

The High School Principal's Perspective and Role in regard to the
Integration of Technology into the High School and How has the Principal's
Role been impacted

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**The High School Principal's Perspective and Role in Regard to the
Integration of Technology into the High School and How Has the Principal's
Role Been Impacted**

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The purpose of this study was to focus on how the high school principal's role has changed as a result of the integration of technology. This was a qualitative study, which utilized semi-structured interviews to obtain the data necessary from practicing high school principals in western Pennsylvania. The goal was to identify the strengths, weaknesses, and barriers of technology that have affected education and the role of the high school principal. Another goal was to identify what the principals found to be effective professional development from their perspective and where the principals perceived technology moving toward in the future.

The results of this study showed that a majority of the high school principals claim to be tech savvy. The study also found that based upon the perspectives of the high school principals, technology was beneficial when completing daily duties, housing student information, and analyzing test data. Furthermore, communicating with staff and parents has become more efficient according to the high school principals. Based upon the perspectives of the high school principals, technology can improve instruction, but in and of itself, does not make instruction effective. While technology can enhance instruction, sound pedagogy is firmly rooted in effective methods of instruction. The results from this study as outlined through the principals perspective stated that funding, staff resistance, and poor infrastructure all can become significant barriers when integrating

technology into the high school.

This study provided the high school principal with suggestions about successfully accepting technology into the high school and utilizing it effectively. It outlined many of the barriers present and the appropriate professional development to help with the integration process.

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CHAPTER I INTRODUCTION

The world is moving at a much faster speed than ever before, and globalization is at its peak. Technology is breaking down barriers across the world, provides people throughout the world with opportunities to obtain information, education, and interact in business. This has caused an increase in outsourcing of jobs and services, but has connected the world in a very positive way, but the situation is two fold as many barriers and issues have been created as well. The McREL (2001) Leadership for School Improvement study stated that without a doubt the world is changing at an incredible rate. Advances in technology are mind boggling; the Internet has placed a tremendous amount of knowledge literally at our fingertips; and huge companies have merged with other huge companies, which will undoubtedly have implications for the workplace of the future (p.1).

I.A. TECHNOLOGY AND GLOBALIZATION

Education although behind industry and business, due to the lack of funding, has recently made tremendous strides in the integration of technology. It is clear that the student of today must learn to utilize technology in order to compete and interact in this fast moving global world. Education has utilized tax dollars from both their state and local budgets as well as federal grants to obtain the funding to integrate technology into the schools. Their goal is not only to offer their students opportunities to utilize technology, but to increase student learning and achievement.

I.B. TECHNOLOGY IN EDUCATION

Some people in education feel that we are still behind other facets, such business and social organizations. Brooks-Young (2002) stated that while schools are spending a huge amount on the acquisition of technology for instruction, literature has shown that many schools have not realized the benefits they had anticipated (p.3). Slowinski (2003) stated that technology implementation in schools has shifted from the access stage to effective integration into curriculum. In this new paradigm shift, very little discussion is taking place on the role administrators would need to play (p. 26). In accordance with the high school principals' perspectives from this study, the high school principal must play an active role and support the teaching staff, in the most effective way. "The number one issue in the effective integration of educational technology into the learning environment is not the preparation of teachers for technology usage but the presence of informed and effective leadership" (Gibson, p. 502).

I.C. ROLE OF THE PRINCIPAL

The key role principals play in schools has been well documented and acknowledged (Buckner, 1997). Since the importance of effective leadership is clearly a necessity to the success of the technology integration process, administrators must take an active role. The McREL Balanced Leadership study (2003) states that there is, in fact, a relationship between leadership and student achievement (p.3). Since the No Child Left Behind Act was passed, educators as a whole and in particular building principals have been held to a higher level of accountability with regard to student achievement. The principals that participated in this study realized and recognized the challenge and acknowledged that technology will play into the process in variety of ways.

Elmore (2005) in his piece "Knowing the Right Thing to Do: School Improvement Performance-Based Accountability" stated that every state has initiated some of performance based accountability for schools. The designs vary from state to state, but they all share some common characteristics: periodic testing of students, reporting of test scores by schools, and some mechanism that identifies schools that need improvement (p.5). The most common mechanism utilized is Adequate Yearly Progress or AYP which is measured by the scores students of a district receive on their state's high stakes test, graduation rates, etc. Elmore (2005) emphasized that under No Child Left Behind (NCLB), states set a minimum percentage of students required to be proficient on state reading and math assessments in every school. These are called starting points. These targets rise incrementally until all students are expected to be proficient in reading and math in 2013-14 (p.6).

Elmore (2005) stated that low performing schools are to make much larger gains to achieve the goal. Schools that already meet the performance targets are required to make smaller gains (p.6). If schools are missing the target marks consistently, then action must and will be taken. Elmore (2005) stated that students who are attending schools that miss their targets for two straight years must be offered the option of moving to another public school within the school district. Schools must develop a plan for improvement that promotes parental involvement, uses ten percent of districts title I funds for professional development, and incorporates a teacher mentoring program.

If the school continues to miss the target goals, more sanctions are applied, more opportunities for students and parents must be provided, and the No Child Left Behind Legislation even stated that the district must formulate a plan that might include replacing staff, decreasing management authority at the school level, appointing outside experts to advise the

school, lengthening the school day or year, or restructuring the school as a whole (p.6). It is very important that an administrator must achieve the target goals; however, merely just wanting to achieve is easy but actually meeting them can be a real challenge. Elmore (2005) outlined a successful process of school improvement through phases rather than a steady linear fashion (p.12).

Elmore's (2005) first phase is problem recognition, where schools must recognize and internalize problems of performance by paying attention to evidence on student performance (p.12). In this stage, technology can be utilized to store, interpret, and disaggregate data to make effective data driven decisions to improve the school's scores.

There is a lot of data that has been produced throughout this process and the building principal must use the data to make solid data driven decisions. The newsletter for the Center for Comprehensive School Reform and Improvement states that school districts that show continued improvement base decisions on data rather than habit or hunch (p. 2). This can become overwhelming for the principal, but with the use of effective technology, he or she can effectively manage the data to make a variety of decisions such as: improving communication with staff, parents, and the community about the school and its goals, identifying areas for improvement and remediation, and identifying where there are standards being missed in the curriculum. An example of this is when, researchers found that one improving school, the Minneapolis Public Schools, illustrated this approach with the school district's data system by collecting and analyzing data in more than 15 different areas, some of the major areas included attendance and suspension rates as well as school climate data (Togneri & Anderson, 2003).

Elmore's (2005) second phase is called "low hanging fruit;" this phase stated that if schools succeed in choosing the right target and develop knowledge and skills in the teachers and students, they typically see a

modest low level increase in student performance (p.12). Technology is found throughout this phase in the form of professional development for teachers and computer software that helps provide the students whose performance could easily be improved with additional support and tutoring. Elmore (2005) refers to this stage as the "some teaching versus no teaching" phase and alludes to the fact that the improvement of a few students can make the whole school look better (p. 12).

Elmore's (2005) third and fourth stages are stagnation and external help. In stagnation, the initial simple moves turn out to have a very short-term, very disappointing effect; however, the building has come collectively together to work toward the goal. There needs to be a sense of internal accountability that improvement must continue and in this stage attempts to tackle tougher issues such as instructional improvement (p.12). When teachers attempt to integrate and implement new strategies, it can become challenging and as Elmore (2005) stated there is almost always a need for external help, which often comes in the form of professional development based upon the needs of the staff (p.12). In order for the external support to be successful, the school must have collective and individual goals, which as Elmore (2005) stated is a key factor to internal accountability (p. 12).

The external help will be needed in Elmore's (2005) next stage which is barrier resolution, to help the staff move forward as they face difficult issues (p.12). Elmore (2005) stated that these issues often deal with cognitive demand of instruction or determining why the instructional strategies adopted work for some students and not others (p.13). Technology can be helpful to differentiate instructional strategies for the wide variety of students, and when using appropriate software that works, teachers can help students of all abilities at the same time.

Once the barriers have been resolved, it leads to a very disturbing stage that Elmore called "impossible work," where the problems become more

complex and difficult (p.13). What teachers and administrators are saying in this stage is that they simply do not have the capacity to make the next round of changes, and Elmore agrees with them (p. 13). Elmore (2005) stated that it is critical to get external help in this phase, to help identify the problems dealing with student learning and instructional practices, to broaden and deepen common expectations about high-quality instructional practices, and to see schools in similar circumstances that have managed to get through (p. 13).

Elmore's (2005) final two stages deal with transforming the organization and the organization being able to self-manage its own improvement (p.13). Schools that make it through the impossible work stage crisis typically emerge stronger, more coherent, and have a higher sense morale with regard to student learning (Elmore 2005, p.13). Finally, very few schools even those that are classified as "high performing" rarely reach the self-managing stage. Elmore (2005) stated that few schools do collectively take over the improvement process (p.13). Technology is involved throughout all of Elmore's stages, sometimes as acting as an additional barrier to the process and other times as vehicle for change. It often depends on the individual district or staff member's experience and/or skill set utilizing the technology. The twenty-first century administrator must be technology savvy, and support his or her staff so that he or she can more effectively utilize technology to reach target goals, improve instruction and learning, and prepare the students for the global world.

Because the world is now more global than ever before, educators must prepare students for the world in which they will live. In schools, no one person is more important or influential than the building principal. With the already overwhelming amount of roles the principal must take on, he or she must add one more, a technological leader. There has not been much research or discussion about the issues the high school principal faces in dealing

with effective integration of technology and how the principal's role has changed.

I.D. STATEMENT OF THE PROBLEM

This study examines the impact of the integration of technology on the role of the high school principal.

I.E. RESEARCH QUESTIONS

1. What did the literature say about the effects of technology on the schools?
2. What impact has the integration of technology had on the role of the high school principal?
3. What strengths have been identified by implementing and integrating technology into the schools and classrooms?
4. What are the weaknesses or barriers that building principals and other professional staff have encountered when implementing and integrating technology into the schools and classrooms?
5. What is the most effective professional development program that the high school principals have utilized?
6. Where is technology moving to in the future, how will it affect education, and what can high school principals do to ensure success of their students and teachers?

I.F. DEFINITION OF TERMS

Technology savvy administrator- For the purpose of this study, it is defined as a school administrator who has a skill set that is above average when dealing with technology, which means that the administrator possesses skills to perform many of his or her daily tasks in an effective and efficient way. For example, he or she is competent in using data storage programs, Microsoft office, email, safety equipment, online grade books, etc.

On board with technology- For the purpose of this study, it is defined as being not only willing to utilize technology, but embracing it, helping to lead the movement, and by finding new and innovative technological advancements to help the overall school's success.

Integration- For the purpose of this study, it is defined as implementing various aspects and features of technology related tools to enhance, monitor and analyze the educational process.

CHAPTER II LITERATURE REVIEW

II.A. PURPOSE OF THE STUDY

The object of this study was to examine the importance of technology integration into public high schools and more importantly the challenges and successes of the leadership role for the building principal. The study also aimed at finding the most effective technological programs and the most innovative and successful means of professional development for both the principal and the teachers. The questions that were asked at the principal interviews were designed to answer the above mentioned questions or issues.

II.B. WHERE I OBTAINED MY LITERATURE

The databases I utilized in this literature review were ERIC, Pitt Cat, EBSCOhost, Proquest, and Zoom data based search through the University of Pittsburgh and reviewed a few of the latest journals on technology in education. I used the following keywords in the search engines mention above: technology, administrator, principal, k-12, education, professional development, effective programs, and a few others to develop effective searches to achieve the data needed to complete a comprehensive literature review. The literature review began when I looked at how technology has affected so much of society as a whole and then moved into how it has affected education and the principal's role as an educational leader.

