times."

The school coordinators at each case study school also reported that integration of technology was a strategy being used to assist teachers in improving their technology proficiency skills. School coordinators noted that technology was utilized by teachers across the curriculum and schools were providing guidance in the area of technology integration across grades and subjects.

Needs Based

Professional development based on a teacher's needs was frequently discussed by all of the site-based facilitators interviewed. It was reported that often times a teacher would approach the facilitator and ask for help with a particular lesson, activity, skill, or technique. In some of the facilitators own words, "When they need me they call and I'm always there", "So a lot of my schedule was allowable for me to just go and help whoever needed help", and "I never chose, if they asked me to come in."

These facilitator responses further support the implementation of professional development based on teachers' needs at the case study sites.

> But my teachers, I think the thing that became most beneficial to them were the things that we did when we weren't in the training. They would just be available, open that door, my teachers would walk in and say, 'Hey, I'm doing this and I want to do something technology but I don't know.' I said okay give me the design.

and, “Teachers could come to me on their planning period and say, in two weeks I have to teach this … it calls for this piece of technology and I have no idea what it is, help me.”

Additional support for this type of professional development was also noted by the school coordinators and district grant coordinators. Both groups reported using professional growth plans and teacher proficiency assessments as ways to identify teachers individual technology professional development needs.

Online Resources

A fourth theme or type of professional development activity that was utilized and identified by the facilitators and school coordinators was training on the use of online resources. All of the facilitators and school coordinators reported that showing teachers and students how to use the internet, working with specific online resources, and training on the online databases provided by the state, Gale and Worldbook, were components of their SCHOOLTech program. Facilitators rated the use of online resources as a weekly activity implemented on their survey responses.

One interviewee said, “I’d go online do some research, bring it to them, and then we would work one on one and develop that lesson. Another thing I did that was very beneficial is I have signed them on to a number of online publications.” Other activities or trainings focused on online resources were also mentioned by interviewees. They commented, “The iSafe training was really great. It was a training to learn about the dangers that were out there on the internet and how to teach the kids how to use the internet safely” and “World book online, their opening page, how much information the kids could get just from the homepage.” Another online resource that was utilized to train teachers was United Streaming. This site is full of educationally sound resources and graphics. It provided teachers with interactive information that could be used to engage students, in students’ multimedia projects, and in classroom

presentations. With just a few clicks, teachers and students had access to high quality online resources. As one facilitator said, "United Streaming has always been a big hit."

Job-Embedded

The final theme that was evident across all four facilitators responses during the interviews and from facilitator, school and district coordinator survey responses, was the use of job-embedded professional development. Facilitators commented that being able to work with teachers within the school day or on designated professional development days was more effective than professional development done before or after the work day. One facilitator noted, the teachers schedule times with me and I'm booked everyday." A district grant coordinator commented, "Having the onsite support of a tech expert gave teachers and students an opportunity to use technology in teaching and learning." Another district coordinator found that having someone to do training in the classroom was a best practice of the program.

This comment about scheduling opportunities to work with teachers shows how important job-embedded training was when working with teachers at the school sites.

> Definitely, you know a lot of teachers it is hard for them to stay after school for a formal professional development. When you go into the classroom they can learn and pick it up while you are modeling it in the classroom and they have in tern learned that particular software. So I would definitely think that would be the best thing.

At one of the SCHOOLTech case study sites, targeted professional development days became an important approach to working with teachers.

> We got, they initiated embedded, early dismissal across the parish. Every two weeks we get dismissed an hour early. So every two weeks the teachers had to come and meet with me one hour of their professional period. I grouped them by discipline … so I actually started using the job embedded for whole group instruction.

When discussing how to manage scheduling time with teachers, a facilitator said, "We did the job-embedded and professional period trainings." Another facilitator explained to job-

embedded training this way,

> When I schedule my days, I schedule two days in a row. So if I do a lesson …I can be there the next day to help that teacher finish up the lesson, so I would teach the first hour and then I'd stay in there the rest of the day while they taught.

Student Achievement

During the interviews, facilitators were asked how they thought the SCHOOLTech program, impacted student achievement. Although all four facilitators knew that participating in the SCHOOLTech program alone could not be the single cause of gains in student achievement, they strongly felt that it did have a positive influence on student engagement and motivation. One facilitator said this about the value of the school-based facilitator's position when referring to student achievement, "Just an extra instructional person for them. I definitely think it is good." Other positive comments about the program's impact on student achievement were, "I think it impacted student achievement greatly. First of all, the kids love technology and it really excited the kids about learning some of the things that are not as exciting to learn" and "One thing we found was that when a teacher and myself took them out and integrated technology we had no problem getting them motivated." A final comment was, "I think it has made a big difference in the performance of our children."

District grant coordinators for the case study sites unanimously reported that they believed the SCHOOLTech program not only had a positive impact of student achievement, but student technology proficiency as well. This belief was further supported by the school coordinators who reported that student technology proficiency was maintained or had increased at the SCHOOLTech schools after two years of participating in the SCHOOLTech program. School Performance Scores at 3 of the 5 sites showed positive gains from years zero to two, while two of the sites struggled to increase their SPS.

Successes and Challenges

To close the interviews, facilitators were asked to identify what they perceived to be the single biggest success and challenge when it came to positively impacting teacher technology proficiency. Getting teachers to change their beliefs and opinions about technology from not wanting to use it in the classroom to seeing it as a valuable instructional tool, was a success sited by all four facilitators. A facilitator said, "My personal success is seeing my teachers and students so reliant on the tech and the benefit of the school is the exposure we have been able to give students and teachers with the technology." Other facilitators explained their program's success this way, "I think that was the most effective thing about SCHOOLTech was that it got everybody on board", "The motivational aspect, to see my teachers rely on it and rely on me that is a good thing that I'm not sitting here taking up space wondering what I do", and

> I think the fact that the biggest success was that once it started to catch on all my teachers wanted computers in their classrooms. I even had some teachers that have been teaching 30 years decide, oh, well, yea, I'll go through INTech.

Facilitators and district grant coordinators agreed that the biggest challenge of the program was getting veteran teachers to start using technology; many were reluctant. One interviewee responded that," Getting older teachers to buy into it" was her biggest challenge. Another stated,

> Well, I mean, some of the teachers that have been in the system for 30 some years, and you know, they are number one afraid of a computer first off, and secondly, oh, it just doesn't work for me all of the time. But, with my help …they've accepted it more. They look at it more now as a tool than an obstacle.

One facilitator said this about the challenge of working with veteran teachers,

> Getting those teachers who have really been teaching 20 something years, seeing that retirement at the back door saying, 'I'm not changing.' My lesson plans are done and I'm not doing it. That has been my challenge.

An additional challenge recognized by each site was also finding time to schedule job-

embedded professional development. Facilitators and district grant coordinators reported that scheduling job-embedded professional development was difficult due to the many tasks or commitments teachers had to address outside of the SCHOOLTech program.

Teacher Technology Proficiency

Teachers, site-based coordinators, and district coordinators all agreed that the SCHOOLTech program had a positive impact on teacher technology proficiency. The percent of proficient teachers at each site increased, school coordinators rated teachers at or above the same level they were prior to participating in the program, and grant coordinators reported positive gains in this area. Teachers were reported as being more motivated to engage in the use of technology which in turn motivated students to use technology and become more actively involved in their own learning.

Summary of Results

The mixed methodology utilized in this study yielded both quantitative and qualitative data on the overall impact of the SCHOOLTech program on teacher technology proficiency. Data also provided information on the types and frequencies of professional development implemented at SCHOOLTech sites showing the highest gains in teacher technology proficiency. Quantitative data analysis of teacher proficiency scores was addressed through an ANCOVA and resulted in positive findings showing a statistical difference between the teacher technology proficiency scores of the study's SCHOOLTech sites over non SCHOOLTech sites. Qualitative data collected from published and researcher designed surveys identified the types and frequencies of professional development implemented at SCHOOLTech schools. These findings were presented using descriptive statistics in the form of tables, graphics, and narratives.

Case study interviews presented detailed data on five SCHOOLTech sites that had the highest gains in teacher technology proficiency from year zero, prior to participating in the

program, to the end of year two. Triangulation of the interview data with survey data resulted in identification of professional development activities SCHOOLTech school-based facilitators perceived to be the most effective in addressing teacher technology proficiency. One to one interaction with teachers, integration of technology into the curriculum, needs based, online resources, and job-embedded professional development were identified as having the most positive impact on teacher technology proficiency.

Finally, an independent *t*-test was conducted to determine if a significant difference existed between the School Performance Scores of SCHOOLTech and non SCHOOLTech schools from year zero to the end of year two. Although SCHOOLTech schools had a higher mean SPS at the end of both years, results of the *t*-test showed there was not a significant difference. Analyses of multiple data sources indicated that student achievement was significantly improved in three of the five case study schools. In all five schools, students were reported as being more engaged and motivated to learn.

CHAPTER FIVE
DISCUSSION AND CONCLUSIONS

The primary purpose of this study was to identify specific types of professional development implemented by school-based instructional technology facilitators that positively impacted teacher technology proficiency. Available research on the role and impact of school-based facilitators is limited. This study expanded upon the existing body of research which has peripherally addressed this phenomenon. Expansion of this field of study was accomplished by engaging in an in-depth inquiry of school-based facilitators' practices and instructional settings from multiple perspectives. Study results also add to the current literature that attempts to identify the professional development required to empower classroom teachers with the skills needed to effectively integrate technology into the teaching and learning process in order to ultimately, improve student achievement.

Both quantitative and qualitative methodologies were employed in this study allowing for the collection of data at varying levels of inquiry. Findings from this study were positive and supported the role of school-based technology facilitators as catalysts for improving teacher technology proficiency. Results also revealed that increased levels of teacher motivation and engagement with technology led to higher levels of student engagement which in turn positively impacted student achievement. Triangulation across data sources led to the identification of effective school-based professional development practices that can be replicated by other educational entities to improve teacher technology proficiency. Discussion of the results is organized into the following sections: (1) effect of school-based technology facilitator on teacher technology proficiency, (2) best practices, (3) other considerations for school-based technology professional development programs, (4) impact on student achievement and motivation, (5) conclusions and recommendations for K-12 institutions, and (6) implications for future research.

Effect of School-Based Technology Facilitator on Teacher Technology Proficiency

Quantitative survey results presented statistically sound evidence that professional development provided by school-based facilitators positively impacts teacher technology proficiency. School-based facilitators were able to make a difference in teachers' proficiency levels by being present and available to teachers on multiple levels. They established relationships with teachers through individualization and personal contact. Facilitators were able to step in almost immediately to meet teachers at their level of readiness and willingness to engage with technology. The close proximity of the facilitators to teachers allowed for professional development to occur within teachers' comfort zones, familiar settings, and in real time teaching and learning situations. Teachers were initially dependent of their facilitators, but as trainings were implemented and ongoing school-based support was given, they became more and more independent and confident in their abilities to effectively integrate technology.

It was noted that working with veteran teachers was often difficult but the most rewarding in the end. School-based facilitators were able to work with veteran and other reluctant teachers on a personal level that would be almost impossible had they not been located in the same setting. Through persistence, patience, and initial hand holding, facilitators were able to get teachers who had never embraced technology before to see the value and power of technology as an instructional and classroom management tool.

Findings from this study support and expand upon current research on the role of school-based facilitators as positive influences on teachers' technology skills. Lai, Trewen, and Pratt (2002) also found that through ongoing interactions and professional development at the school level, technology coordinators promoted change in teachers' technology skills. As was the case with facilitators and teachers in this study, Jenson, Lewis, and Smith (2002) reported that teachers meeting with mentors to learn new skills was an approach that promoted the use of

technology in the classroom. In 2002, Pardini found that teachers training teachers built an internal infrastructure that provided "just in time" support in a nonthreatening learning atmosphere. School-based facilitators in this study helped to establish a human infrastructure that allowed teacher to teacher, teachers to teachers, and teacher to facilitator networking. This internal network of interactions provided teachers with the personalized and individualized training and supported they needed to become effective users of instructional technology.

Best Practices

Group mentoring, Making Connections, technology connected lesson planning, and providing technical support to teachers were the most dominant types of professional development implemented across all SCHOOLTech sites. With the exception of technical support, these activities are in sharp contrast to the types of professional development teachers at case study sites were engaged in with their facilitators.

At the case study sites where the highest increases in teacher technology proficiency were attained, facilitators were able to motivate teachers to not only learn more about innovative and targeted technology tools and resources, but to have ownership for the planning and use of technology. Teachers also learned about pedagogy focused on the use of technology that was capable of meeting their instructional needs and goals. Qualitative data analyses identified one to one interaction with teachers, integration of technology into the curriculum, needs based, online resources, and job-embedded professional development as effective professional development activities school-based facilitators implemented that improved teachers' technology proficiency levels.

One to One Interaction and Needs Based

One to one interaction with teachers allowed time for facilitators to get to know teachers on personal and professional levels. In this instance, personal refers to a facilitator becoming

familiar with a teacher's technology skill level and needs, pedagogical practices, and overall teaching style. Teachers often sought out their facilitator, outlined a specific need, and worked collaboratively with their facilitator to plan a lesson or activity based on the defined need. One to one interaction and needs based professional development were complimentary. Teachers developed a sense of ownership and put more into their training. The facilitators' in-depth knowledge of teachers' needs and ability to interact on a one to one basis made it easier to follow-up with teachers the next day or within a few days. Follow-up led to reinforcement of teachers' skills and another opportunity to praise and validate teachers' willingness to learn how to use technology.

One to one interaction places value on the human element required to support teachers' effective use of technology (Holland, 2001). Cole, Simkins, and Penuel (2002) noted in their research that establishing a mentor system where experienced and novice technology using teachers were paired was influential in improving teachers' effective use of technology. Findings from this study strongly support one to one interaction through modeling and mentoring. Results of this study are also in line with Holland's (2001) findings that teachers at all levels need timely support from colleagues and peer coaching. This study's findings also support Whitfield and Latimer's (2003) research which found that having a technology specialist work on site with teachers helped teachers to overcome their fears and be more receptive to change.

This study supported current findings on the importance of providing teachers with mentors who can model the effective use of technology, but more importantly, results of this study supported the use of one to one interaction based on teachers' specific instructional technology needs and skill levels.

Curriculum Integration

It's important to understand that professional development at the study sites predominately avoided archaic sit and get workshops where large groups of teachers were herded into a computer lab for a one hour word processing skills lesson or procedures on how to use a software package. Instructional software and resources were taught by facilitators within the context of the curriculum, lessons, and with students in the classroom setting. Facilitators were careful to align any trainings or modeling implemented with the instructional goals and objectives teachers were targeting.

In addition, professional development that focused on the integration of technology into the state adopted curriculum became an important facet of professional development programs at the case study sites. Teachers did not need an additional lesson or topic to teach. Instead, they needed facilitators to help them use technology to engage students in the content, lessons, and activities they were required to and already planned to teach. Helping teachers to see how technology could enhance, improve, and compliment existing content and lesson plans made it easier for teachers to integrate technology. They were not being asked to add on additional lessons or learn new content. This also made it easier for teachers to step out of their familiar and practiced styles of teaching and begin to use technology to give teaching and learning a fresh, new, and engaging look.

The identification of curriculum integration as a professional development activity school-based facilitators can implement to help teachers become better users of technology was noted in the current research. Several researchers pointed out that professional development must focus on the activities and lessons that teachers use on a daily basis with the students in their classrooms (Byrom, 2001; Mouza, 2002; Nisan-Nelson, 2002; OTA, 1995; and Shaw, 2003). Bybee and Loucks-Horsley (2000) proclaimed that technology literacy standards along with

curriculum reform and adequate teacher professional development could serve as catalysts for change. Results of this study showed that facilitators utilized professional development opportunities to focus on the integration of technology into and across the curriculum which initiated classroom based levels of curriculum reform.

Appropriate Use of Online Resources

Although facilitators reported implementing training on specific instructional software packages, training on online resources was an even bigger focus in the schools. An abundance of free educational resources are available on the web in addition to the set of educational databases that the teachers and students had access to during the program. Online resources are convenient but cumbersome to manage if you do not have knowledge of which websites host safe and useful educational resources. Teachers eagerly wanted to learn how to locate and integrate online resources into lesson planning and instruction. Online resources provide limitless amounts of information at teachers and students fingertips. Facilitators were able to help teachers start small, learn about proven educational sites, and then begin exploring and locating online resources on their own. Again, teachers became confident in their abilities through the modeling and mentoring done by the facilitator.

Current research outlines access to appropriate resources as a critical factor that must be in place for teachers to begin to effectively integrate technology into the learning environment (Mouza, 2002; Pardini, 2002; Cole, Simkins, & Penuel, 2002). Access to software and online instructional resources was integral to teachers' successes in the SCHOOLTech settings showing increases in teacher proficiency levels.

Job-Embedded Training

Through job-embedded training that took place during teachers' planning periods, during live classroom lessons, or immediately before or after school the facilitator could keep the

training relevant, focused, and just in time. It was convenient to walk into school in the morning, find out that a teacher needed some online resources to compliment the next day's lesson, assist the teacher in locating and integrating them into the lesson, and then return on the next day to model or support the teacher as the lesson unfolded. Teachers received almost instant reassurance and gratification. They did not have to wait until they could ask colleagues for assistance or for next month's off-site training on online resources.

Published findings note the importance of job-embedded professional development as an effective approach to supporting teachers as they develop new skills (Fatemi, 1999; Grant, 1996; Shaw, 2003; and WestEd, 2000). Facilitators at the SCHOOLTech schools found that working with teachers in their own settings and during their school day, was much more effective than trying to implement professional development that was disconnected from teachers'' real world classrooms. As Shaw (2003) noted and the study's results showed, job-embedded professional development allows teachers to become active, not passive learners. Findings from this study supporting job-embedded trainings also expanded upon Bybee's (2001) approach which advocated professional development aligned to overall system, school, and classroom instructional goals.

Other Considerations for School-Based Technology Professional Development Programs

The literature also points out that just in time technical support is paramount when it comes to supporting teachers' use of instructional technology (Lai, Trewen, and Pratt, 2002; Whitfield & Latimer, 2003). Both quantitative and qualitative data collected through the study instruments qualified these findings. Facilitators at all of the SCHOOLTech sites reported that providing technical support was something they did almost daily to help teachers utilize technology. Respondents noted that teachers felt more apt to use technology in their classrooms when they knew someone was close at hand to assist should technical problems arise.

Although all facilitators at the five case study schools were classroom teachers prior to working with the SCHOOLTech program and had similar personal professional development experiences, three of the facilitators had educational credentials beyond the Bachelor's degree that specifically focused on educational technology. The instructional technology experience and skill level of a facilitator working with a school-based professional development program is a factor that should be considered and could make the impact of the program on teacher technology proficiency more beneficial.

Impact on Student Achievement and Motivation

Achievement levels at the school-based facilitators' schools were higher than those schools without a facilitator, although the difference between the groups' School Performance Scores was not significant. Follow-up qualitative case studies were conducted with SCHOOLTech schools that had more than 10% of an increase in teachers achieving technology proficiency. Analyses of multiple data sources indicated that student achievement was significantly improved in three of the five schools. Students were reported as being able to become active participants in their learning through the use of technology. They became more motivated to learn, explore, and use technology to create multimedia and research projects which brought their motivation to learn to higher levels. Through the support and guidance facilitators provided teachers in the use of technology, teachers became more proficient, utilized technology more and effectively in instructional ways which led to students being motivated and engaged.

Conclusions and Recommendations for K-12 Institutions

While the published research on technology integration, proficiency, and professional development is increasing in volume, it is limited or devoid of empirical studies that specifically identify the types of professional development implemented by school facilitators that can increase teacher's technology skills and willingness to embrace technology as a valuable

instructional tool. Through administration and analysis of a quantitative survey and multiple qualitative instruments the results of this study provided empirical evidence of specific types of professional development implemented by school-based facilitators that can forward teachers' technology proficiency.

The most significant conclusions of this study are twofold. First, having a school-based facilitator provide teachers with professional development can improve teachers' proficiency levels. A second conclusion is the identification of five research based professional development practices that can positively impact teacher technology proficiency.

Based on the results of this study, the following professional development practices were perceived by facilitators and district and school coordinators as effective in increasing teacher technology proficiency which led to increased use of instructional technology and resulted in more engaged students. These practices can be replicated in other K-12 schools:

(1) Provide teachers with access to preferably, full-time school-based instructional technology facilitators who can implement targeted professional development opportunities based on teachers' needs.

(2) Utilize a one to one mentoring system where a technology facilitator or experienced technology using teacher is paired with a less experienced teacher to provide support, guidance, and modeling of technology connected lessons and pedagogy.

(3) Schedule school-based job-embedded professional development days, designated periods during the school day, or immediately before and after school focused on the effective integration of technology into the curriculum.

(4) Provide teachers with professional development that focuses on how to select, evaluate, and integrate web based instructional technology tools and resources.