II.C. TECHNOLOGY AND GLOBALIZATION

Technology has impacted our society and the world in positive and negative ways; it has changed the way our world operates, in business, in social

settings, and in an individual's daily living. King-Sears and Evmenova (2007) stated that in the business world, advances in technology are abound. The world of enterprise can efficiently accomplish tasks once considered onerous, such as correcting typed errors, which previously involved correction fluid, or for minor revisions, which often necessitated retyping the entire document. They gave examples of being able to cut, paste, insert, and delete. Also, communication through electronic mail and the Internet have sped the process of communication up as opposed to hand written communication (p.6).

II.D. THE EFFECTS OF TECHNOLOGY ON EDUCATION

When looking at our youth and how they are growing up in a digital age, Hsi (2007) stated that popular books entitled *Don't Worry Mom, I'm Learning* and *Everything Bad is Good for You: How Today's Popular Culture is Actually Making us Smarter*, argue in favor of technology based interest driven activities and play with technology, especially digital-based video games, because they benefit development and learning (p. 1512). Hsi also stated that there is large societal concern that exists among adults, including parents, school administrators, education policy-makers, and teachers alike, that this engagement with and attraction to media and digital based ways of playing are actually interfering with children's development, health, and schooling, influencing social behavior, and consequently distracting youth's attention away from learning new content, participating in civically minded activities, and acquiring future work place skills. In addition, Hsi also reported the possibilities of Internet addictions, gambling, cyber bullying, online thefts, and exposure to pornography are just some of the many risks posed by engaging in networked digital technology (p. 1512). These issues are vital to education both the pros and the cons that face the administrators and educators as a whole.

Hsi (2007) outlines some of the implications for educational practices with regard to technology and the impact of digital kids. Hsi (2007) stated that because children can competently perform complex tasks outside of school with digital technologies, but may not display the same skills on school-type tasks. It was important for both research and practice to understand the nature of learning in out-of-school settings and how to build upon the practices of youth in digitally mediated learning environments to support learning in multiple settings including school classrooms through teacher professional development (p. 1522). As educators prepare students for the global world they will enter, it is important they stay updated and adapt to the new ways in which students learn.

Globalization has been affected by technology, and the people of the world cannot change quickly enough to keep up with the innovations of technology. As I completed the Anderson (2004) reading, I was brought back to the ninth grade American History class that I teach. In the class, I developed "Big Rocks" or essential themes that apply to the material we were covering, and the students must apply the themes to the real world today. In one of the chapters of the history book, the students have a theme called technology in society, and they had to explain how technology affected early society and then offer examples of how technology is still improving and affecting society. For example, Eli Whitney's cotton gin affected the southern society by boosting the level of cotton production as well as the southern economy.

This was an excellent example of how people utilized technology to make their lives easier and their production run more smoothly. However, this example pushed me into the issue of today's world of technology. In his book *The World is Flat*, Friedman (2006) stated an example of a Certified Public Accountant, who rarely meets with the clients and does a lot of the work behind the scenes, can have their job outsourced overseas. The forms and

returns that he or she once worked on can be made available online on a server, and the accountant in India will complete the return for quite less (Friedman, p.14). Another example Friedman presented is that when someone in United States makes a reservation at a local restaurant or hair salon, they often confirmed it with someone halfway across the globe (Friedman, p.15). These were great examples of how technology is connecting the globe creating a world market in which some companies are struggling to keep up with causing jobs to move through the outsourcing process around the world. As Fisch (2003) stated if all of the jobs in the United States were moved to China, China would still have a labor surplus.

Educators are also being affected by the technological innovations that are having such a major impact on students' lives. Education has struggled to keep up with business, for example, Fisch (2003) reported that in 2002, Nintendo invested \$140 million dollars in research and development. Because of the influence of technology, our youth learn much differently now and education must adapt. Langhorst, (2007) stated that our world is making it convenient to obtain media information, music, phone calls, text messaging, video games, and streaming videos anytime and anywhere. Colleges have been offering more online courses, and the state of Michigan requires all students to take at least one online course before graduating. Langhorst believes that like him other teachers should use the same tools that make online learning successful to expand learning opportunities in the classroom. Students already have been using technology to interact socially (using blogs, wikis, podcasts, You Tube etc.) so teachers can use them to provide students with additional learning opportunities to learn outside of the classroom (p.74). This is adapting to the way that students are learning today.

There are other areas in education that have been adapting to the current technological innovations. Statistics have shown that the presence of technology in schools has grown at exponential rate throughout the last 20

years (Dirksen & Tharp, 2000). From online classrooms and research and the use of the computer as a word processor and the utilization of software to help school stakeholders effectively communicate to the use of data to make appropriate data driven decisions are just some of the many important ways in which technology has affected education.

The education world has focused on increasing and improving technology in the schools moving into a world filled with computers and technology in which teachers utilize to educate their students. D'Angelo and Woosley (2007) stated that technology has evolved and become more central to teaching and learning. Overhead projectors were used to deliver course material in the classrooms in the 1960's and 1970's. Today's professors and teachers are using more advanced technology such as PowerPoint and Blackboard to deliver course information (p.462). Britt, Brasher, and Davenport (2007) stated that according to the National Center for Education Statistics (NCES. 2000) nearly all k-12 public school teachers (84 percent) have access to computers in their classrooms (p. 122). It seemed as though schools are beginning to see the light and are attempting to make a serious effort to make technology more available. This is important because as Martin & Shulman (2006) stated in their report that "teachers who utilized technology in their practice had a great number of computers in their classrooms (mean: 2.98) than those that reported that they did not use technology in their classrooms (Mean: 1.87)." (p.2). Therefore, technology was utilized when it was made available.

In addition to computers being made available to all students, some large districts that value the use of technology find it important to move toward every student having his or her own laptop computers. For example, Penuel (2006) stated that states such as Maine and Texas have invested in state wide initiatives to fund access to laptops for secondary school students. Large districts such as Henrico County in Virginia and Cobb County in Georgia are providing laptops and digital content to all middle and high

school students (p.329). This increase of technological tools into the classrooms has inspired teachers and has promoted and pushed student learning. As evidenced through a review of 219 research studies from 1990 to 1997 surmised that "students in technology rich environments experienced positive effects on achievement in all major subject areas" (Schacter, 1999, p. 5). However, the Simba Information Electronic Education Report (2007) stated that although more than half the states have technology standards for students and teachers, far fewer have procedures to evaluate how students and teachers meet those standards, according to survey findings from Technology Counts 2007: A Digital Decade, Education Weeks's 10th Annual Report on Educational Technology (p.4). In an era of educational accountability, it would be important to have an evaluation system, possibly a standard based system, to ensure accountability of students and staff.

Once the technology and computers are made available, the students must be prepared to use it effectively to obtain helpful information. Hallack (2000) stated that the teacher's mission ought to include teaching students how to cope with the amount of information available to them, in other words, give them the ability to locate information, explain it and be responsible knowledge consumers (p. 33). It is important for students to learn what credible information is and how to obtain it in the most effective and efficient way. The literature repeatedly finds that integrating technology into instruction tends to move classrooms from teacher-dominated to student-centered learning environments. In such "Constructivist" classrooms students tend to work more cooperatively, have more opportunities to make choices, and play a more active role in their learning (Mize & Gibbons, 2000).

The technology skills that are being taught are important to the students because the careers that they will fall into will require these skills. Fisch (2003) stated that the top ten in-demand jobs for 2010 did not exist in 2004, so educators are preparing students for jobs that are not even

here yet and that will use technology that is not even invented yet, to solve problems that are not even problems yet. To do this, schools will need to be up to date with the latest technology innovations, which will cost districts large sums of money. The Simba Information Electronic Education Report (2007) stated that more than half of parents and teachers who participated in the Project Tomorrow-NetDay 2006 Speak Up survey said their schools are not doing a good job in preparing students to compete for jobs and careers in the 21st century. The survey also revealed that much more needs to be done to equip our classrooms with technology, train our teachers to integrate technology into the curricula, and involve the parents in the use of technology (p.5).

The above mentioned point is explained because without technology grants, many school districts cannot afford to create the technological savvy environment and education funding is always an issue. With technology always changing and requiring updates and upgrades, it can become not only difficult but very costly as well for a school district to operate under the current technological standards. For example Palozzi & Spradlin (Spring 2006) stated that costs go far beyond faculty, software, and transmission systems, and include such services as academic, computing, and telecommunications support, with scalability and course development the two most important factors in determining technology costs (p. 6). Technology requires a lot of support in order for it to be utilized effectively and efficiently. Ringstaff and Kelly (2002) reflected that a common error schools or districts make is purchasing technology "without a clear vision of how it is to be integrated into the mission of the school or district" (p. 20). Therefore, administrators must carefully select the appropriate technology to fit their school or district's needs with regard to their mission or goals.

However, this being said it is necessary to stress the importance of offering students a strong technological based education. Social Economic Status or (SES) students are students who come from low income families who

receive free and reduced lunches at schools. These students are faced with many challenges because they do not have the technology resources that other students do. The Simba Information Electronic Education Report (2007) stated that providers of the technological resources are to contact the SES families the school must identify that it will work with, as opposed to just receiving more of same ineffective strategies being used in the regular school day. The people do not want to feel as if their pockets are being picked, but rather as a chance to help kids who can really use it (p.5). It is important for all students to have the same opportunities because all students must obtain and master these skills if they are going to compete in a global economy and interact in global world.

There has been a rapid growth in technology into the public schools. Staples and Pugach (2005) stated that the rapid growth in the types of available technological tools, paired with the decline in the price of these resources captivated schools and parents alike, who want to prepare their children for a society where learning and employment were increasingly dependent on digital access and expertise (p.285). Brooks (2006) stated the goal: is to integrate subject matter and technology into a student centered classroom with meaningful content enriched environment, choices for learning, multiple activities, and varied assessment strategies (p.8). As technology has become more available to students, the challenge for school leaders is to utilize technology within the curriculum to increase student learning.

King-Sears and Evmenova (2007) discussed how to use comprehensive assessments to determine and specify assistive technology need for students with disabilities. To ensure the effective use of technology, school systems can use several instruments and checklists to determine whether and which assistive technology devices and services are necessary; and educators base assistive technology decisions on student abilities and needs, as well as on environmental considerations (p.6). Therefore, an essential part of the

school vision for technology integration was the development of a technology plan (Fabry & Higgs, 1997). The plan must include clear goals and reflect the ideas of the entire school community, but it must also be connected to the overall school goals (Knight & Albaugh, 1997).

II.E. PROFESSIONAL DEVELOPMENT AND COLLEGE PREPARATION

Teachers must then be provided the training, skills, professional development, administrative support, and the time in class to integrate technology into their classrooms. As Shibley (2001) stated, "the challenge is to educate teachers so they can integrate or weave technology into the curriculum and learning process" (p. 62). However, not all teachers feel comfortable and confident in doing this as Dawson (2006) stated that the reason many teachers do not use technology in their classrooms stems from a fear or intimidation of computers in general (p.279). Due to this fear, students are not provided with the opportunities to utilize effective technological tools in order to increase the level of teaching and in turn boost student learning. This problem can be prevented by the building principal, if he or she can choose not only the best tools to utilize but also by implementing strong supportive professional development for the staff. By taking these proactive and supportive steps, the administration promotes an environment that will support technology and increase student achievement.