(5) Provide teachers with the technical infrastructure, modern classroom technologies,

and digital communications tools needed to make technology a seamless part of the curriculum that is being taught on a daily basis.

Implications for Future Research

Future research on this field of study could expand upon the varying roles of school-based technology facilitators and further outline model practices and programs designed to positively impact the technology proficiency of both teachers and school leaders and student achievement. Additionally, future research could explore the characteristics or skills of successful school-based instructional technology facilitators, their professional growth practices, and beliefs. Differences in school-based professional development at varying K-12 levels could also be studied.

Detailed studies on the varying ways that facilitators interact with teachers on a one to one basis could yield critical data leading to professional development strategies that could improve teacher technology proficiency. Since funding facilitators' salaries may be an issue for school systems, a study outlining various ways in which systems have approached this facet could provide some insight. Studying teachers' attitudes, beliefs, and perceptions of what they think makes an effective school-based facilitator may better define the role of school-based facilitators in the future.

Two additional inquiries for future research include the role of administrator support and its possible impact on teacher technology proficiency and identification of specific administrator skills or characteristics of leaders in schools with high numbers of technology proficient teachers. Finally, a study of the relationship between teacher technology proficiency and student achievement could be very beneficial to educators and school systems struggling to meet accountability goals and guidelines.

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APPENDIX A
LOUISIANA TEACHER TECHNOLOGY PROFICIENCY SELF-ASSESSMENT

Directions: Carefully ready each item and select the answer that best represents how often you address or complete each performance indicator or described activity.

	Never	Seldom	Sometimes	Frequently	Almost Always
1) I explain in my lesson plans how I use technology to meet the diverse needs of learners.	○	○	○	○	○
2) I promote student uses of technologies that address their unique social backgrounds, characteristics, and cultural identities.	○	○	○	○	○
3) I facilitate classroom uses of technology tools for collaboration with peers or outside experts.	○	○	○	○	○
4) I ensure that students understand the ownership issues of intellectual material developed with district resources.	○	○	○	○	○
5) I use technology to collect and analyze student achievement data.	○	○	○	○	○
6) I post homework assignments or other regularly updated class information electronically for students or parents to access.	○	○	○	○	○
7) I identify and select technology resources that reflect my students' cultural and ethnic backgrounds.	○	○	○	○	○
8) I use technology to communicate information to students, parents, and community members.	○	○	○	○	○
9) I employ classroom procedures to ensure students' safe and healthy use of technology.	○	○	○	○	○
10) I facilitate classroom uses of technology tools for conducting research.	○	○	○	○	○
11) I use information on how students learned using technology for future instructional planning.	○	○	○	○	○
12) I model and teach acceptable/responsible use of	○	○	○	○	○

technology resources.					
13) I base my technology planning decisions on how to best support student learning goals.	○	○	○	○	○
14) I plan opportunities for my students to learn or improve computer skills as part of my instruction.	○	○	○	○	○
15) I teach my students to properly credit electronically published work to its original source.	○	○	○	○	○
16) I establish guidelines students can use to monitor their own technology skills.	○	○	○	○	○
17) I encourage students to tutor or assist each other when using technology.	○	○	○	○	○
18) I identify current and emerging technologies and evaluate how they can be used to improve student learning.	○	○	○	○	○
19) I allocate adequate time to check technology equipment and resources in preparation for a lesson incorporating technology.	○	○	○	○	○
20) I ensure that students follow fair use guidelines for using copyrighted material in their projects/assignments.	○	○	○	○	○
21) I examine student assessment data generated by computer based student learning systems used to support student learning of subject matter.	○	○	○	○	○
22) I evaluate how well students follow technology rules and procedures.	○	○	○	○	○
23) I utilize computer based training (CBT) or tutorial software to further my technology skills or improve my instructional practice.	○	○	○	○	○
24) I promote student uses of technologies that improve their understanding of the diverse characteristics and cultural identities of the global community.	○	○	○	○	
25) I use grading software or a student records database to organize grade	○	○	○	○	○

or attendance information.					
26) I establish and monitor classroom procedures for ensuring equitable access to technology resources for all students.	○	○	○	○	○
27) I use technology to collaborate with colleagues and staff on issues related to student learning.	○	○	○	○	○
28) I use technology to collaborate with students, parents, and community members on issues related to student learning.	○	○	○	○	○
29) I identify and select technology resources that reflect my students' cultural and ethnic backgrounds.	○	○	○	○	○
30) I integrate technology standards with content standards in classroom instruction.	○	○	○	○	○
31) I interpret data and use technology to communicate findings to improve instructional practice and student learning.	○	○	○	○	○
32) I identify and select assistive or adaptive technologies to enable and empower learners with diverse abilities or specials needs.	○	○	○	○	○
33) I seek out professional development opportunities to improve my technology knowledge and skills.	○	○	○	○	○
34) I have students reflect on their use of technology in completing assignments.	○	○	○	○	○
35) When planning lessons, I consider when it is appropriate to incorporate technology into learning environments and experiences.	○	○	○	○	○
36) I allow my students to select and use technology tools to complete their assignments.	○	○	○	○	○
37) I use technology to collect and analyze a variety of classroom, department, or grade-level data.	○	○	○	○	○
38) I participate in professional development courses via distance education technologies (e.g.	○	○	○	○	○

Internet, videoconference).					
39) I facilitate classroom uses of technology tools for collecting, manipulating, or analyzing data.	○	○	○	○	○
40) I encourage the availability of technology resources for student use outside the classroom.	○	○	○	○	○
41) I identify current and emerging technologies and evaluate how they can be used to address personal or workplace needs.	○	○	○	○	○
42) I use technology tools to assess student learning.	○	○	○	○	○
43) I adapt instructions for using technology so that they are age-appropriate for my students.	○	○	○	○	○
44) I facilitate classroom uses of technology tools for discussion of ideas and reflection on learning experiences.	○	○	○	○	○
45) I choose technology resources that are appropriate for all students, including those with special needs or English language learners.	○	○	○	○	○
46) I can use Internet search tools to locate information.	○	○	○	○	○
47) I can send email and attachments as necessary.	○	○	○	○	○
48) I can troubleshoot general hardware problems, such as connecting power cords and cables and re-booting the computer.	○	○	○	○	○
49) I can find and open documents inside folders.	○	○	○	○	○
50) I can select items and options from pull-down menus.	○	○	○	○	○

APPENDIX B

SCHOOLTech FACILITATOR SURVEY

Demographic Information

Contact Information

1) SCHOOLTech Facilitator's Email: _____
2) SCHOOLTech Facilitator's Work Number: _____
3) Date Hired (Month and Year): _____

Experience and Background

4) What is the total number of years you have served as a school based SCHOOLTech Facilitator? _____

5) What is the total number of years you have served as a school based facilitator (include the time you have served as a SCHOOLTech Facilitator)? _____

6) Before becoming a school-based SCHOOLTech Facilitator, what position did you hold?
_____

- ○ Teachers
- ○ School Technology Facilitator/Coordinator
- ○ Technology Technical Support Staff
- ○ Curriculum Facilitator/Coordinator
- ○ Librarian
- ○ Other

If other, what was your position? _____

7) Have you earned any of the following endorsements or degrees?

- □ Technology Facilitator Endorsement
- □ Technology Leadership Endorsement
- □ Master's Degree in Educational Technology
- □ Plus 30 in Educational Technology
- □ Other

If other, please list. _____

Training, Professional Development and Professional Growth

Training

8) Did you receive any training to enhance your skills as a SCHOOLTech Facilitator?

- ○ Yes
- ○ No

If yes, please list the training opportunities:

Professional Growth

9) Was there any aspect of the SCHOOLTech program that provided you the best professional growth opportunity?

- ○ Yes
- ○ No

If yes, what?

School Sites Serviced

Program Demographics

10) List the name(s) and grade levels of all schools sites where you serve as a SCHOOLTech Facilitator.

USE THE FORMAT:
School Name (Grade Levels)

11) Did you serve part-time at any of these schools listed above?

- ○ Yes
- ○ No

If yes, which schools?

12) Did you have the resources you needed to perform your duties at all of your school sites?

- ○ Yes
- ○ No

If no, which sites did not have proper resources?

If no, what resources did you lack?

Activities and Professional Development

Professional Development Activity Frequency

13) Select the types and frequencies of professional development activities you implemented at your SCHOOLTech sites to assist teachers in becoming technology proficient and to increase integration of technology into the curriculum.

	Daily	Weekly	Monthly	Occasionally	Never
In class modeling of technology connected lessons.	○	○	○	○	○
One on one mentoring by SCHOOLTech Facilitator.	○	○	○	○	○
Group mentoring by SCHOOLTech Facilitator.	○	○	○	○	○
Teacher to teacher mentoring.	○	○	○	○	○
Collaborative planning with SCHOOLTech Facilitator.	○	○	○	○	○
Collaborative planning with SCHOOLTech Facilitator and other teachers.	○	○	○	○	○
Before or after school day professional development trainings.	○	○	○	○	○
Within school day professional development trainings.	○	○	○	○	○
Professional development trainings at the regional TLTCs.	○	○	○	○	○
Professional development trainings at district lab or training facility.	○	○	○	○	○
Use of online resources (including Worldbook and Gale).	○	○	○	○	○
Use of state's Making Connections site.	○	○	○	○	○
Use of the SCHOOLTech BlackBoard site.	○	○	○	○	○
Provide assistance to classroom teachers on developing and implementing classroom websites.	○	○	○	○	○
Provide assistance to the school in implementing use of the school's website.	○	○	○	○	○
Provide assistance to teachers in developing electronic portfolios for student assessment.	○	○	○	○	○
Provide assistance to teachers with	○	○	○	○	○

technology links to the comprehensive curriculum.					
Provide assistance to teachers with developing technology connected lesson plans.	○	○	○	○	○
Provide technical support to teachers.	○	○	○	○	○

Face-to-Face Professional Development Offerings

14) Please list all face-to-face professional development trainings that you offered to **TEACHERS**. Include the title, time/length of training, and number of participants.

15) Please list all face-to-face professional development trainings that you offered to **SCHOOL ADMINSTRATORS**. Include the title, time/length of training, and number of participants.

16) Please list all face-to-face professional development trainings that you offered to **DISTRICT ADMINSTRATORS**. Include the title, time/length of training, and number of participants.

17) Please list all face-to-face professional development trainings that you offered to **PARENTS**. Include the title, time/length of training, and number of participants.

18) Please list all face-to-face professional development trainings that you offered to **COMMUNITY**. Include the title, time/length of training, and number of participants.