Along with the support that is provided to the teachers currently working in classrooms, it is also important to look at teacher preparation at colleges and universities. Pohan and Dieckmann (2005) stated that most traditional teacher education programs have technology components, but these courses are often removed from real life k-12 classrooms (p.22). This caused the fear and intimidation discussed earlier because teachers struggle to

connect, correlate, and implement what they learned from their teacher preparation programs into the classroom. The teacher preparation programs need to work with local districts to offer a more hands-on interaction format. Those teachers that have had the opportunity to graduate from a teacher education program in which they had an interactive technology piece in their curriculum have a huge advantage over those who did not. They promoted the use of technology in their classrooms which in turn promotes a higher level of student learning.

The students going through teacher preparation programs are very in touch with technology and the use of the World Wide Web. Debevec, Shih & Kashyap, (2006), stated that students today have grown up in a "high technology" environment and are adept at the use of computers and the Internet for information exchange (p.293). Then, these students encouraged the professors to utilize technological resources available in order to help them learn and manage the material more effectively. For example, Debevec, Shih & Kashyap, (2006) stated that students frequently ask professors to prepare their lecture notes using Microsoft Power Point, to have a course Web site, and to use multimedia to illustrate key themes (p.293). These students are entering the education field with a positive attitude toward technology, and they have been equipped with a high level of competence.

II.F. INTEGRATION OF TECHNOLOGY INTO THE CURRICULUM

Not all teachers went through this type of preparation program. Many of the veteran teachers in districts did not have these experiences and are struggling to adapt or are unwilling to adapt to the technology movement. Cardillo (2005) stated that classroom teachers do not see the relevance of the technology standards to their own teaching and, as a result, were reluctant to do the extra work required to change what they had been doing

for years (p. 10). The professional development time provided by the school needs to be focused on the integration of technology. By showing teachers the benefits to student learning and achievement, they will be more willing to embrace the technology and put forth the additional effort. As Cardillo (2005) stated teachers in theory believe technology is an integral part of student learning, but in practice it is a different story (p. 10).

II.G. THE BUILDING PRINCIPAL'S ROLE

Good leadership is the key to the success of the implementation of any change movement. Technology integration is no different, the McREL research in 2003 concluded that there are two primary variables that determine whether or not leadership will have a positive or a negative impact on achievement. The first is the focus of change - that is, whether leaders properly identify and focus on improving the school and classroom practices that are most likely to have a positive impact on student achievement in their school. The second variable is whether leaders properly understand the magnitude or "order" of change they are leading and are able to adjust their leadership practices accordingly (p.6).

As far as technology is concerned, it is clear that it is needed and beneficial to the students and staff to increase achievement. The educational leader must determine what magnitude or order of change they are leading, with technology it can vary throughout the staff. The McREL research (2003) discussed the difference between a first order change, which is merely a marginal change or extension of the past practices and second order change which is defined as a disturbance of every element of a system and a complete break from the past (P.7).

Technology integration can be a first order change for the staff members who are savvy when it comes to technology or who have mastered the

needed skills. On the other hand, those staff members who have little to no experience and/or skills will struggle and be faced with a second order change. As the McREL research study stated (2003), if a second order change is actually put into place for an unprepared staff, it will likely result in a negative impact on student achievement (p.7). McREL (2003) also stated that different perceptions about the implications of change can lead to one person's solution becoming someone else's problem. That is, if a change had first order implications for one person or group of individuals, yet has a second order implication for another group or person, the latter group may view the change as a problem rather than a solution (p.7).

The leadership for school improvement research study performed by McREL in 2001 discussed incremental change defined as fine-tuning or making relatively minor adjustments in a system. Incremental change is a normal ongoing part of any effective organization. Like any relationship, group, or system, as people and processes work together, better ways of living and operating together emerge to help the system run more smoothly, effectively, and efficiently (p.3). Updates or improvements upon current already existing technology that help a school system or building run more efficiently would be classified as incremental changes.

Also, the leadership for school improvement research study performed by McREL in (2001) talked about fundamental changes, which typically involves altering the very essence or identity of a system, in other words, a deep change that transforms the system (p.4). An example of this would be an implementation of entirely new technological system in which a majority of the staff will need ongoing training and professional development. McREL (2001) stated that questions about why such a shift is taking place and what it means for the future must be addressed. All stakeholders along with the teachers and staff need support and training throughout the often bumpy process of adopting the different approach (p.4).

Educational leaders must utilize professional development opportunities to show the importance and offer the appropriate training and support to ensure the teachers' successes with technology. In dealing with professional development, Burkhouse, Loftus, Sadowski, and Buzard (2003) stated that, "a focused professional development experience led by qualified teachers, mentors, and colleagues is the indispensable foundation for competence and high quality teaching" (p. 7). Louie (2006) stated that because professional development is so important, the Massachusetts Department of Education encourages districts to apply the NCLB guidelines to all of their technology spending, allocating a minimum of 25% of their technology budget for professional development (p.15). Professional development opportunities can be provided through workshops, classes, mentor programs, and co-teaching experiences. Holland (2001) argued that peer coaching "is an excellent way for teachers at a mastery level to continue to develop in their knowledge and use of technology, particularly in their use of technology in their classrooms" (p. 254).

Administrators should utilize a needs assessment for their staff and ensure that the professional development being offered to the teachers is going to be beneficial and increase their knowledge and skills. Because teachers themselves feel such limitations acutely; most who participated in these types of short term trainings reported that the training was too short in duration and too limited to be of much use (Ringstaff & Kelly, 2002).

The integration of technology into the students' curriculum provides many benefits to the students that increase their learning and growth. Adding appropriate technology tools and interventions to the array of children's educational experiences enhances access, learning, attention, communication, and social skills and may help some children learn in a new and more effective way (Casey 1997; Hutingner, 1998; & Pressman 1999). When implemented appropriately, technology can help to solve the wide variety of issues that

trouble so many students.

Some of the differences in how learning occurs in technology rich classrooms (as compared to traditional classrooms) may account for consistent findings that technology can especially effective with at-risk special needs students (Barley, 2002; Page, 2002). Young children with a wide range of disabilities not only use technology, but many of them also use it easily and effectively and retain how to use this technology for a period of time (Hutinger, Clark & Johanson, 2001). By retaining how to use the software and technology, the students with disabilities continued to use the technology in order to learn new and more challenging information and skills in a familiar, comfortable, and helpful way. Every student is unique and learns differently, but by utilizing the wide array of technological innovations, teachers can help each student to learn in their own way.

The building principal is already a position of many titles: instructional leader, building manager, and the provider of effective professional development, to name a few. With the innovation of technology, the building principal must support the technology movement and adopt yet another role, the role of technology leader. Ausbrooks (2000) stated that effective twenty-first-century school administrators will be those who are able to harness the power of technology, via powerful browsers, search engines, the Internet, or other technologies and communicate effectively with others at all organizational levels in order to make informed, intelligent decisions (p.8). The high school principal must have necessary technology skills to guide his or her teachers in a positive direction that supports strong classroom practices, assessments, and curriculum in order to increase student learning and achievement.

Principals as the leader of the building must be knowledgeable, supportive, and motivating through the integration of technology process. Teachers will not buy into the implementation of technology if the principal

does not. As Geer (2002) stated, "School administrators are the impetus for successful technology use in schools" (p.57). Principals must be prepared to deal with teacher resistance to technology being integrated into the curriculum. They have to provide extensive teacher training in the integration of technology into the curriculum (Weiss, 1994). If administrators buy in and lead their teaching staff effectively, efficiently, and supportively, the integration process will run a lot smoother, the use of technology will increase, and the building will achieve sustainability.

It is important for the administrators to utilize the most effective professional development available to help the teachers effectively and efficiently obtain the necessary skills. Burke and Meade (2007) stated that like in business where it is location, location, location! Education stresses professional development, professional development, professional development! Burke and Meade (2007) believed that Engineering by Design (EbD) is the most effective; it is a standards-based k-12 solution for technology programs. It was a comprehensive model that integrates science, technology, engineering, and mathematics through comprehensive, articulated coursework. Within each component of the program, there were course guides with integrated rubrics and assessments. Most importantly, the program linked effective professional development to help the staff with resources via electronic delivery platform known as eTIDEonline (p.23).

The McREL (2001) study of Leadership for School Improvement discussed the standards of a good educational administrator provided by the Interstate School Leaders Licensure Consortium (ISLLC) and those standards developed by the American Association of School Administrators (AASA) (p.7). The two stated that their seven categories are not the end to all answers but more of a beginning inquiry. They were similar and discussed the importance of the administrator as an effective educational leader who promoted the success of all students by: creating a clear vision for the school; being able to

respond to the larger political, social, economical, legal, and cultural changes; collaborating with the community; effectively managing the organization, by making data driven decisions, ensuring safety and utilizing resources effectively; planning and developing curriculum that is conducive to student learning; and acting with integrity, fairness, democratic, and in an ethical manner (p.7-8).

Technology was used to allow all stakeholders to understand and become familiar with the school's vision, communicate with the community and all other stakeholders, stay up to date on all legal, social, and cultural issues, warehouse and utilize data to make data driven decisions, and provide a flexible updated online curriculum that is easily accessed by all and that will ensure that the students will obtain the necessary skills by graduation. Technology was used to help the school administrator effectively manage all of these standards. However, at times, technology can hinder the administrator's ability to meet standards. A couple of possible examples are when there are glitches in the system or the staff, students, and community are not competent in the skills necessary to utilize the technology effectively.

II.H. CONCLUSION AND FOCUS

After completing this literature review, it was clear that many studies have been conducted on the effectiveness of technology integration on student learning, preparation and professional development for teachers, technology being taught in teacher preparation programs, the cost and money from the budget being spent on technology, and the importance of providing students with the technology skills of the twenty-first century. However, there was very little information or studies done on the high school principals' role, what high school principals find to be effective or strengths of integrating

technology, what they feel are barriers or weaknesses, what principals feel is the most effective professional development to train and support themselves and their teaching staffs, and where and how the principals see technology effecting students in the future.

This study will focus on the high school principal's perspective and role in regard to the integration of technology into the high school and how the role of the principal has changed.

CHAPTER III METHODOLOGY

Mertens (2005) stated that a paradigm is a way of looking at the world. It was composed of certain philosophical assumptions that guide and direct thinking and action (p. 7). Gay & Airasian (1996) stated that basically, there are two major research paradigms, quantitative and qualitative (p.9).

III.A. QUALITATIVE AND QUANTITATIVE RESEARCH METHODS

Quantitative research is more scientifically based on numbers, and researchers use mathematics to determine results. Mertens (2005) stated that in quantitative report format, results are typically reported by the use of tables and graphs. Researchers also tended to write in a detached style, avoiding first person pronoun and employing the passive voice (p. 431).

The qualitative paradigm tries to preserve the form and essence of human behavior and to analyze its qualities, rather than subject it to mathematical or other transformations (Lindoff, 1995). As Eisner (1979) stated qualitative research is based on the information gained through watching, listening, touching, feeling, smelling, tasting and interacting (p. 14). Mertens (2005) also stated that although qualitative reports can use tables and graphs, they typically present results in a more narrative style and include more personal revelations about the author (p. 431).