Face-to-Face Professional Development Offerings

19) Please list all online professional development trainings that you offered to **TEACHERS**. Include the title, time/length of training, and number of participants.

20) Please list all online professional development trainings that you offered to **SCHOOL ADMINSTRATORS**. Include the title, time/length of training, and number of participants.

21) Please list all online professional development trainings that you offered to **DISTRICT ADMINSTRATORS**. Include the title, time/length of training, and number of participants.

22) Please list all online professional development trainings that you offered to **PARENTS**. Include the title, time/length of training, and number of participants.

23) Please list all online professional development trainings that you offered to **COMMUNITY**. Include the title, time/length of training, and number of participants.

Program Progress and Effectiveness

SCHOOLTech Program Effectiveness

24) Describe any "best practices" or model implementations of the SCHOOLTech Grant that could be replicated in other schools to assist teachers in becoming technology proficient as well as expanding the integration of technology into the curriculum.

25) List the two biggest challenges for each of the following:

Assisting teachers in becoming technology proficient:

Assisting teachers in integrating technology into the classroom:

26) Have your SCHOOLTech schools seen improvement in student performance scores as a result of this program?

- ○ Yes
- ○ No

If yes, how have the scores improved?

27) Have your SCHOOLTech seen an improvement in student technology literacy as a result of this program?

- ○ Yes
- ○ No

28) What resources, if any would make your SCHOOLTech program more successful?

APPENDIX C
SCHOOLTech FACILITATOR INTERVIEW PROTOCOL

1) How did you address your personal professional development needs in order to prepare yourself to assist other teachers with their technology proficiency?
2) If you served, more than one SCHOOLTech site, please describe any professional development implemented and effective at both school sites? A modified version of this question will also be asked of facilitators serving single sites.
3) Would you describe what you found to be the most effective professional development you implemented to positively impact teacher technology proficiency?
4) Could you describe any in class mentoring or modeling you conducted with teachers at your school?
5) How do you believe the SCHOOLTech program impacted student achievement at your SCHOOLTech school(s)?
6) Could you describe in detail an effective professional development practice or model you implemented that could be replicated at other school sites to positively impact teacher technology proficiency and student achievement?
7) Please describe what you perceive to be the single, biggest success of your SCHOOLTech program in impacting teacher technology proficiency?
8) Please describe what you perceive to be the single, biggest challenge of your SCHOOLTech program in impacting teacher technology proficiency?

APPENDIX D
INTERVIEW INFORMED CONSENT

Study Title: Site-Based Technology Facilitators: Catalysts for Achieving Teacher Technology Proficiency In K-12 Classrooms

Performance Site: Phone Interviews with site-based school technology facilitators

Investigator: The following investigator is available for questions about this study:
Janet G. Broussard
M-F, 8:00 a.m. – 6:00 p.m. (225)-938-1004
Evenings (337) 667-6999

Purpose of the Study: To investigate the types and frequencies of technology professional development being implemented by site-based school instructional technology facilitators to identify effective and replicable practices that can positively impact teacher technology proficiency.

Subject Inclusion: School technology facilitators

Number of subjects: 5 to 8 school technology facilitators
Study Procedures: The technology facilitators have delivered professional development at their respective sites for two years. A self-report survey will be administered to each facilitator to identify the types and frequencies of professional development being implemented. The top five to eight schools with the highest gains in teacher technology proficiency on the self-assessment instrument will participate in phone interviews Technology facilitators from the identified sites from previous administration of a teacher technology proficiency assessment will be used to identify Five facilitators will be interviewed to gain an in-depth understanding of the practices implemented Teachers will participate in a four week technology professional development experience paired with an online community of practice. A self-efficacy survey will be administered before and after the program. All teachers will also complete two teacher self-reports. Following the training, teachers will participate in a focus group, and principals will be interviewed.

Benefits: Teachers will receive professional development credit from their parish.

Risks: The only study risk is the difficult concealing the identify of the schools when reporting data. However, every effort will be made to maintain confidentiality.

Right to Refuse: Subjects may choose not to participate or to withdraw from the study at any time.

Privacy: Results of the study may be published, but no names or identifying information will be included in the publication. Subject identity will remain confidential unless disclosure is required by law.
Signatures:

The study has been discussed with me and all my questions have been answered. I may direct additional questions regarding study specifics to the investigator. If I have questions about subjects' rights or other concerns, I can contact Robert Matthews (225) 578-1145. I agree to participate in the study described above and acknowledge the investigator's obligation to provide me with a signed copy of this consent form.

Signature of Subject:_____Date_____

APPENDIX E

SCHOOLTech GRANT REPORT

General Grant Information

Contact Information

1) Name of SCHOOLTech Grant Coordinator: _____
2) SCHOOLTech Grant Coordinator's Email: _____

Program Demographics

3) How many SCHOOLTech Facilitators were you able to hire with this grant? _____

4) How many SCHOOLTech Facilitators did you hire with other funding sources? _____

5) List the names of all SCHOOLTech Facilitators associated with this grant.

USE THE FORMAT: *Teacher Name – School Name*

6) When was this/were these facilitator's hired.

USE THE FORMAT: *Teacher Name – Hire Date*

7) How many schools are served by the SCHOOLTech Facilitator(s)? _____

Of these schools, how many had a full time facilitator? _____

8) How many of your facilitators earned the following endorsements or degrees?
Technology Facilitator Endorsement _____
Technology Leadership Endorsement _____
Master's degree in Educational Technology _____
Plus 30 in Educational Technology _____

SCHOOLTech Program Effectiveness

9) Describe any "best practices" or model implementations of the SCHOOLTech Grant that could be replicated in other schools to assist teachers in becoming technology proficient as well as expanding the integration of technology into the curriculum.

10) List the two biggest challenges for each of the following:

Assisting teachers in becoming technology proficient:

Assisting teachers in integrating technology into the classroom:

11) Have your SCHOOLTech schools seen improvement in student performance scores as a result of this program?

- ○ Yes
- ○ No

If yes, how have the scores improved?

12) Have your SCHOOLTech seen an improvement in student technology literacy as a result of this program?

- ○ Yes
- ○ No

13) If grant funding was not available to continue the current SCHOOLTech program, would the district try to seek other funding sources to continue this program?

- ○ Yes
- ○ No

EETT Goal 1 Reporting

Indicator 1.1

14) Performance Indicator 1.1

Target for Indicator 1.1

Have you met/exceeded or not yet attained your target for indicator 1.1

- ○ Met/Exceeded
- ○ Not Yet Attained

Please provide an explanation or documentation for your answer.

Explanation:

Indicator 1.2

15) Performance Indicator 1.2

Target for Indicator 1.2

Have you met/exceeded or not yet attained your target for indicator 1.2

- ○ Met/Exceeded
- ○ Not Yet Attained

Please provide an explanation or documentation for your answer.

Explanation:

Indicator 1.3

16) Performance Indicator 1.3

Target for Indicator 3.1

Have you met/exceeded or not yet attained your target for indicator 1.3

- ○ Met/Exceeded
- ○ Not Yet Attained

Please provide an explanation or documentation for your answer.

Explanation:

Indicator 1.4 (if applicable)

17) Performance Indicator 1.4

Target for Indicator 1.4

Have you met/exceeded or not yet attained your target for indicator 1.4

- ○ Met/Exceeded
- ○ Not Yet Attained

Please provide an explanation or documentation for your answer.

Explanation:

EETT Goal 2 Reporting

Indicator 2.1

18) Performance Indicator 2.1

Target for Indicator 2.1

Have you met/exceeded or not yet attained your target for indicator 2.1

- Met/Exceeded
- Not Yet Attained

Please provide an explanation or documentation for your answer.

Explanation:

Indicator 1.2

19) Performance Indicator 2.2

Target for Indicator 2.2

Have you met/exceeded or not yet attained your target for indicator 2.2

- Met/Exceeded
- Not Yet Attained

Please provide an explanation or documentation for your answer.

Explanation:

Indicator 2.3

20) Performance Indicator 2.3

Target for Indicator 2.3

Have you met/exceeded or not yet attained your target for indicator 2.3

- ○ Met/Exceeded
- ○ Not Yet Attained

Please provide an explanation or documentation for your answer.

Explanation:

Indicator 2.4 (if applicable)

21) Performance Indicator 2.4

Target for Indicator 2.4

Have you met/exceeded or not yet attained your target for indicator 2.4

- ○ Met/Exceeded
- ○ Not Yet Attained

Please provide an explanation or documentation for your answer.

Explanation:

EETT Goal 3 Reporting

Indicator 3.1

22) Performance Indicator 3.1

Target for Indicator 3.1

Have you met/exceeded or not yet attained your target for indicator 3.1

- Met/Exceeded
- Not Yet Attained

Please provide an explanation or documentation for your answer.

Explanation:

Indicator 3.2

23) Performance Indicator 3.2

Target for Indicator 3.2

Have you met/exceeded or not yet attained your target for indicator 3.2

- Met/Exceeded
- Not Yet Attained

Please provide an explanation or documentation for your answer.

Explanation:

Indicator 3.3

24) Performance Indicator 3.3

Target for Indicator 3.3

Have you met/exceeded or not yet attained your target for indicator 3.3

- Met/Exceeded
- Not Yet Attained

Please provide an explanation or documentation for your answer.

Explanation:

Indicator 3.4 (if applicable)

25) Performance Indicator 3.4

Target for Indicator 3.4

Have you met/exceeded or not yet attained your target for indicator 3.4

- Met/Exceeded
- Not Yet Attained

Please provide an explanation or documentation for your answer.

Explanation:

APPENDIX F

SCHOOL TECHNOLOGY SURVEY

NOTE:
All text indicated in red denotes changes from the 2004-05 surveys.

School Demographic and Contact Information

Name of person completing this survey: _____
Email of person completing this survey: _____

School Name: _____
NCES #: _____
Telephone Number: _____
Fax Number: _____
School's Website: _____
Grade Span: From _____ to _____

Principal's Name: _____
Principal's Email: _____

Number of teachers: _____ (Use the number reported to LDE in December 2005).

Number of students: _____ (Use the number reported to LDE in December 2005).

Number of administrators: _____ (Use the number reported to LDE in December 2005).

Number of Eighth Grade Students: _____ (Use the number reported to LDE in December 2005).

Special Circumstances in 2005-06

Did the school sustain physical damage from either Hurricane Katrina or Rita?

- ○ Yes
- ○ No

If yes, did the school reopen for students in 2005-06?

- ○ Yes
- ○ No

If no, will the school reopen?

- ○ Yes
- ○ No

If yes, when is the school's anticipated opening? _____

Was the school's technology infrastructure or computer equipment damaged?

- ○ Yes
- ○ No

If yes, did the school replace the equipment in 2005-06?

- ○ Yes
- ○ No

If no, will the school replace the equipment in 2006-07?

- ○ Yes
- ○ No

Did your school enroll and retain hurricane displaced students?

- ○ Yes
- ○ No

If yes, did your school have to create additional classrooms (i.e. add T-buildings, open another school branch at a separate location, etc.) to support the additional student population?

- ○ Yes
- ○ No

If yes, did your school purchase additional technology equipment to support the new student population?

- ○ Yes
- ○ No

Infrastructure and Technical Support

Computers

1. How many computers* in the school are connected to the Internet? _____
   a. How many of these computers are in a library media center? _____
   b. How many of these computers are in a lab setting used primarily for technology integration? _____
   c. How many of these are in a computer lab setting used primarily for specialized coursework or for skill and enhancement learning (e.g., Carl Perkins labs, business labs, Reading First, ILS labs)? _____
   d. How many of these are in a mobile lab (computers that are moved from one room to another)? _____
   e. How many of these are predominantly administrative? _____
   f. How many of these are in classrooms (non-lab setting)? _____

   Note: a + b + c + d + e + f must equal the total as reported in this question

2. How many computers* in the school are NOT connected to the Internet? _____
   a. How many of these are in a library media center? _____
   b. How many of these computers are in a lab setting used primarily for technology integration? _____
   c. How many of these are in a computer lab setting used primarily for specialized coursework or for skill and enhancement learning (e.g., Carl Perkins labs, business labs, Reading First, ILS labs)? _____
   d. How many of these are in mobile lab (computers that are moved from one room to another)? _____
   e. How many of these are predominantly administrative? _____
   f. How many of these are in classrooms (non-lab setting)? _____

Note: a + b + c + d + e + f must equal the total as reported in this question

3. Of the total computers in questions 1, how many of these computers **ARE NOT** running current operating systems and software (e.g., Windows 2000 or greater and/or Apple OS X or greater)? _____

*Computers to be counted should include all laptop computers, tablet PCs, and desktop computers. **Do not count** computers which are no longer operable OR are obsolete and cannot be upgraded for use in performing basic technology integration skills.

Other Technology/Computing Devices

4. How many PDAs (Portable Digital Assistants) are available for use by students and/or teachers in your school? _____

5. Which of the following devices are available for use by students and/or teachers in your school?
   Check all that apply:

- ☐ Assistive/Adaptive Devices (e.g., Intellikeys keyboard, Jellybean switch, eyeglasses)
- ☐ Computer Projection Devices (e.g., video projector, scan converter)
- ☐ Digital Still Cameras
- ☐ Digital Video Cameras
- ☐ High Definition TV Monitors (digital)
- ☐ Ink Jet Printers
- ☐ Laser Printers
- ☐ Laserdisc Players
- ☐ Personal Digital Assistant (PDA)
- ☐ Scanners
- ☐ Smart Boards
- ☐ Text Editors (e.g., Alpha Smarts, Dream Writers)
- ☐ TV Monitors (not computer monitors)
- ☐ TV Production Studios
- ☐ Web TV Units
- ☐ Probes
- ☐ GPS Units
- ☐ Graphic Calculator
- ☐ Flex Cam
- ☐ VCR Player
- ☐ DVD Player
- ☐ Audio System
- ☐ Video Conferencing
- ☐ i-Pods

School Connectivity

6. Does your school have Internet Access?

- ○ Yes
- ○ No

Classroom Connectivity

In the chart below, indicate the number of each type of room in your school, the number of rooms with the specified amount of internet connectivity, and the number of rooms in your school that meet the state definition of a model technology classroom. Note: the total number of instructional rooms in the school includes **ALL** classrooms, libraries, and computer labs – every room in which instruction is provided to students, and not used for primarily administrative purposes).

	Classrooms			**Library/ Media Centers**	**Computer Labs**	**Total Instructional Rooms**	**Administrative Rooms/ Offices**
	7a			**7b**	**7c**	**7d = 7a+7b+7c**	**7e**
7. **Number of rooms designated as:**							
	8a			**8b**	**8c**	**8d = 8a+8b+8c**	**8e**
8. **Number of rooms with specified number of Internet connections:**	1 computer with internet connection	2-3 computers with internet connection	4 or more computers with internet connection	**Number of library/ media centers with 1 or more internet connections**	**Number of computer labs with 1 or more computers connected to the internet**	Total Instructional Rooms with internet connections	**Number of administrative rooms/offices with internet connections**
9. **Number of model classrooms*:**				*A **model classroom** has a minimal ratio of 5:1 student-to-internet-connected PCs, a networked teacher computer, a networked printer, appropriate software, and a large screen display and/or projection device			

Support

In this section, provide information about the school-based technology (both instructional and technical) facilitators. Do not include non-school based support facilitators in this count.

10. Does your school have a school-based facilitator to assist teachers with technology integration?
    - ○ Yes
    - ○ No

If yes, this position is ☐ Full time (salaried)
☐ Part time (salaried; half day or less)
☐ Part time (stipend or release time; extra duties on top of regular, full-time position)
☐ Volunteer

If yes, how is this position funded? (check all that apply)
☐ Federal Grant
☐ State Grant
☐ Other Grant
☐ District Funding
☐ Not Funded (volunteer)

11. Does your school have a school-based technical support person for maintenance and/or support of hardware and software?
    - ○ Yes
    - ○ No

If yes, this position is ☐ Full time (salaried)
☐ Part time (salaried; half day or less)
☐ Part time (stipend or release time; extra duties on top of regular, full-time position)
☐ Volunteer

12. Is your school-based instructional technology facilitator the same person as the school-based technical support person?
    - ○ Yes
    - ○ No

School Technology Needs

13. What is your school's **most** critical technology need?
    - ○ Higher/better internet connection speed
    - ○ More classroom computers and equipment
    - ○ Technical support help and/or training
    - ○ More professional development training to utilize current technology
    - ○ School technology facilitator(s) to assist teachers

14. What is your school's **least** critical technology need?
    - ○ Higher/better internet connection speed
    - ○ More classroom computers and equipment
    - ○ Technical support help and/or training
    - ○ More professional development training to utilize current technology
    - ○ School technology facilitator(s) to assist teachers

Infrastructure and Technical Support Rubric

Identify your school's current level of progress in the area of **Infrastructure and Technical Support**. It is possible that your school may have indicators in more than one of the levels of progress (Early Tech, Developing Tech, Advanced Tech, or Target Tech). However, you are to select the <u>one</u> level of progress that <u>best</u> describes your school at this particular point in time.

Early Tech	**Developing Tech**	**Advanced Tech**	**Target Tech**
• Student access to technology is mostly limited to lab settings. • Faculty and teacher access to technology is inconsistent and mostly limited to offices or workspaces. • Technical assistance for students and faculty use of technology is viewed as inconsistent or inadequate. • Issues of access and quality are unresolved.	• Access to technology is available in the classroom to support student learning and faculty teaching and productivity. • Access to technology is growing and includes both classroom and lab settings for student use. • Internet access and network resources are limited and/or not consistently available. • Technical assistance for students and faculty is readily available but is limited to troubleshooting hardware and software. Technical assistance for supporting teaching and learning is not clearly defined or is understaffed.	• Access to computers, software, and Internet networks is provided for students, teachers, and support personnel throughout the school (classrooms, libraries, media centers, administrative areas) during the school day and sometimes beyond the school day. • Technical assistance for students, teachers, and administrators is readily accessible and includes mentoring to enhance skills in managing classroom resources and instructional strategies to support teaching and learning.	• Students and teachers have "on-demand access" to technology resources – hardware and software, telecommunications, and other online resources, including home and community access. • Technical assistance for students, teachers, and administrators is available around the clock. The technical assistance includes paid staff and identified peer and student mentors, as well as content and pedagogy specialists for supporting the use of technology in teaching and learning.

- ○ Early Tech
- ○ Developing Tech
- ○ Advanced Tech
- ○ Target Tech

Student Learning

15. Are students in your school enrolled in any distance learning courses delivered electronically?
    - ○ Yes
    - ○ No

    If yes, provide the number of students participating in the following distance learning programs.

    ___ Louisiana Virtual School (online web-based classes offered via the Internet and administered by the Louisiana Department of Education)

    ___ 8(g) LVS courses (classes provided by an accredited satellite course provider and are funded by an LVS 8(g) grant)

    ___ 8(g) audio graphic courses (classes conducted using the computer and telephone through the Statewide Distance Learning Network administered by the Louisiana Department of Education)

    ___ Interactive Video, compressed or IP-based (classes delivered using "real-time," interactive audio-video approach)

    ___ Other _____

16. Are students in your school enrolled in any of the Secondary Computer Education Courses (as identified in *Bulletin 741*)?
    - ○ Yes
    - ○ No

    If yes, provide the number of students in the following courses:
    ____ Computer Technology Applications
    ____ Computer/Technology Literacy
    ____ Computer Science I or II
    ____ Computer Architecture
    ____ Computer Systems and Networking I or II
    ____ Digital Graphics and Animation
    ____ Desktop Publishing
    ____ Multimedia Productions
    ____ Web Mastering
    ____ Independent Study in Technology Applications

17. Students can use technology to support learning in a variety of ways. In the chart below, identify the approximate frequency of a particular use by most of the students in your school. If technology in your school is not used in the manner described, then indicate "Never."

Student Use of Technology	Daily	Weekly	Monthly	Rarely or	Never

				Occasionally	
Communicate electronically with experts, peers, and others	○	○	○	○	○
Solve real-world problems	○	○	○	○	○
Productivity Tools (Word processing, spreadsheets, databases)	○	○	○	○	○
Multimedia/Production (multimedia programs, concept mapping software, graphing software, etc.)	○	○	○	○	○
Conduct online research	○	○	○	○	○
To assist in problem-solving, self-directed learning, and extended learning activities.	○	○	○	○	○
Work on online collaborative projects	○	○	○	○	○
Use digital cameras, probes to collect data, scanners, etc. to enhance learning	○	○	○	○	○
Simulations, virtual tours, etc.	○	○	○	○	○
Computer-assisted learning (CCC, Compass, Plato, Skills Tutor, Orchard, LightSpan, etc.)	○	○	○	○	○

18. How does your school integrate the Louisiana K-12 Educational Technology Standards into the learning experiences of the students and school curricula? Check all that apply.