III.B. CONSTRUCTIVIST AND QUALITATIVE APPROACH

Mertens (2005) broke these two major paradigms down into four subgroups: positivism, constructivism, transformative and pragmatic that used quantitative, qualitative, and mixed methods (p.9). Positivism is primarily quantitative, and like most quantitative approaches focuses on one reality

(Mertens, 2005, p.9). Constructivist was primarily qualitative, and allowed for multiple, socially constructed realities (Mertens, 2005, p.9). The transformative approach used an inclusion of qualitative, but quantitative and mixed method approaches can be utilized, and it operates under the concept of multiple realities shaped by social, political, cultural, economic, ethnic, gender, and disability values (Mertens, 2005, p.9). Finally, the pragmatic approach matches methods to specific questions and purposes of research, uses mixed methods, and works under the idea that what is useful determines what is true (Mertens, 2005, p.9).

To explore how the high school principal's perspective and role in regard to the integration of technology into the high school and to explore how his or her role has been impacted would be better researched in a constructivist qualitative method as opposed to a quantitative approach. By using a qualitative approach to the study, I was able to conduct semi-structured interviews with high school principals to answer my research question and give more meaningful feedback than if they were to fill out a quantitative survey.

III.C. STATEMENT OF THE PROBLEM

This study examines the impact of the integration of technology on the role of the high school principal.

III.D. RESEARCH QUESTIONS

1. What did the literature say about the effects of technology on the schools?
2. What impact has the integration of technology had on the role of the high school principal?

3. What strengths have been identified by implementing and integrating technology into the schools and classrooms?
4. What are the weaknesses or barriers that building principals and other professional staff have encountered when implementing and integrating technology into the schools and classrooms?
5. What is the most effective professional development program that the high school principals have utilized?
6. Where is technology moving to in the future, how will it affect education, and what can high school principals do to ensure success of their students and teachers?

III.E. APPROACHES FOR DATA COLLECTION

III.F. INTERVIEW PROCESS

When using the qualitative approach, the interview is one of the most common data collection tools. I conducted semi-structured interviews that ask predefined questions about how the high school principal's role has been impacted, the identified strengths and weaknesses when integrating technology into the high school, what professional development programs are being utilized, and where the building principal sees technology moving to in the future and how it will affect education. Although the predefined questions will be asked, the semi-structured interview process allows the high school principals some freedom to talk. By using the semi-structured interview process as opposed to the structured, the interviewees were given the chance to expand on the questions which provide the researcher with a better understanding of the principals' points of view. For this research study, a semi-structure interview served as the most beneficial method.

I conducted all but one of these semi-structured interviews face to face. However, another type of interview that I utilized was telephone interviewing. Telephone interviewing used the exact same format as the face to face interview, but the communication was done over the phone. Although it was not the method preferred for this study, it was necessary to use the telephone interview to complete one interview in order to offer the interviewee a more effective option with regard to flexibility and convenience for the interview to take place.

III.G. INTERVIEW SELECTION

The participants in this study were high school principals from Western Pennsylvania. The eligibility requirements to be selected were just that the individual is a high school principal in Western Pennsylvania and the building has some presence of technology. I limited the study to just high school principals to narrow the study and compare alike participants. Gender, race, religion, ethnic background, or any other typical barrier has no bearing on the selection process for this study. However, after I pulled the willing participants, there was a mix of principals, some males and some females, ranging in age from their early thirties to late fifties. After identifying those building principals who met the requirements of the study, a target group was identified. From this target population eight to ten principals were interviewed, and I served as the only interviewer. The high school principals were chosen based upon the level of technology in his or her building, their technology competency, and their building location. Many of the principals who were willing to participate came from small rural districts in Mercer and Lawrence counties in western Pennsylvania. Not all of the principals who were asked to participate choose to do so. This was a limitation to the study that must be considered. Those building principals selected had their identities held confidential as well as their districts, and were given the opportunity to take back or rescind statements in which they did not want released.

III.H. ANALYSIS: QUALITATIVE CONTENT ANALYSIS

Mertens (2005) stated that data analysis in qualitative studies is an ongoing process, and it does not occur only at the end of the study as is typical in most quantitative studies (p. 420). To analyze this study, I used qualitative content analysis, which is defined by Hsieh & Shannon (2005) as "a research method for the subjective interpretation of the content of text data through the systematic classification process of coding and identifying themes or patterns" (p.1278). Qualitative content analysis focuses on identifying common themes and patterns as opposed to just counting words or averaging numbers. Since this study identified common themes or patterns from the interviews, this method was a good fit for the data analysis.

Quantitative content analysis requires that the data is selected using random sampling rules in order to ensure the validity of statistical inference, while qualitative content analysis usually consists of predetermined selected cases which reflect the research questions being investigated (Berg, 2001). This also validated why the study being conducted should use qualitative content analysis because the interviewees selected will have integrated technology into their high school and due to their experience, willingness, and location will qualify them as good subjects.

Qualitative content analysis usually used the theme as the meaningful unit for analysis. The themes were expressed in single words, phrases, sentences, paragraphs, or entire documents, and when using a theme as a coding unit, the researcher is looking for expressions of an idea (Minichiello,1990). The themes identified stemmed from the research questions, and interviewees' responses to the questions aligned with the identified themes and provided the needed data for the analysis of this study.

The data collected in my study was analyzed periodically throughout the

study, and the common themes or strands were identified. These common strands created themes that resulted from the responses to the interview questions which stemmed from the research questions. Lincoln and Guba (1985) stated three ways themes can be identified: consensus themes - when the majority of the principals state the same theme, supported themes - when approximately half of the principals state the same theme, and individual themes - when only one or two principals state the same theme. The consensus themes were operationally defined as between six to ten subjects supporting it. Supported themes were operationally defined as between three to five subjects in support of the theme. Finally, individual themes were operationally defined as have only one or two individuals supporting the theme. The themes were categorized by frequency rather than importance. Guba cited in Patton (1990) which suggests that the researcher begin focusing on similarities and differences between the categories, in order to effectively categorize them.

The research questions focused on strengths and weaknesses of the high school principal's role in the technology integration process, the effective forms of professional development, and the future implications of technology. These results provided the necessary information to be able to analyze and provide helpful insight on the issue of technology integration into the high school and how it has impacted the building principal's role.

I interviewed the principals the first time in a semi-structured format and processed the results. I then analyzed the results, and themes emerged from the data. After I reviewed the themes, I decided that it would be valuable to rank the themes that dealt with the strengths against one another and then do the same with the barriers, because so many were identified by the principals. I utilized a ranking form by having each principal fill one out in a second semi-structured interview. This provided me with what the principals felt the most important theme was after ranking them individually and averaging their scores. I found this to be important piece because it

showed principals and other education professionals reading this study what the principals interviewed perspective was and what they felt to be the most critical strengths and barriers.

CHAPTER IV: FINDINGS

The object of this study was to examine the importance of technology integration into public high schools and more importantly the challenges and successes of the leadership role for the building principal. This chapter includes a report on the interviews and an analysis of the data collected. The first part contains a profile of each high school, as provided by the respective principals in a semi-structured interview process. All of the research questions are discussed and reports of the major and minor themes are addressed as well.

IV.A. PROFILE OF THE INTERVIEWEES

The ten public high schools whose principals were interviewed varied. Some schools were rural, others suburban, and one was urban. The high school principals that were interviewed also varied; some had more experience than others in the position, and others were more technologically savvy than others. The interviewer, at the beginning of each interview, asked the principal to explain or tell about his or her high school. Their responses are outlined, in this manner:

School/Principal A:

Principal A has been in education for 26 years, and all of his years have been in district A. He taught social studies and moved into administration and served as the head teacher for twelve years, as the assistant principal for two and a half years, and has been the head principal for two and half years. He describes school A's make up as a mix between rural and urban. It is a small school housing students in grades seven through twelve in the building. School A graduates between forty-five and seventy-five students per

year. It has a population of 590 students in grades five through twelve, has two counselors, and thirty-eight staff members. The principal of school A states that he is confident in his ability to utilize technology and that his staff has implemented technology in a variety of ways.

School/Principal B

Principal B has been in education for over twenty years and has been the high school principal at high school B for the past fourteen years. School B is in a rural district, and the entire district's population is 1,300 students. In principal B's building, the population is 740 students, divided between grades seven through twelve. Principal B feels very comfortable with technology and stated that he sees the importance. He reports that he and his staff utilize technology in a variety of ways and communication with parents utilizing email and a program called Edline are essential to the district's success.

School/Principal C

Principal C reported that this is her first year with the district as an administrator. She had taught English for the past six years in two different districts. Principal C reports that her building is in the south hills of Pittsburgh, Pa and is a large middle class urban district. There are 1,600 students in her building that are divided between grades nine through twelve. She also reported that about five percent of the students are minority students. School C has 130 teachers, six counselors, and four administrators on staff. The building is undergoing a sixty-four million dollar renovation. The principal is early into her administrative career but characterizes herself as up to date with technology. The building is using technology in a variety of ways, and she herself is a proponent of technology innovation.

School/Principal D

Principal D is serving his first year as head high principal in district D. He had taught in district D for six years prior to taking the position. The junior-senior high school is populated by 560 students in grades seven through twelve, has two counselors, and forty-four staff members. The school is located in a rural district of western Pennsylvania. It has recently been providing the students with additional opportunities such as dual enrollment through Butler Community College and the University of Pittsburgh. Principal D was part of the technology movement as a teacher and served as a core team member in much of its integration and now continues to lead the movement. Principal D considers himself more than able to utilize technology and feels comfortable integrating technology into the building.

School/Principal E

Principal E has been a high school principal in the district for five years and has taught for five years in the school before taking the position. Principal E describes her school as being a part of a rural district in western Pennsylvania. The building holds grades nine through twelve; it currently has close to 800 students in the building and fifty-five teachers on staff. It is predominantly white middle class community, and many of the parents whose students attend the schools work at local colleges and universities. Principal E feels that her building has an appropriate amount of technology, but is not convinced that it is being used appropriately or is making a huge difference. Principal E feels you cannot replace good old fashion instruction, and that although technology can be an important tool, her building's PSSA scores are among the highest in the state due to great instruction.

Principal/School F

Principal F has been an administrator for five years total, three of which have been in his current position as high school principal in school F. School F is described as a small urban district in western Pennsylvania that is pinched between four neighboring districts that are all different, ranging from urban to rural. The district has close to 1,100 students k-12, and principal F's building houses 460 students, grades seven through twelve. The district is predominately African-American. There are fifty-five staff members in the building, and he is the head principal, with an assistant principal under him. The building is currently under corrective action 2 and is looking to improve on the next PSSA testing date. The district is currently looking to increase the amount of technology in the building as the principal heads the classrooms for the future grant. This grant will increase the amount of computers in the building by over 200. Also, it will provide professional development for the staff and provide the funding for technology coaches to offer the support and expertise that principal F feels vital to the technology integration process.

Principal/School G

Principal G has been the high school principal in school G for fifteen years and has been employed by the district for over thirty-one years. School G houses 450 students divided up between grades nine through twelve. There are thirty-eight secondary teachers and two administrators. Building G is part of rural district made up of four townships and is in the county seat for the entire county it represents. Principal G feels that technology plays an important role in: communication, collecting and analyzing data, policy, scheduling, budgeting, evaluation of staff, etc. Principal G feels that he possesses the necessary technology skills and can offer the staff the support needed throughout the integration process.

Principal/School H

Principal H has been with the district for many years and has served as principal for past several years. Principal H describes the school as being very rural and having a small town base with traditional values. Principal H shares an example of this when he discusses the town fair. During this time, the school district starts school later than neighboring districts, so that the students, staff, and community can participate in the fair. The school district's enrollment has been declining from 750 three to five years ago down to 610 currently. Building H has a seventh through eighth grade wing and a ninth through twelfth grade wing. There are 310 students total in the building, and the graduating classes are usually around fifty to fifty-five students. Principal H considers himself competent when dealing with technology, but relies heavily on the school's technology coordinator. Principal H believes in slow steady integration, as opposed to a more rapid integration approach.

Principal/School I

Principal I has been in the district for quite some time and has just recently accepted her role as co-principal, where she serves as the principal of academic affairs, and her counterpart serves as the head of student affairs. Principal I describes building I as a part of a rural district in western Pennsylvania, where close to thirty percent of the students in the building are on free and reduced lunch. There are over 1,000 students in the building, distributed between grades seven through twelve. The district graduates between 140 and 170 student per year. Principal I feels that her district is moving at an above average pace with regard to technology integration. The building just recently received the classrooms for the future grant, and the district will be implementing eight mobile computer labs with smart boards into the building. Principal I feels competent in her

ability to lead the technology movement and realizes the importance in technology integration.

Principal/School J

Principal J has been with the district for many years serving as an administrator and currently is the high school principal. Principal J describes the district as a middle class community located in the rust belt of western Pennsylvania. The building houses 960 students, distributed between grades seven through twelve. Thirty-eight percent of the student population is on free and reduced lunch, and the district is a transient community with student moving in and out of the district constantly. Principal J is confident in his ability to utilize technology effectively and uses it in almost every duty everyday. The building utilizes a lot of technology for items such as; communication, grade and attendance software, and teaching and learning to name a few. However, Principal J does see the infrastructure as being the one obstacle in the way of further development and integrations of technology into the building. Principal J does anticipate updates in software and hardware in the near future, but expansion will be limited to the infrastructure of the current building.

This chart offers a brief demographic description of each principal and his or her building.

Principal	Setting	Student Population	Graduation	Staff	Gender
A	Rural/Urban	590 Students Grades 5-12	45 - 75	38 Teachers 2 Counselors	Male
B	Rural	740 Students Grades 7-12	80 - 110	52 Teachers 2 Counselors	Male
C	Urban/ Middle Class	1600 Students/ Grades 9-12	300 - 375	130 Teachers 6 Counselors	Female
D	Rural	560 Students Grades 7-12	75 - 95	44 Teachers 2 Counselors	Male
E	Rural	800 Students Grades 7-12	125 - 175	55 Teachers 2 Counselors	Female
F	Urban	460 Students Grades 7-12	65 - 90	65 Teachers 1 Counselor	Male
G	Rural	450 Students Grades 9-12	100 - 120	38 Teachers 2 Counselors	Male
H	Rural	610 Students Grades 7-12	50 - 55	25 Teachers 1 Counselor	Male
I	Rural	Over 1,000 Students Grades 7-12	140 - 170	60 Teachers 2 Counselors	Female
J	Middle Class Mix/ Rust Belt	960 Students Grades 7-12	110 - 150	70 Teachers 2 Counselors	Male

IV.B. ADDRESSING THE RESEARCH QUESTIONS

The following section outlines each of the research questions identified in this study and defines the series of interview questions asked of each principal. Each individual principal's answers to the questions produced data, which was analyzed to identify similarities and themes emerged. Lincoln and Guba (1985) stated three ways themes can be identified: consensus themes - when the majority of the principals state the same theme, supported themes - when approximately half of the principals state the same theme, and individual themes - when only one or two principals state the same theme.

For the purpose of this study, as reported by Guba (1985), I have defined the themes as follows: Consensus themes were operationally defined as between six to ten subjects supporting it. Supported themes were operationally defined as between three to five subjects in support of the theme. Finally, individual themes were operationally defined as having only one or two individuals supporting the theme.

IV.B.1. Research Question #1

What did the literature say about the effects of technology on the schools?

As stated at the conclusion of my literature review, it was clear that many studies have been conducted on the effectiveness of technology integration on student learning, preparation and professional development for teachers, the cost and money from the budget being spent on technology, and the importance of providing students with the technology skills of the twenty-first century. However, there was very little information or studies done on the high school principals' role, what high school principals find to be effective or strengths of integrating technology, what they feel are barriers or weaknesses, what principals feel is the most effective professional

development to train and support themselves and their teaching staffs, and where and how the principals see technology affecting students in the future.

IV.B.2. Research Question #2

What impact has the integration of technology had on the role of the high school principal?

The additional specific interview questions asked of the principals to acquire data to answer research question number two were:

- Has it become challenging since you have made yourself more available through the use of technology to the staff, students, parents, board of education members, community members etc.? If so, touch on a few issues and explain how you manage them effectively and efficiently?
- What percentage of communication is now done utilizing technology? (i.e. email, website postings, cell phones, interim or mid-term grade/attendance reports, etc.)
- How do you utilize technology when completing daily duties?

Overall Impact - How technology has impacted the role of the principal. The themes that emerged will follow.

Principal A stated,

Technology has made me much more available, and at times, it can be a challenge. People expect you to be available at all times throughout the day, and there is a lot going on in the day of an administrator. What I do is based them upon importance and get back to certain items and others have to wait. As far as what percentage of communication is done through the use of

technology, I would have to say eighty-five percent. The staff and I use technology to communicate through email; also our attendance, grades, and school activities are all online. Discipline is done hard copy as well as some scheduling and some personalized written memos.

Principal B stated,

Technology has made me much more available, and initially, I thought it would be a concern, but it turned out to be very beneficial. The ability to communicate with staff, parents, and community members quickly and efficiently is a huge advantage. However, only about fifty percent of the communication is done through the use of technology. This is because over half of the parents living in our district do not internet access and must receive hard copies in the mail. Our building utilizes technology to communicate with staff on a daily basis. We also use technology to place grades, attendance, and discipline online. Technology is used in safety as well, as the building has forty-eight cameras to help monitor the outside and inside of the building.

Principal C stated,

The increase level of technology has been over all manageable and beneficial. Email communication is efficient and effective and allows me to leave a paper trail. It ensures that everyone receives memos, and excuses go by the way side. On the same lines however, the email can be a bit overwhelming after being sick and missing only one day of school. Typically, there will be over fifty emails to sort through, and I have to prioritize the emails

in order of importance and delegate those of less importance to support staff. Overall, it is beneficial, and about ninety-five percent of all communication is done using some form of technology. Many of the staff and my daily duties are completed using technology such as email communication and palm pilots/software programs in order to keep track of attendance, grades, discipline, and student demographics. Also, probably the most important technology is used to gather and analyze data to benefit student achievement. I analyze PSSA benchmark data to decide who needs remediation. Remediation is done using technology as well. We utilize Study Island, a program designed to work with students to improve their areas of weakness.

Principal D stated,

The integration of technology which makes me more available is not a challenge for me. It is a very positive thing. It allows me to communicate more efficiently and effectively with staff, parents, other administrators, etc. It is not as personal to communicate in this fashion, but it is more convenient and effective. For this reason, at least seventy-five percent of the building's communication is done using some form of technology. I use technology to complete many of my daily duties. I email memos to the entire staff and communicate via email with individual staff members throughout the day. I utilize a program called Power School in the building, which the staff and myself track attendance, grades, and student information. The building along with the entire district has introduced an online curriculum mapper called Atlas Curriculum, which allows the k-12 curriculum to be stored, modified, and utilized in a manageable way.

Finally, I use technology to manipulate data from the PSSA tests and 4 sight benchmark scores to make data driven decisions that will improve instruction and improve student achievement.

Principal E stated,

Since technology has improved the ability to communicate and made me more available, I have not experienced any challenges. Actually, it has been truly beneficial and a great asset in the communication process. Over seventy-five percent of all communication is done using technology. In our building, the only hard copy items that go out are the school calendar, lunch menu, and any discipline report. In house or within our building, the percentage of communication done using technology jumps to ninety percent. I utilize technology to complete many of my essential daily duties as a high school principal. For example, I use email to communicate with staff and parents quickly and efficiently. All of our building's grades and attendance are managed through an online program. I use a program called Star Based to track discipline and file discipline reports to accompany the parent phone call. All of the state reports are online, such as attendance and school violence reports. Finally, even our student information is online, and the state is now mandating it be in a state wide system known as PIMS.

Principal F stated,

I see it as a benefit that technology allows me to be more available to all parties involved in the school. Technology makes everyone more involved in the education process which is a huge benefit, but technology must be used appropriately. Technology

must be used as an instrument to improve instructional methods/strategies that in return improve student achievement, be more effective instructors, and complete tasks more efficiently to save time. Because I believe that when, used appropriately, technology allows communication to be done more efficiently and effectively, at least ninety percent or higher of all communication is done using technology. I use technology to complete many of my daily duties, not only for communication purposes where a person can send a memo out to a lot of people at one time, but to look at student scores using software programs such as e-metric and PVAS to determine skill gaps in the curriculum. Also, with technology I can multi-task, by talking on the cell phone and emailing someone at the same time for example. Another great example of how it is fast and easy is through the process of editing documents on Microsoft Word as opposed to having to redo the entire document.

Principal G stated,

I do not view it as challenge that technology has made me more available. I believe it is advantageous to be able to be contacted much easier, and to be able to contact staff and parents in a much more efficient manner. The ability to instantly communicate back and forth is a great asset. For example, a teacher can send me an email to let me know that a student is on his or her way, and I can watch for them to come on the school's safety cameras all the way from their classroom to my office. Due to these advantages, about sixty percent of all communication is done utilizing some form of technology. However, I do want some personal face to face contact or written communication because

these options are more personal. In addition to communicating online through the use of email, I use technology to complete many other daily duties. I use online programs to track discipline, attendance, and grades. I also utilize monitoring cameras to watch the entire building from televisions in the office.

Principal H stated,

With regard to the increase in technology which has made me more available I don't really see it as a challenge at all. I welcome technology communication. My secretary is very tech savvy and helps me update the website and communicate via email. Email communication has made my life easier. It is quicker to get information out to staff and parents than phone calls or other traditional ways of communication. All of the faculty members' email addresses are available on the website, and parents are able to communicate directly with a teacher. I ask that the staff respond to parent concerns within forty eight hours; however, it rarely if ever takes the staff longer than twenty four hours to respond. This eliminates my role as the middle man who usually must deliver the messages between parents and staff. Technology is utilized for up to seventy percent of the communication process for the building. In addition to emailing staff and parents, I use technology to complete many of daily duties. I use software programs to develop absentee sheets and to track grades and attendance. Discipline is kept in a software system, and data is housed and manipulated to make data driven decisions to improve instruction and improve achievement on 4 sight benchmark tests and PSSA test scores.

Principal I stated,

With the increase in technology, I am constantly available to the public, parents, staff, and community. At first, it seemed as though it was going to be a bit of a challenge. But because of my rapport with the community and staff, it worked out and actually became quite beneficial. Opening up lines of communication is always important, and technology helped in the process. Close to eighty percent of all communication for the building is done utilizing some form of technology. Many of my daily duties are fulfilled through some form of technology as well. For example, when notifying parents, a technology software system called School Reach calls all of the parents in the district and delivers the message within minutes. Also, all of our grades are done online through a program called Edline which provides parents with up to date lesson plans, student grades, and student attendance. In addition, communication with staff, parents, and community members are mostly done through the use of email.

Principal J stated,

The increase level of ability through the use of technology is overall very positive and beneficial with very few set backs. I use email to communicate with staff, parents, and the central office and send on average thirty to forty emails a day. It is easier and more efficient to reply through email. Ninety percent of the building's communication is done through the use of modern technology. Many of my daily duties and my staff's as well are completed using technology. We use Grade Quick software for our grades and attendance. In addition, we utilize an online program called Edline where lesson plans are posted weekly, and grades

are updated weekly by the staff. Not only can I view the grades but so can the students and their parents. Parents are able to email the teacher and myself if the updates have not been made, and I will then talk to the staff to ensure that it will not happen again. Another positive is utilizing software to manipulate PSSA and 4 sight benchmark data to make data driven decisions that will improve instruction and increase student achievement.