    ☐ As a separate subject
    ☐ Into mathematics
    ☐ Into English/language arts
    ☐ Into social studies
    ☐ Into science
    ☐ Into other subject areas (e.g., art, health education, family and consumer science)

19. During the 2005-06 school year, did ALL students in your school have access to a networked computer and were ALL students in your school regularly given the opportunity to do meaningful work from these networked computers, beyond use for drill and practice?

    Note: *For a school to answer "**YES**" to this question would mean that the school environment is such that all students have regular use of a networked computer for learning and research and that the use is across multiple disciplines and classrooms and is consistent with the Louisiana K-12 Educational Technology Standards. (Computer use for drill and practice activities in a lab or classroom environment alone would not meet this condition.)*

    ○ Yes
    ○ No

    If no, provide an approximate percentage of your students, who during the 2005-06 school year, had access to a networked computer for learning and research and who were given the opportunity to do meaningful work from these networked computers:

- 75-99 %
- 50-74%
- 25-49%
- 1-24%
- 0%

Student Learning Rubric

Identify your school's current level of progress in the area of **Student Learning**. It is possible that your school may have indicators in more than one of the levels of progress (Early Tech, Developing Tech, Advanced Tech, or Target Tech). However, you are to select the **one** level of progress that **best** describes your school at this particular point in time.

Early Tech	Developing Tech	Advanced Tech	Target Tech
• Student use of technology to support learning is limited and sporadic and is mostly done in a computer lab setting or library. • Students occasionally use productivity software applications and/or use tutorial software for drill and practice. • Students have little engagement in the learning process. Student collaboration is isolated.	• Students have regular weekly use of a computer to supplement classroom instruction, primarily in lab and library settings. • Students regularly use technology on an individual basis to access electronic information and for communication and presentation projects. • Students use technology for research, communications, and presentations.	• Students have regular weekly technology use for integrated curriculum activities utilizing various instructional settings (i.e., classroom computers, libraries, labs, and portable technologies) • Students work with peers and experts to evaluate information, analyze data and content in order to problem solve. • Students select appropriate technology tools to convey knowledge and skills learned.	• Students have on-demand access to all appropriate technologies to complete activities that have been seamlessly integrated into all core curriculum areas. • Students work collaboratively in communities of inquiry to propose, assess, and implement solutions to real world problems. • Students communicate effectively with a variety of audiences. • Students use digital content and technology is used in ways that significantly

			changes the entire learning process, allowing for greater levels of collaboration, inquiry, analysis, and creativity.

- ○ Early Tech
- ○ Developing Tech
- ○ Advanced Tech
- ○ Target Tech

Educator Technology Proficiency and Practice

20. What types of strategies does your school implement to build teacher technology competency and to assure that all teachers in your school can achieve the National Educational Technology Standards for Teachers? Check all that apply.

    - □ School Improvement Plan that addresses instructional technology strategies across all areas
    - □ Lesson plans that integrate technology standards
    - □ Professional Growth Plans that include technology integration objectives
    - □ Classroom observations and evaluations
    - □ Self-assessment survey of technology skills and technology methods attained by teachers
    - □ Online communication (e.g., email, discussion boards, announcements, memo)
    - □ School stipends for after-hours professional development
    - □ Release time for teachers to attend district and or regional TLTC-provided workshops
    - □ Release time for teachers to attend state and national professional conferences
    - □ Time provided for teachers to plan collaboratively for technology-rich, standards-based lessons

21. Teachers can utilize technology to support instructional practices and their professional growth and performance in a variety of ways. In the chart below, identify the approximate proportion of your teachers that use technology in the manner that is described.

Teacher Practice	All	Most	Half	A Few	None
Teacher uses technology to provide technology-rich learning experiences for students (e.g. student online research, student online collaborative projects, students engaged in authentic technology-based work)	○	○	○	○	○

Teacher uses technology to provide students with non-traditional forms of student assessment (e.g., multimedia projects, websites, electronic portfolios)	○	○	○	○	○
Teacher collaborates with other educators online	○	○	○	○	○
Teacher participates in online courses	○	○	○	○	○
Teacher maintains professional electronic portfolio	○	○	○	○	○
Teacher uses technology to enhance his/her own productivity (e.g., managing grades, assessment and evaluation tools, communicating with parents)	○	○	○	○	○
Teachers use technology tools and applications to enhance assessment practices	○	○	○	○	○

Professional Development

22. Indicate the number of teachers in your school who have successfully completed each of the following statewide technology professional development programs **DURING 2005-06**:
    _____ FIRSTTech
    _____ Louisiana INTECH K-6
    _____ Louisiana INTECH 7-12
    _____ INTECH 2 Science
    _____ INTECH 2 Social Studies
    _____ Making Connections
    _____ Marco Polo Training
    _____ K-12 Online Database Resources Training (WorldBook and/or GALE)
    _____ State-sponsored Online Professional Development (e.g., EIT)
    _____ Louisiana Information Literacy Initiative (LILI)
    _____ Universal Designs for Learning (UDL)
    _____ i-Safe
    _____ PalmQuest
    _____ Proficiency Express
    _____ Effective Instructional Technology: An Introduction
    _____ Effective Instructional Technology: Building a Portfolio of Exemplars
    _____ GLEEM Modules

23. Indicate the TOTAL number of teachers in your school who have successfully completed each of the following statewide technology professional development programs **PRIOR to the 2005-06** school year:
    _____ FIRSTTech
    _____ Louisiana INTECH K-6
    _____ Louisiana INTECH 7-12
    _____ INTECH 2 Science
    _____ INTECH 2 Social Studies
    _____ Making Connections

_____ Marco Polo Training
_____ K-12 Online Database Resources Training (WorldBook and/or GALE)
_____ State-sponsored Online Professional Development
_____ Louisiana Information Literacy Initiative (LILI)
_____ Universal Designs for Learning (UDL)
_____ i-Safe
_____ PalmQuest

24. Which of the following types of technology training opportunities does your school currently provide? Check all that apply.

- ☐ Basic Computer Skills (use of operating systems and parts of the computer)
- ☐ Advanced Technology Skills (use of website development software, PDAs, GPS, video production, etc.)
- ☐ Email Communication
- ☐ Basic Productivity Skills (word processing, spreadsheets, databases and presentation)
- ☐ Integration of Technology Instruction (use of technology resources in classroom instruction)
- ☐ Use of Electronic Grade books
- ☐ Classroom Internet Research
- ☐ Grant Writing Skills
- ☐ Writing Professional Growth Plans
- ☐ Online or University Courses
- ☐ Other _____
- ☐ Our school does not provide any of these types of training

25. Which of the following professional development opportunities does your school need? Check all that apply.

Productivity Training

- ☐ Basic Computer Skills (use of operating systems and parts of the computer)
- ☐ Advanced Technology Skills (use of website development software, PDAs, GPS, video production)
- ☐ Email Communication
- ☐ Basic Productivity Skills (word processing, spreadsheets, databases and presentation)
- ☐ Integration of Technology (use of technology resources in classroom instruction)
- ☐ Use of Electronic Grade books
- ☐ Grant Writing Skills
- ☐ Writing Professional Growth Plans
- ☐ Classroom Internet Research

Technology Integration Training

- ☐ Louisiana INTECH K-6
- ☐ Louisiana INTECH 7-12

- ☐ INTECH 2 Science
- ☐ INTECH 2 Social Studies
- ☐ MarcoPolo Workshop
- ☐ Making Connections Workshop
- ☐ WorldBook Online Workshop
- ☐ Gale Group Database Workshop
- ☐ Online Professional Development
- ☐ Universal Designs For Learning (UDL)
- ☐ Louisiana Information Literacy Initiative (LILI)
- ☐ Other _____
- ☐ None

Educator Technology Proficiency and Practice Rubric

Identify your school's current level of progress in the area of **Teacher Technology Proficiency and Practice**. It is possible that your school may have indicators in more than one of the levels of progress (Early Tech, Developing Tech, Advanced Tech, or Target Tech). However, you are to select the <u>one</u> level of progress that <u>best</u> describes your school at this particular point in time.

Early Tech	**Developing Tech**	**Advanced Tech**	**Target Tech**
• Technology skills and use of technology is limited to a few teachers. • Teachers have limited or no opportunities for technology-rich professional development. • Teachers use technology in the classroom as a supplement. • Teachers are aware of the possibilities for the use of technology to support professional practice, but lack either the requisite skills	• Teachers are skilled in the basic professional productivity tools, using technology primarily for their own productivity in relation to teaching and learning (creating plans, composing reports, writing letters). • Professional development in technology focuses on technology skills and is limited in content and/or frequency.	• Teachers are skilled in the uses of technology for teaching and learning. • Teachers are using the technology, basic productivity tools and basic Web resources with students. • Teachers are provided with timely, ongoing needs-based professional development opportunities for technology skill development and application of technology in teaching and learning with the	• Teachers are skilled users of technology to improve teaching, learning, and school management. • Teachers integrate multiple technologies to transform the teaching process by allowing for greater levels of interest, inquiry, analysis, collaboration, creativity, and content production • Teachers have access to professional development "on demand" in a mode suitable to various learning styles. Resources are provided to support professional development.

or access to become effective users.		time and equipment to be successful. • Professional development opportunities use various modes of delivery and are evaluated for effectiveness and satisfaction.	• Professional development opportunities are regularly evaluated, revised with input from participants, and based on a comprehensive technology plan.

- ○ Early Tech
- ○ Developing Tech
- ○ Advanced Tech
- ○ Target Tech

School Administrator Technology Proficiency and Leadership

Information for this section must be obtained directly from or submitted directly by the school principal and assistant principal.

26. Has the principal completed the LEADTech coursework, or is the principal currently enrolled in the LEADTech program?
    - ○ Yes
    - ○ No

27. Has/Have the assistant principal(s) completed the LEADTech coursework, or is/are the assistant principal(s) currently enrolled in the LEADTech program?
    - ○ Yes
    - ○ No
    - ○ N/A

28. Has the principal completed the Louisiana Principal Induction (LPI) coursework, or is the principal currently enrolled in the LPI program?
    - ○ Yes
    - ○ No

29. Has/Have the assistant principal(s) completed the Louisiana Principal Induction (LPI) coursework, or is/are the assistant principal(s) currently enrolled in the LPI program?
    - ○ Yes
    - ○ No
    - ○ N/A

30. Do the principal and assistant principal(s) actually encourage teachers to integrate appropriate technologies to maximize learning and teaching?
    - ○ Always

- ○ Almost Always
- ○ Sometimes
- ○ Almost Never
- ○ Never

31. How does the principal routinely and regularly model/promote effective uses of technology in his/her work? Check all that apply.
    - ☐ Data-driven decisions
    - ☐ Email communication with district
    - ☐ Email communication with parents
    - ☐ Email communication with teachers
    - ☐ PDAs
    - ☐ PowerPoint presentations
    - ☐ Spotlight effective teaching practices
    - ☐ Use technology for recording teacher evaluations
    - ☐ Using student management systems
    - ☐ Web page creation
    - ☐ Word processing (newsletters, memos, reports)

32. How does/do the assistant principal(s) routinely and regularly model/promote effective uses of technology in his/her/their work? Check all that apply.
    - ☐ Data-driven decisions
    - ☐ Email communication with district
    - ☐ Email communication with parents
    - ☐ Email communication with teachers
    - ☐ PDAs
    - ☐ PowerPoint presentations
    - ☐ Spotlight effective teaching practices
    - ☐ Use technology for recording teacher evaluations
    - ☐ Using student management systems
    - ☐ Web page creation
    - ☐ Word processing (newsletters, memos, reports)
    - ☐ N/A

33. How does the principal promote and support effective use of technology for teachers and learning. Check all that apply.