The only major set back with the increase in technology is the amount of complaints that come across on a given day. I usually have to filter through them to determine which ones are truly valid, and this can take some time. Overall, the increase in technology is very beneficial to the completion of my daily duties and the management of the building.

Themes that emerged from question 2a

Themes that came from research question #2a- Has it become challenging since you have made yourself more available to staff, students, parents, board of education members, community members etc.? If so, touch on a few issues and explain how you manage them effectively and efficiently?

Consensus Theme

Theme #1: The increase in technology that makes the principal more available to staff, students, parents, board of education members, and community members can appear to be a challenge initially to some but actually is very beneficial to all in the end. This was mentioned by nine principals.

Principal B stated,

Technology has made me much more available, and initially, I thought it would be a concern, but it turned out to be very beneficial. The ability to communicate with staff, parents, and community members quickly and efficiently is a huge advantage.

Principal C stated,

The increase level of technology has been over all manageable and beneficial. Email communication is efficient and effective, and allows me to leave a paper trail as it ensures that everyone receives memos, and excuses go by the way side.

Principal D stated,

The integration of technology which makes me more available is not a challenge for me. It is a very positive thing. It allows me to communicate more efficiently and effectively with staff, parents, other administrators, etc. It is not as personal to communicate in this fashion, but it is more convenient and effective.

Principal E stated,

Since technology has improved communication and made me more available, I have not experienced any challenges. Actually, it has been truly beneficial and a great asset in the communication process. For example, I use email to communicate with staff and parents quickly and efficiently.

Principal F stated,

I see it as a benefit that technology allows me to be more available to all parties involved in the school. Technology makes everyone more involved in the education process, which is a huge benefit, but technology must be used appropriately. Technology must be used as an instrument to improve instructional methods/strategies that improve student achievement. Teachers must be more effective instructors and complete tasks more efficiently to save time.

Principal G stated,

I do not view it as challenge that technology has made me more available. I believe it is advantageous to be able to be contacted much easier and to be able to contact staff and parents in a much more efficient manner. The ability to instantly communicate back and forth is a great asset. For example, a teacher can send me an email to let me know that a student is on his or her way from his or her classroom, and I can watch them come on the school's safety cameras all the way to my office.

Principal H stated,

With regard to the increase in technology which has made me more available, I don't really see it as a challenge at all. I welcome technology communication. My secretary is very tech savvy and helps me update the website and communicate via email. Email communication has made my life easier as it is quicker to get information out to staff and parents than phone calls or other traditional ways of communication. All of the faculty members' email addresses are available on the website, and parents are

able to communicate directly with the teacher. I asked that the staff responds to parent concerns within forty eight hours. However, it rarely if ever takes the staff longer than twenty four hours to respond.

Principal I stated,

With the increase in technology, I am constantly available to the public, parents, staff, and community. At first, it seemed as though it was going to be a bit of a challenge. But because of my rapport with the community and staff, it worked out and actually became quite beneficial. Opening up lines of communication is always important, and technology helped in the process.

Principal J stated,

The increase level of ability through the use of technology is overall very positive and beneficial with very few set backs. I use email to communicate with staff, parents, and the central office and send on average thirty to forty emails a day. It is easier and more efficient to reply through email.

Individual Theme

Theme 2: The increase in technology that makes the principal more available to staff, students, parents, board of education members, and community members is a challenge, and the principal must rank the abundance of emails and calls by importance and get back to those most important. This was mentioned by one principal.

Principal A stated,

Technology has made me much more available, and at times, it can

be a challenge. People expect you to be available at all times throughout the day, and there is a lot going on in the day of an administrator. What I do is base them upon importance and get back to certain items and others have to wait.

Consensus Theme	Supported Theme	Individual Theme
It can appear to be a challenge initially to some but actually is very beneficial to all in the end.		It is a challenge, and the principal must rank the abundance of emails and calls by importance and get back to those most important.

Figure #1- Research question #2a- Has it become challenging since you have made yourself more available to staff, students, parents, board of education members, community members, etc.? If so, touch on a few issues and explain how you manage them effectively and efficiently?

Themes that emerged from question 2b

Themes that came from research question #2b- What percentage of communication is now done utilizing technology? (ie. email, website postings, cell phones, interim of mid -term grade/attendance reports, etc.)

Supported Themes

Theme 1: The amount of communication done utilizing technology is at least eighty-five percent or higher, which was stated by four principals.

Principal A stated,

As far as what percentage of communication is done through the use of technology, I would have to say eighty-five percent.

Principal C stated,

Overall, it is beneficial and about ninety-five percent of all communication is done using some form of technology.

Principal F stated,

Because I believe that when used appropriately technology allows communication to be done more efficiently and effectively, at least ninety percent or higher of all communication is done using technology.

Principal J stated,

It is easier and more efficient to reply through email. Ninety percent of the building's communication is done through the use of modern technology.

Theme 2: The amount of communication done using modern technology is between seventy and eighty-four percent. Four principals stated that their buildings fall within this category.

Principal D stated,

It is not as personal to communicate in this fashion, but it is more convenient and effective. For this reason, at least seventy-five percent of the building's communication is done using some form of technology.

Principal E stated,

Over seventy-five percent of all communication is done using technology. In our building, the only hard copy items that go out are the school calendar, lunch menu, and any discipline report.

In house within our building, the percentage of communication done using technology jumps to ninety percent.

Principal H stated,

Technology is utilized for up to seventy percent of the communication process for the building.

Principal I stated,

Opening up lines of communication is always important, and technology has helped in the process. Close to eighty percent of all communication is done utilizing some form of technology.

Individual Themes

Theme 3: The amount of communication done using modern technology is between fifty-five and sixty-nine percent. Only one principal fell into this category.

Principal G stated,

The ability to instantly communicate back and forth is a great asset. For example, a teacher can send me an email to let me know that a student is on his or her way from his or her classroom, and I can watch them come on the school's safety cameras all the way to my office. However, I do want some personal face to face contact or written communication because these options are more personal. For this reason only about sixty percent of all communication is done using technology.

Theme 4: The amount of communication done using modern technology is below fifty-five percent. Only one principal fell into this category.

Principal B stated,

The ability to communicate with staff, parents, and community members quickly and efficiently is a huge advantage. However, only about fifty percent of the communication is done through the use of technology. This is because over half of the parents living in our district do not have internet access and must receive hard copies in the mail.

Consensus Themes	Supported Themes	Individual Themes
	The amount of communication done utilizing technology is at least eighty-five percent or higher.	The amount of communication done using modern technology is between fifty-five and sixty-nine percent.
	The amount of communication done using modern technology is between seventy and eighty-four percent.	The amount of communication done using modern technology is below fifty-five percent.

Figure 2- research question #2b- What percentage of communication is now done utilizing technology? (ie. email, website postings, cell phones, interim of mid-term grade/attendance reports, etc.)

Themes that emerged from question 2c

Themes that came from research question #2c- How do you utilize technology when completing daily duties?

Consensus Theme

Theme 1: Technology is utilized to complete many of the principal's major duties such as: communicating with staff via email, warehousing student test data to make data driven decisions, using cameras for safety purposes, and

tracking and posting attendance, discipline, lesson plans, and grades online. Eight principals stated this as being true.

Principal B stated,

Our building utilizes technology to communicate with staff on a daily basis. We also use technology to place grades, attendance, and discipline online. Technology is used for safety purposes as well, as the building has forty-eight cameras to help monitor the outside and inside of the building.

Principal C stated,

Many of the staff and my own daily duties are completed using technology such as email communication and palm pilots/software programs to keep track of attendance, grades, discipline, and student demographics. Also, probably the most important use of technology is when it is used to gather and analyze data to benefit student achievement. I analyze PSSA benchmark data to decide who needs remediation. Remediation is done using technology as well. We utilize Study Island, a program designed to work with students to improve their areas of weakness.

Principal E stated,

I utilize technology to complete many of my essential daily duties as a high school principal. For example, I use email to communicate with staff and parents quickly and efficiently. All of our building's grades and attendance are managed through an online program. I use a program called Star Based to track discipline and file discipline reports to accompany the parent phone call. All of the state reports are online such as

attendance and school violence reports. Finally, even our student information is online, and the state is now mandating it be in a state wide system known as PIMS.

Principal I stated,

Many of my daily duties are fulfilled through some form of technology. For example, when notifying parents, a technology software system called School Reach calls all of the parents in the district and delivers the message within minutes. Also, all of our grades are online through a program called Edline which provides parents with up to date lesson plans, student grades, and student attendance. In addition, communication with staff, parents, and community members are mostly all done through the use of email.

Individual Theme

Theme 2: Although technology is used for many of my daily duties, there is still a need for personal communication, both face to face and in writing. Two principals stated this.

Principal A stated,

It is important to continue to make face to face contact and to hand write memos on occasion as it is more personal.

Principal G stated,

I do want some personal face to face contact or written communication because these options are more personal.

Consensus Theme	Supported Theme	Individual Theme
Technology is utilized to complete many of the principal's major duties such as: communicating with staff via email, warehousing student test data to make data driven decisions, using cameras for safety purposes, and tracking and posting attendance, discipline, lesson plans, and grades online.		Although technology is used for many of my daily duties, there is still a need for personal communication, both face to face and in writing.

Figure 3- research question #2c- How do you utilize technology when completing daily duties?

IV.B.3. Research Question #3

What strengths have been identified by implementing and integrating technology into the schools and classrooms?

The additional specific interview questions asked of the principals to acquire data to answer research question number three were:

- What are some effective software programs that you utilize? Do the companies that provide the software offer training and tech support?
- Is technology improving instruction? If so, please give some brief examples?

Themes that came from research question #3

What strengths have been identified by implementing and integrating technology into the schools and classrooms?

Consensus Theme

Theme 1: Communication, safety, student research, academic classroom tools, software for grades and attendance, and data analysis that drives instruction and that increases student achievement were identified as major strengths because of the integration of technology into the schools and classrooms. Nine administrators stated this.

Principal C stated,

One of the strongest assets that have come from the integration of technology into the schools and classrooms is the increased level of efficient and effective communication. This communication is vital in the education process, whether it is between the administration, staff, students, or parents, it is necessary and needed for success. Another strong point is the use of academic tools that are technology-based that aid both the teacher in their instruction and the student in their learning. The student taking ownership of their own learning is often done through the use of technology. The school is initiating some concepts of blended schools where a teacher teaches the course through an online process using software such as Blackboard. Students also use technology for research whether it be for a class, tutoring, or to do career and college planning. I use technology software such as E-metric, Grow Network, and Success for All to analyze and manipulate data from the PSSA and 4 sight benchmark tests. This analysis is done to determine where students need reinforcements, where curriculum and instruction can be improved to increase student achievement. Finally, technology is used to house student information, grades, attendance and discipline.

Principal D stated,

When talking about the strengths that have arose from the implementation of technology, the following come to mind: communication, the ability to analyze data to drive instruction that increases student achievement, and the ability to make items such as grades, attendance, and even the district curriculum available online are all very important. I utilize software programs to complete all of the tasks mentioned above. I use Outlook Windows for email communication and Power School to house up to date student grades, attendance, and student information. I also use programs such as E-metric, the Grow Network, Success for All 4 sight testing to analyze test data to determine where remediation is needed and to identify skill gaps. Finally, the district recently implemented the Atlas Curriculum mapper, which makes the district's curriculum available on line, manageable, living, and useful offering up to date lesson plans and assessments for every course.

Principal E stated,

When looking at some of the strengths that have evolved from the integration of technology, many have emerged. Communication is now more available and technology through the use of email saves time. The cameras that have been installed help to monitor the inside and outside of the building, which provides an increased level of safety for staff and students. I utilize Edline, an electronic software program where up to date grades, attendance, and lesson plans are made available for the administration, students, and parents by the staff. Finally, I also see the value in being able to collect and analyze data obtained throughout the year from the PSSA and 4 sight benchmark tests. I use software programs to evaluate the data to make data driven decisions that will

improve curriculum, instruction, and ultimately student achievement.

Principal J stated,

Some of the strengths that have emerged from the integration of technology into the building and classrooms are: communication, online grades, lesson plans, and attendance, academic tools for teachers and students, and the ability to use software to house and manipulate test data. The increase in fast and efficient communication is great as I use it to communicate with staff, parents, and other administrators. Our building utilizes the online software program, Edline, along with Grade Quick to provide students and parents with up to date grades, attendance, and lesson plans. Teachers and students also utilize many quality academic tools to create power point presentations, take virtual tours of places around the earth, and programs like Google Earth, for example, where students can pick place and a live visual will appear in seconds. Finally, I use software programs such as E-Metric and Success for All to look at testing data from the PSSA and 4 sight benchmark tests in order to make data driven decisions to improve the curriculum, teacher instruction, and most importantly, student achievement.

Individual Theme

Theme 2: The items that emerge as strengths following the integration of technology are a strong school website and a strong technology coordinator. Only one principal stated this.

Principal H stated,

The success of technology into our building stems from our excellent

technology coordinator. He is very savvy and provides the support the staff needs, along with building and updating the school's website, which is an excellent asset. The website is place where students and parents can get up to date weather reports, activity schedules, and teachers' email addresses, in case there is a need to communicate.

Consensus Theme	Supported Theme	Individual Theme
Communication, safety, student research, academic classroom tools, software for grades and attendance, and data analysis that drives instruction and that increases student achievement were identified as major strengths because of the integration of technology into the schools and classrooms.		The items that emerge as strengths following the integration of technology are a strong school website and a strong technology coordinator.

Figure 4- Research question 3- What strengths have been identified by implementing and integrating technology into the schools and classrooms?

Themes that came from research question 3a

The following themes emerged from research question #3a- What are some effective software programs that you utilize? Do the companies that provide the software offer training and tech support?

Supported Themes

Theme 1: The software programs that are being used are effective and offer appropriate professional development, training, and support. Five principals stated this.

Principal C stated,

The Read 180 Tutoring Reading Software Programs come with training for the administration and staff that use the program to help students improve. Additional hardware and software programs are coming to the building since we received the Classrooms for the Future Grant. With this grant, professional development, training, support, and even money for a technology coach are provided.

Principal D stated,

The online grading, attendance, and student information software we use is the Power School package. This program is through Intermediate Unit 13, and they are very supportive and helpful and work great with the district's technology coordinator. We have also implemented an online curriculum mapper called Rubicon Atlas. This program is very effective, and the support is excellent. The people from Atlas have in-serviced our staff and offer ongoing support. I also use the Grow Network, E-Metric and Success for All to analyze student testing data to make decisions that benefit the curriculum, instruction, and student achievement. All of the above mentioned programs offer support and training on how to use the programs effectively. Finally, our tutoring programs, Study Island and Apangea, which are used for the remediation of the PSSA material, have ongoing training and support for the PSSA remediation staff and students.

Principal F stated,

An excellent software program to track grades, attendance, and student information is Smart Student, which is made available through the Intermediate Unit 4. The Intermediate Unit offers the appropriate training and support for the program. The building also recently

implemented Rubicon Atlas, an online curriculum mapper. Rubicon Atlas offers great support and training to the staff as well. Finally, the building received the Classrooms for the Future grant, which will provide additional software and hardware to the building. With this grant comes online peer support, professional development, and the money to hire a technology coach for onsite support.

Theme 2: The software programs that are being used are effective, but the support and training is provided by a technology coordinator or coach. Four principals stated this.

Principal A stated,

Microsoft Office and Word Perfect are installed on all computers in the building, and the technology coordinator offers support and training for the teachers. Our building uses a grade book through the Intermediate Unit, and the technology coordinator for the district offers the support and training for this program as well.

Principal G stated,

Our building uses a program called Star Based. I have been using it for the past fifteen years, and it is pretty effective. Our technology coordinator is able to offer the support and training necessary. This support and training from the technology coordinator is necessary since the Intermediate Unit offers little to no support.

Individual Theme

Theme 3: The program being used in our building is not very effective, and there is little to no support and training that is being provided. Help takes too long when problems occur with software. One principal

stated this creating an individual theme.

Principal H stated,

The program we use is SASI. This electronic grade book, attendance book, and student information warehouse is based out of San Diego, California, and with the time difference between here and there, it could be three or four hours before a tech support associate even attempts to help. The help is then done over the phone and many problems arise. This program has been deemed as ineffective and in talking with other local administrators, we plan on implementing Power School or Power Soft. Both of these programs have been given good reviews on support and training from other administrators.

Consensus Theme	Supported Theme	Individual Theme
	The software programs that are being used are effective and offer appropriate professional development, training, and support.	The program being used in our building is not very effective, and there is little to no support and training that is being provided. Help takes too long when problems occur with software.
	The software programs that are being used are effective, but the support and training is provided by a technology coordinator or coach.	

Figure 5- Research question #3a- What are some effective software programs that you utilize? Do the companies that provide the software offer training and tech support?

Themes that came from research question 3b

The following themes emerged from research question #3b- Is technology improving instruction? If so, please give some brief examples?

Supported Theme

Theme 1: Technology is improving instruction by providing tools to analyze data that will drive instruction to promote student achievement and by providing tools that are used to improve instruction and keep students attentive and active. Three principals stated this.

Principal C stated,

It does improve instruction. Technology software programs help administrators analyze data to drive instruction and curriculum that will increase student achievement. Technology allows teachers to differentiate instruction that will benefit all students. Also, there are software tutorial programs that help to provide the much needed remediation to improve student achievement. Finally, the Internet is making information available for student research.

Principal H stated,

Technology is improving instruction by using smart boards to increase student participation. By using the Internet for fast and efficient online research, teachers have the ability to research solid standard based lessons online that can be used in the classrooms daily. Using these standard based lessons will improve instruction, and it will increase student achievement.

Theme 2: The implementation of technology only helps instruction when data is analyzed to determine where instruction can be improved. Furthermore, technology integration cannot replace good instruction. This was stated by five principals.

Principal A stated,

The use of technology and software to analyze data from 4 sight and PSSA test scores to provide quick results to improve instruction and boost student achievement is what is truly beneficial. "Technology will not make a bad teacher a good one, but it has the potential of enhancing an already good one."

Principal D stated,

Technology is not a necessity for good instruction, but it does help. If used appropriately, it can improve the lesson. Technology is also used to analyze data from the 4 sight and PSSA tests to improve student achievement. However, in the classroom, technology cannot replace good instruction as it can only serve as an aide.

Principal E stated,

The only way technology is helping instruction now is that it is providing data to identify areas that need improvement. As far as in the classroom, it is not helping. Nothing can replace a teacher and student relationship when they work together.

Individual Theme

Theme 3: It is too early to tell if technology is actually improving instruction, but it is providing some benefits for teachers and students. This was stated by two principals.

Principal B stated,

It is too early to tell right now. I must see the achievement results in order to determine whether or not it is successful. It does help to make instruction more engaging to the students and provides more academic tools for the teachers to utilize.

Principal F stated,

Technology may make learning more exciting, but it is too early to tell if it is truly improving instruction. It will take a few years of tracking student achievement before one can determine the impact it is having on instruction. Technology benefits student learning and the way teachers teach. It keeps the students more involved in their learning.

Consensus Theme	Supported Themes	Individual Theme
	The implementation of technology only helps instruction when data is analyzed to determine where instruction can be improved. Furthermore, technology integration cannot replace good instruction.	It is too early to tell if technology is actually improving instruction, but it is providing some benefits for teachers and students.
	Technology is improving instruction by providing tools to analyze data that will drive instruction to promote student achievement and by providing tools that are used to improve instruction and keep students attentive and active.	

Figure 6- Research question #3b- Is technology improving instruction? If so, please give some brief examples?

IV.B.4. Research Question #4

What are the weaknesses or barriers that building principals and other professional staff have encountered when implementing and integrating technology into the schools and classrooms?

The additional specific interview questions asked of the principals to acquire data to answer research question number four were:

- If the staff is resistant to technology integration, what are common concerns or issues that arise, and what types of interventions do you use that are effective?
- What are some of the software/hardware glitches that are most detrimental? How do you work through them?

- While integrating technology, what are some of the risks or concerns that you have encountered?
- Is funding an obstacle when integrating technology? If so, how do you obtain necessary funds?
- Have there been any issues of misuse or abuse by staff or students?
- Are there problems with your building's infrastructure that are preventing or slowing down the integration of technology?

Themes that came from research question 4a

Themes that came from research Question #4a- If the staff is resistant to technology integration, what are common concerns or issues that arise, and what types of interventions do you use that are effective?

Consensus Theme

Theme 1: The staff is resistant to the integration of technology. Some common concerns are: there is not enough time and the staff does not have the necessary skills to use the technology. To address these issues, effective professional development is provided along with ongoing support, training, and peer coaching. This was stated by nine principals.

Principal B stated,

There is resistance towards the integration of technology from the staff; in particular, the veteran staff who was not provided with as much technology training in their teacher preparation programs. The staff complains about not having enough time to learn the technology

being implemented. Another concern is a lack of training and support while learning how to implement the technology into their classrooms. In addition to in-services on technology, our staff is getting additional training online through the Classrooms for the Future grant. This online training will show the staff the benefits of utilizing technology in their classrooms and how to implement and integrate it effectively.

Principal C stated,

There is a resistance from the teachers; in particular, the older staff as many are uncomfortable using technology. They have a fear of using it and do not want to give up the lecture style that they are used to. We offer appropriate professional development in which the teachers have choices, so that they can get the help they need in the areas in which they need it. In addition, there is a lot of support provided. The building has technology coaches available, and we pair staff members up with other staff members who are more tech savvy. This offers struggling teachers with a peer support person to help them. They will feel more comfortable with the peer support person because they already know them. Finally, when integrating new technology, we attempt to stress the value and get the staff to take ownership of the integration.

Principal E stated,

There is some resistance from the staff. One of the common teacher concerns is that there is not enough time. Technology is just one more thing to do, and the staff does not receive appropriate or enough training. Because of the lack of training, many teachers feel uncomfortable; in particular, the older staff. The older staff has a

higher level of uncomfortably. In order to address these concerns, the administration will assign the staff members a peer support person who is tech savvy to help train and support them in their areas of weakness. The staff will be given common planning time with their support person. The administration will also give the teachers' time in their schedules to observe other teachers who are using technology effectively. Teachers will also receive time in their schedules for training opportunities.