    - ☐ The principal considers the instructional technology skills of the prospective teachers applying for a position at his/her school.
    - ☐ The principal provides release time for teacher professional development in the area of instructional technology.
    - ☐ The principal evaluates a teacher's effective use of instructional technology as one of the assessment factors when evaluating personnel.
    - ☐ The principal requires teachers on his/her staff to include a technology goal in their professional growth plans.
    - ☐ The principal requires teachers on his/her staff to include a technology component in lesson planning.

34. Identify the ways in which the principal addresses his/her professional growth in the area of technology and instructional leadership. Check all that apply.

- ☐ LEADTech
- ☐ Louisiana Principal Induction (LPI)
- ☐ District-provided technology trainings
- ☐ Regional TLTC-provided trainings
- ☐ Online Courses
- ☐ National conferences
- ☐ University courses

35. Identify the ways in which the assistant principal(s) addresses/address his/her/their professional growth in the area of technology and instructional leadership. Check all that apply.

- ☐ LEADTech
- ☐ Louisiana Principal Induction (LPI)
- ☐ District-provided technology trainings
- ☐ Regional TLTC-provided trainings
- ☐ Online Courses
- ☐ National conferences
- ☐ University courses
- ☐ N/A

School Administrator Technology Proficiency and Leadership Rubric

Identify your school's current level of progress in the area of **School Administrator (Principal and Assistant Principal(s)) Technology Proficiency and Leadership**. It is possible that your school may have indicators in more than one of the levels of progress (Early Tech, Developing Tech, Advanced Tech, or Target Tech). However, you are to select the one level of progress that best describes your school at this particular point in time.

Early Tech	Developing Tech	Advanced Tech	Target Tech
• The principal /assistant principal(s) demonstrates minimal personal use of technology, but his/her professional practice is not significantly impacted by technology. • The principal /assistant principal(s) acknowledges the benefits of technology in instruction, but lacks the time, access or interest to actively model, support or promote the integration of technology across the school curriculum and the professional growth of his/her teachers in the area of instructional technology.	• The principal /assistant principal(s) models the use of technology in some aspects of his/her daily work as the instructional leader of the school. • The principal /assistant principal(s) expects teachers to use technology for administrative and classroom management tasks. • The principal /assistant principal(s) encourages teachers to advance their knowledge of instructional technology in their professional growth plans.	• The principal /assistant principal(s) models the use of technology in his/her daily work. • The principal /assistant principal(s) has policies, budgets, resources, and incentives for teachers that support the use of technology in teaching, learning, and professional collaboration. • The principal /assistant principal(s) takes an active role in facilitating the professional development of staff related to technology. He/she ensures that training offerings support the school curriculum and rich instructional practices. • The administrator is well-versed in the effective use of technology in student learning.	• The principal /assistant principal(s) is an excellent role model for the effective use of technology. Administrator uses technology, not only as prescribed through standard procedures and reports, but to interpret and report data in new and creative ways and to communicate with stakeholders. • The principal /assistant principal(s) ensures integration of appropriate technologies to maximize learning and teaching and involves and educates the school community around issues of technology integration.

		He/she is able to constructively evaluate classroom uses of technology and prescribe modifications.	• The principal /assistant principal(s) participates in and often initiates professional collaborations that are enabled and supported through technology. When new technologies are demonstrated to be of value for learning or efficiency, the administrator is an early adopter and effective promoter.

- ○ Early Tech
- ○ Developing Tech
- ○ Advanced Tech
- ○ Target Tech

Classroom Integration and Effective Practices

36. Indicate the frequency with which most or all students in your school use technology for learning in each content area specified below:

Content Area	Daily	Weekly	Monthly	Rarely or Occasionally	Never
Reading	○	○	○	○	○
Writing	○	○	○	○	○
Mathematics	○	○	○	○	○
Science	○	○	○	○	○
Social Studies	○	○	○	○	○
Arts	○	○	○	○	○
PE/Health	○	○	○	○	○
Foreign Language	○	○	○	○	○

37. Indicate the mechanism(s) your school has in place to adopt and promote technology-supported instructional practices school-wide. Check all that apply.

- ☐ A school team (e.g., a school improvement team, school leadership team) establishes yearlong targets for building-wide adoptions of proven solutions (including technology-supported solutions) that promote improved student learning and achievement.
- ☐ Teacher technology performance reviews include assessment of effective technology integration.
- ☐ Incentives are provided to teachers who adopt proven best practices related to technology (e.g., laptops, conference attendance, stipends).
- ☐ Best practices are entered into the Making Connections website for lesson plans and curricula that is accessible to all teachers.
- ☐ Best practices are spotlighted through communication mechanisms (e.g., newsletter, faculty meetings, email).
- ☐ The school has no formal process in place to promote technology-supported instructional practices school-wide. Teacher adopts technology-supported instructional practices based on their own comfort level and interest.
- ☐ Encourages and provides opportunities for participation in local, state, and national technology conferences for professional development (e.g., LACUE, NECC).
- ☐ Encourages and supports grant writing activities (by classroom teachers and/or school Grant Writing Team) to provide additional hardware, software, and professional development opportunities.
- ☐ Teachers regularly meet as teams for collaborative planning sessions and focus on technology integrated lessons as part of curriculum planning.
- ☐ Teachers have begun to make technology connections to Comprehensive Curriculum implementation.

38. Rate the extent to which the following conditions exist in your school.

1 = Not at all
2 = Efforts to do this are just beginning
3 = Efforts have begun and some progress has been made
4 = Efforts have begun and we have made considerable progress
5 = This condition has been achieved at our school

School Condition	1	2	3	4	5
Technology is used to promote inclusion of special needs students into mainstream classes and/or curricula	○	○	○	○	○
There is guidance from the school to ensure that the use of technology by teachers across grades and content areas is consistent	○	○	○	○	○
There are policies in place to ensure that all aspects of the student population have access to technology resources to support learning.	○	○	○	○	○

39. Do the teachers in your school utilize web resources for instructional support and activities?
- ○ Yes
- ○ No

If yes, select all that apply.

- ☐ School Web Page
- ☐ District Web Page
- ☐ Louisiana Department of Education Website
- ☐ Making Connections Website
- ☐ On-line libraries/databases
- ☐ Other Web sites

40. Which of the following devices are routinely used to support classroom instruction?

- ☐ Assistive/Adaptive Devices
- ☐ Computer Projection Devices
- ☐ Digital Still Cameras
- ☐ Digital Video Cameras
- ☐ High Definition TV Monitors (digital)
- ☐ Laser Printers
- ☐ Laserdisc Players
- ☐ Personal Digital Assistant (PDA)
- ☐ Scanners
- ☐ Smart Boards
- ☐ Text Editors (e.g. Alpha Smarts, Dream Writers)
- ☐ TV Monitors (not computer monitors)
- ☐ TV Production Studios
- ☐ WebTV Units
- ☐ Probes
- ☐ GPS Units
- ☐ Graphic Calculator
- ☐ Flex Cam
- ☐ VCR Player
- ☐ DVD Player
- ☐ Audio System
- ☐ Video Conferencing
- ☐ i-Pods

Classroom Integration and Effective Practice Rubric

Identify your school's current level of progress in the area of **Classroom Integration and Effective Practice**. It is possible that your school may have indicators in more than one of the levels of progress (Early Tech, Developing Tech, Advanced Tech, or Target Tech). However, you are to select the one level of progress that best describes your school at this particular point in time.

Early Tech	Developing Tech	Advanced Tech	Target Tech

• Teacher-directed instruction is the predominant mode of instruction. • When technology is used, students usually work alone with few options for student interaction, cooperative learning, or project-based learning. • Technology is used to supplement or as a reward. • No technology use or integration occurring in the core content areas (mathematics, English/language arts, science, and social studies).	• Teachers attempt to implement student-centered approaches to learning, but often do not allow sufficient time or appropriate technology resources. • Use of technology is minimal in core content areas (mathematics, English/language arts, science, and social studies). • Technology is beginning to be used and applied in ways that support the existing curriculum standards. Applications typically reflect presentations of content or student activities that are similar to those found in the classroom before technology integration.	• Teachers routinely use student-centered approaches to learning that are meaningful, active, cooperative, project-based and that allow student use of appropriate technologies. • Technology is integrated into core content areas (mathematics, English/language arts, science, and social studies). • Technology is integrated into instruction and used for research, planning, multimedia presentations and simulations, and to correspond and communicate. • Technology is used in many ways to support existing instruction and to make that instruction more engaging. Learning is often project-based, but seldom results in products for outside audience	• Teachers routinely use student-centered approaches to learning including constructivist pedagogy (allowing students to create, identify, and construct their own problems, scenarios, or innovative solutions to complex problems), facilitating appropriate student use of technology-based resources. • Technology is integral to all subject areas. • Technology is interwoven into many learning situations. Learning is often multidisciplinary. Students have opportunities to exercise problem-solving skills within classroom context. Learning activities are highly interactive and responsive to student needs.

- Early Tech
- Developing Tech
- Advanced Tech
- Target Tech

Communication and Community Outreach

41. Does your school provide phones in the classroom?
    - ○ Yes
    - ○ No

42. Does your school have a website?
    - ○ Yes
    - ○ No

    If yes,

    a. Is the school's website linked to the district site?
        - ○ Yes
        - ○ No

    b. Which of the following items are included and regularly updated on the school's website?

    (Check all that apply):
        - ☐ school calendar
        - ☐ school address
        - ☐ school phone number
        - ☐ school fax number
        - ☐ administrators' names
        - ☐ administrators' email addresses
        - ☐ administrators' pictures
        - ☐ a list of faculty members
        - ☐ faculty members' email addresses
        - ☐ links to teachers' web pages
        - ☐ links to sites that would be useful for parents and students

43. The number of teachers who have their own regularly updated class webpage linked from the school's webpage. _____

44. The school currently uses and/or provides which of the following? Check all that apply.
    - ☐ online learning software (e.g., Blackboard, WebCT)
    - ☐ CVC or IP infrastructure for video conferencing
    - ☐ training available for interested community members
    - ☐ community access to technology after hours

45. The number of teachers in your school who routinely use email for professional endeavors: _____

46. The number of students who use email at school as part of the learning experience: _____

47. The number of teachers in your school who have Internet access at their homes. _____

48. The number of students in your school who have Internet access at their homes. _____

49. Students who do not have access to technology in their homes can gain access through: (Check all that apply)
    - ☐ After School Open Labs
    - ☐ Community Centers
    - ☐ Libraries
    - ☐ Take home computer
    - ☐ PDA
    - ☐ i-Pods
    - ☐ Other

Communication and Community Outreach Rubric

Identify your school's current level of progress in the area of **Communication and Community Outreach**. It is possible that your school may have indicators in more than one of the levels of progress (Early Tech, Developing Tech, Advanced Tech, or Target Tech). However, you are to select the one level of progress that best describes your school at this particular point in time.

Early Tech	Developing Tech	Advanced Tech	Target Tech
• Communication with parents and outreach to other educational stakeholders is mostly limited to written or phone communications. • Advanced technologies have very little impact on current school communications.	• Communication and outreach extends beyond traditional communication (written and phone) to include a regularly updated school web page and some use of email communications.	• Communication and outreach includes extensive use of technologies such as email, as well as the availability of up-to-date and extensive web information delivered via school and/or classroom web pages.	• Communication and outreach includes extensive use of email, school and classroom web pages, and online learning communities.

- ○ Early Tech
- ○ Developing Tech
- ○ Advanced Tech
- ○ Target Tech

Planning and Funding

50. Does your school have a stand-alone technology plan?
    - ○ Yes
    - ○ No

If yes,

a. Is your school plan aligned to the district plan?

- ○ Yes
- ○ No

b. Is your school plan aligned with and incorporated into your school improvement plan and improvement strategies?

- ○ Yes
- ○ No

c. Does your plan address curriculum integration needs and strategies?

- ○ Yes
- ○ No

d. What was the year of the last revision of your school plan? ____

If no, is there a component of your school improvement plan that can be identified as a plan for instructional technology in your school?

- ○ Yes
- ○ No

51. Which funding sources does your school use to make technology purchases (hardware, software, technology professional development, technology support)? Check all that apply.

- ☐ District allocation
- ☐ Federal title funds
- ☐ Site-based line item
- ☐ Grants
- ☐ Parent Supporters
- ☐ State Funds
- ☐ Community Partners
- ☐ Fund Raisers
- ☐ Special Education
- ☐ Private donations
- ☐ Other

52. On the average, what annual dollar amount of your *school-based funds** are used to support instructional technology purchases (i.e., what is your average annual expenditure for technology-related purchases)?

- ○ Less than $1000 per year
- ○ $1,000 - $9,999 per year
- ○ $10,000 - $24,999 per year
- ○ Over $25,000 per year

**School-based funds are those funds generated by the school, locally generated specifically for the school, or awarded directly to the school. (i.e., PTO funds, school fundraisers, locally generated funds specifically for the school, or state award funds you choose to earmark for technology. This does not include district, state, or federal funds that flow to the school.)*

E-Rate Funding

53. Does your school apply individually for E-rate funding?
    - ○ Yes
    - ○ No*

54. If your school applies individually for E-Rate funding, does your technology plan address E-Rate requirements and funding requests?
    - ○ Yes
    - ○ No

55. If your school applied for E-Rate funding, what was your discount percentage for 2005-06? _____

56. If your school applied for E-Rate funding, how much did your school apply for in 2005-06? _____ *(rounded to the nearest dollar)*

57. If your school applied for E-Rate funding in 2005-06, has your application been funded?
    - ○ Yes
    - ○ No

    If yes, what was the funding amount? _____ *(rounded to the nearest dollar)*

58. Did your school apply for new or additional E-Rate Funding during the special 2005-06 Katrina Window?
    - ○ Yes
    - ○ No

    If yes, how much did you apply for? _____

59. If your school applied for 2005-06 E-Rate funding, did your school adjust your E-Rate discount during the Katrina Window?
    - ○ Yes
    - ○ No

    If yes, what was the additional funding amount? _____

    If yes, what was the adjusted discount percentage? _____

60. Did your school apply for E-Rate Funding for 2006-07?
    - ○ Yes
    - ○ No

    If yes, what was the free and reduced lunch number you reported on your application

If yes, what was the discount percentage?

If yes, did you file utilizing the Katrina waiver?

- ○ Yes
- ○ No

If yes, did you file utilizing the USDA waiver?

- ○ Yes
- ○ No

61. If you have not applied for E-Rate Funding for 2006-07, do you plan to apply in the special Katrina Extension Window?
    - ○ Yes
    - ○ No

Planning and Funding Rubric

Identify your school's current level of progress in the area of **Planning and Funding**. It is possible that your school may have indicators in more than one of the levels of progress (Early Tech, Developing Tech, Advanced Tech, or Target Tech). However, you are to select the one level of progress that best describes your school at this particular point in time.

Early Tech	Developing Tech	Advanced Tech	Target Tech
• No campus technology plan or a plan that is not implemented. • School technology used mainly for administrative tasks such as word processing, budgeting, attendance, and grade books • No school budget for hardware and software purchases and professional development.	• School technology plan aligns with District Technology plan and is used for internal planning, budgeting, and applying for external funding. • Some dollars in the school budget for hardware and software purchases, professional development, and minimal staffing support.	• A collaboratively developed school technology plan aligns with District Technology plan and is used for internal planning, budgeting, and applying for external funding. Plan is regularly updated and addresses La K-12 Technology Standards for Students. • Appropriate dollars allotted in school budget for hardware and software purchases, professional development,	• A collaboratively developed school technology plan aligns with District Technology plan and is used for internal planning, budgeting, and applying for external funding. Plan is updated at least annually and addresses La K-12 Technology Standards for Students. Plan is focused on student success; based on needs, research, proven teaching and learning principles. • Campus budget for hardware and software purchases, sufficient staffing support, costs for professional development,

		adequate staffing support, and ongoing costs.	incentives for professional development, facilities, and other ongoing costs.

- Early Tech
- Developing Tech
- Advanced Tech
- Target Tech

OCT-06-2006 13:58 P.01/01

IRB #: 2206 LSU Proposal #:_____ Revised: 04/15/2005

LSU INSTITUTIONAL REVIEW BOARD (IRB) for
HUMAN RESEARCH SUBJECT PROTECTION

578-8692 FAX 6792
Office:203 B-1 David Boyd Hall

APPLICATION FOR EXEMPTION FROM INSTITUTIONAL OVERSIGHT

Unless they are qualified as meeting the specific criteria for exemption from Institutional Review Board (IRB) oversight, ALL LSU research/project using living humans as subjects, or samples or data obtained from humans, directly or indirectly, with or without their consent, must be approved exempted in advance by the LSU IRB. This Form helps the PI determine if a project may be exempted, and is used to request an exemption.

Instructions: Complete this form.
Exemption Applicant: If it appears that your study qualifies for exemption send:

(A) Two copies of this completed form,
(B) a brief project description (adequate to evaluate risks to subjects and to explain your responses to Parts A & B),
(C) copies of all instruments to be used. If this proposal is part of a grant proposal include a copy of the proposa and all recruitment material.
(D) the consent form that you will use in the study. A Waiver of Written Informed Consent is attached and must be completed only if you do not intend to have a signed consent form.

to: ONE screening committee member (listed at the end of this form)in the most closely related department/disci to IRB office.

If exemption seems likely, submit it. If not, submit regular IRB application. Help is available from Dr. Robert Mathews, 578-8692, irb@lsu.edu or any screening committee member.

Principal Investigator: Janet G. Broussard **Student**: Y (Y/N)

Ph: 337/667-6999 E-mail janet.broussard@la.gov **Dept/Unit** : ELRC

If Student, name supervising professor: Dr. Yiping Lou **Ph**: 578-2487
Mailing Address: 111K Peabody Hall, Louisiana State University **Ph**: 578-2487

Study exempted by
Louisiana State Unive
Institutional Review B
203 B-1 David Boyd F
225-578-8692
Robert C. Mathews, Cl

Project Title: Site-Based Technology Facilitators: Catalysts for Achieving Teacher Technology Proficiency In K-12 Classrooms

Agency expected to fund project: N/A

Subject pool (e.g. Psychology Students): School Technology Coordinators
Circle any **"vulnerable populations" to be used**: (children <18; the mentally impaired, pregnant women, the aged, other). Projects with incarcerated persons cannot be exempted.

I certify my responses are accurate and complete. If the project scope or design is later changed I will resubmit for review. I will obtain written approval from the Authorized Representative of all non-LSU institutions in which the study is conducted.

PI Signature Janet Broussard **Date** 4-24-06 (no per signatures)

Screening Committee Action: Exempted X Not Exempted ... Category/Paragraph _____

VITA

Janet Giandelone Broussard was born on November 5, 1963, in New Iberia, Louisiana. She is the daughter of Johnny and Betty Giandelone of Morgan City, Louisiana, and the wife of Keith Broussard of Cecilia, Louisiana. She is a graduate of Morgan City High School, Morgan City, Louisiana, 1981. Janet earned her Associate of Science degree in computer programming from Nicholls State University in Thibodeaux, Louisiana, in 1984. In 1991, she earned a Bachelor of Arts degree in elementary education from the University of Southwestern Louisiana in Lafayette, Louisiana. Janet has 15 years of educational experience. Her experiences at the school level include classroom teacher, school technology coordinator, and reading facilitator. In 1999, she earned a master's degree in administration and supervision from the University of Louisiana at Lafayette, Lafayette, Louisiana. Within a year, she was assistant principal at a high school in southwest Louisiana. After one year as a school administrator, she moved to the central office and served as a district technology, library, and grants supervisor for three years. In 2002, she began working on her doctorate at Louisiana State University, Baton Rouge, Louisiana. During the course of her studies, she earned a Plus 30, the Educational Technology Facilitator and Educational Technology Leadership endorsements. In 2004, she became the State Director of Educational Technology for the Louisiana Department of Education where her career continues today. Janet completed her Doctorate of Philosophy at Louisiana State University in the fall of 2006.