Principal F stated,

The staff is resistant to the integration of technology. Some of the concerns are that the teachers do not know to use the new hardware and software and/or that it doesn't work appropriately. Other staff members, who have been in the profession for awhile, consider the new technology a fad that will eventually fade out. One intervention that we utilize to address these concerns is to pair a tech savvy teacher up with one who is not in order to offer support and training. Also, we hold the teachers accountable by making sure they use technology and offer support to eliminate excuses and frustration. Finally, administrators must break tasks down and make technology a part of everything they do within the building.

Theme 2: There is no resistance from the staff, and the technology coordinator offers constant support. One principal stated this.

Principal H stated,

There is no concern with resistance from the staff. The staff has an excellent attitude and rarely becomes frustrated. One of the main reasons for the staff's positive attitude is the excellent technology coordinator. The tech coordinator offers training and support for the

staff. He is always available to address concerns and offer necessary training to prepare the staff for the technology integration. The technology coordinator is always on the spot to fix everything, which leads to a positive rapport with the staff, and it transfers to the positive attitudes toward technology integration that the teachers possess.

Consensus Theme	Supported Theme	Individual Theme
The staff is resistant to the integration of technology. Some common concerns are that there is not enough time, and the staff does not have the necessary skills to use the technology. To address these issues, effective professional development is provided along with ongoing support, training, and peer coaching.		There is no resistance from the staff, and the technology coordinator offers constant support.

Figure 7- Research Question #4a- If the staff is resistant to technology integration, what are common concerns or issues that arise, and what types of interventions do you use that are effective?

Themes that came from research question4b

Themes that came from research question #4b- What are some of the software/hardware glitches that are most detrimental? How do you work through them?

Consensus Theme

Theme 1: The most detrimental glitch is when the Internet and/or online programs go down. It affects everything from grades to attendance, online curriculum, and daily lessons. Nine principals stated this.

Principal A states,

The most detrimental glitch is when the Internet server goes down. Our server is through the Intermediate Unit, and it may take awhile to get it back up and running. While it is down, it is tough on the secretaries to complete their daily duties, such as attendance; therefore, hard copies are the alternative until the Internet is back up. When the internet is down, it could cause problems for those teachers who planned on incorporating technology and the Internet into their lessons. When this occurs, teachers really struggle to find a substitute for the online activity.

Principal D stated,

If the Internet server goes down, the building has problems running. All of our attendance, grades, scheduling, and student information are run through the software program Power School. If the Internet is down, this program won't run causing headaches for all people involved. The program has an excellent back up server to ensure information is not lost, but it causes problems for the time that it is down. To solve it, we rely heavily on a great tech coordinator to get it back up running.

Principal E stated,

Our Internet is through the Intermediate Unit. If it goes down, there is no attendance, grades, or student information available until the problem is fixed. There isn't much we can do except wait until the Intermediate Unit fixes it, and it is pretty much out of our hands. The good thing is that it rarely ever happens, and the Intermediate Unit fixes it as soon as possible.

Principal F stated,

If the Internet goes down, it is a major problem. We depend on other companies to fix it, and this could take time. Our grades and attendance are through the program Smart Student, and if it goes down, it could push deadlines back, which is an issue. If the phone lines go down, it breaks communication, which can cause a variety of concerns. If the administrator or teacher can't fix computer problems themselves, you could lose educational time. It all depends on the expertise of the person who is faced with the problem.

Principal J stated,

If the Internet goes down, teachers have trouble completing the lessons that they had planned. In addition, there are email issues, which break down communication with staff and parents. We utilize the Pro-Soft server to keep track of attendance, discipline, schedules, and grades. If this program were to go down, it would kill the secretaries and could push deadlines back. If the camera server goes down, we could lose a day without the security cameras until they are able to boot back up. The technology coordinator is onsite and attempts to fix as many problems as possible, but the Internet and email issues are fixed through the Intermediate Unit.

Individual Theme

Theme 2: The most detrimental glitch is when the software and technology tools do not work appropriately or consistently. One principal stated this.

Principal C stated,

On many occasions, we have issues with the attendance system. Sometimes, names do not show up, or the names are no longer there at

all. Requests must travel to the central office in order to fix it. The district's cell phones for administrators get little to no reception in the building, which is an issue. Also, the palm pilot I was given to perform many of my daily duties does not always function correctly. Finally, on many occasions, the LCD projectors are not working right before a major in-service presentation or for teachers before a big lesson. In order to work through these issues, I am in close contact with the technology coordinators, who are very helpful and skilled. Ultimately, we must be flexible and patient with technology because it is very helpful when it works.

Consensus Theme	Supported Theme	Individual Theme
The most detrimental glitch is when the Internet and/or online programs go down. It affects everything from grades to attendance, online curriculum, and daily lessons.		The most detrimental glitch is when the software and technology tools do not work appropriately or consistently.

Figure 8- Research question #4b- What are some of the software/hardware glitches that are most detrimental? How do you work through them?

Themes that came from research question 4c

Themes that came from research question #4c- While integrating technology, what are some of the risks or concerns that you have encountered? / Research question #4e- Have there been any issues of misuse or abuse by staff or students?

Consensus Theme

Theme 1: Some of the common risks or concerns are a lack of funding to support the level of technology integration and the possibility that the

technology is not benefiting student achievement. Some common issues of misuse or abuse by students are the use of inappropriate websites and plagiarism. Teachers must ensure confidentiality is protected when using email or looking at student test scores and student information. This was stated by all ten principals.

Principal B stated,

There are security risks such as students having the ability to hack into the district's grading system or view information that is confidential. Students abuse technology by getting around the firewall and going on chat rooms such as My Space or Facebook and getting access to inappropriate websites. The district has a strict policy when this occurs.

Principal C stated,

There is risk that confidentiality could be broken and personal information could get into the wrong hands. Technology also provides students with the opportunity to abuse their rights and get into trouble by going on bad websites or attempting to log on to chat rooms such as My Space.

Principal D stated,

A major concern is the available resources to get funding to support the technological movement. Without the funding, it is very hard to keep updated with the latest technology. The issues of misuse by students usually stem from using the Internet to get on websites and chat rooms that they are not to be on. There have been some issues of staff misuse when confidentiality has been broken. It is very important that student and testing information is protected by all staff members.

Principal G stated,

In addition to students getting on inappropriate websites and chat rooms on the Internet, some other risks include plagiarism, texting in school, and taking pictures with cell phones of tests or other inappropriate images. The technology coordinator is able to record every attempt by students to get on sites that are inappropriate.

Principal J stated,

One major concern is that with all of the money that is being spent on technology, is the price we are paying, going to increase student achievement? Does Edline and 4 sight testing actually increase the building's student achievement? Are we getting the bang for our buck? Some areas of misuse are that kids find ways to get around the firewall in order to get to inappropriate websites. As far as teachers go, they may check their personal emails, which they are not supposed to do.

Consensus Theme	Supported Theme	Individual Theme
Some of the common risks or concerns are a lack of funding to support the level of technology integration and the possibility of technology not benefiting student achievement. Some common issues of misuse or abuse by students are the use of inappropriate websites and plagiarism. Teachers must ensure confidentiality is protected when using email or looking at student test scores and information.		

Figure 9- Research question #4c- While integrating technology, what are some of the risks or concerns that you have encountered? / Research question #4e- Have there been any issues of misuse or abuse by staff or students?

Themes that came from research question 4c

Themes that came from research question #4d- Is funding an obstacle when integrating technology? If so, how do you obtain the necessary funds?

Consensus Theme

Theme 1: Funding is an obstacle when integrating technology, and it remains an obstacle when trying to maintain and update technology. A majority of the initial funding comes from grant money and the money for updates often comes from the district's budget causing many concerns and issues. Seven principals stated this.

Principal A stated,

Funding is a major issue when integrating technology. A large chunk of the district's budget is spent on it. Students often do not take appropriate care of the technological tools, and the tools often are in need of repair which cost big money. A few years ago, we implemented a beautiful MAC lab, but it is very expensive to update the software necessary to run the machines, so we may be replacing them all together. Grant money is the way to go when implementing technology, but once the technology is in place, the grant money goes away, and the district must budget ahead for costly repairs and updates or else you are right back to where you started.

Principal B stated,

Funding is an obstacle, so I latch onto as much grant money as possible. Currently, we are receiving the Classrooms for the Future grant, which is providing our district with \$170,000 this year and \$100,000 next year to integrate technology into the building. I do see

a concern when the grant money runs out. The district can't go backwards and become less tech savvy, and although it costs big money, the district must budget for it because it is a necessity. For example, we have three hundred new laptops that have been integrated in the past couple years. In four year they will be junk, how will we replace them?

Principal H stated,

Funding is an issue. The current board is conservative on spending, so administrators must justify why money should be spent on technology. The technology coordinator just recently leased computers, and it took seven board meetings before the board approved it. Once the technology is in place, it also costs money to maintain the technology that was integrated.

Supported Theme

Theme 2: Funding is not an issue. When technology is necessary, the district finds a way to get the needed funds for technology, such as applying for grants and asking the board of education for funds. Three principals stated this.

Principal E stated,

Funding is not an obstacle. I have been in the district ten years: five years as a teacher and five more as an administrator and never have been told "no" on money for technology integration. If it is justified and needed, I got it without a problem.

Principal G stated,

Funding is currently not an issue. We have received the Classrooms for the Future grant worth approximately \$150,000 dollars this year and

next year as well. The school district will offset costs to update and repair hardware and software by putting a place for the updates and repairs in the budget ahead of time. This way the funds for updates and repairs will be there when it is needed.

Principal J stated,

Funding is not really an obstacle as the board of education understands the importance of technology integration. Teachers are getting new laptops next year, and the building received a grant for ten Mac computers to create a new lab with up to date software to go along with it. To help the board out, we are always looking for technology grant money.

Consensus Theme	Supported Theme	Individual Theme
Funding is an obstacle when integrating technology and it remains an obstacle when trying to maintain and update technology. A majority of the initial funding comes from grant money, and the money for updates often comes from the district's budget causing many concerns and issues.	Funding is not an issue. When technology is necessary, the district finds a way to get the needed funds for technology, such as applying for grants and asking the board of education for funds.	

Figure 10- Research question #4d- Is funding an obstacle when integrating technology? If so, how do you obtain the necessary funds?

Themes that came from research question 4f

Themes that came from research question #4f- Are there problems with your building's infrastructure that are preventing or slowing down the integration of technology?

Consensus Theme

Theme 1: The infrastructure of the building is not preventing or slowing down the integration of technology as the building was either built capable or renovations have taken place to make the building capable. Six principals stated this.

Principal A stated,

The building is ok for now. We recently rewired the entire building eliminating many of the electrical concerns that were present.

Principal D stated,

No real concern right now. The building is wireless, and there are no current issues facing us. However, if the initiative of having a lap top on every desk goes through, we may have an electrical shortage to work through, but there isn't any major concern right now.

Principal E stated,

There are no concerns with the building's infrastructure. It just went under a twenty million dollar renovation to upgrade the building, and it is more than capable of handling any technology integration necessary. Our building is currently not all wireless, but this is by choice because making the building entirely wireless could lead to an increase of student misuse and abuse.

Principal H stated,

After the 2004 renovation of the building, we have not run into many problems. The new wiring is able to handle the increased level of technology. The building is prepared to handle any additional technology movements that may be integrated.

Supported Theme

Theme 2: The infrastructure of the building is preventing or slowing down the integration of technology. The building was either built incapable or renovations need to take place to make the building capable. Four principals stated this.

Principal C stated,

The building's infrastructure can not handle the integration of technology; however, this will soon change. In January of 2009, our multi-million dollar renovation will solve many or all of these issues. The new classrooms will be equipped with up to date technology.

Principal I stated,

The building's infrastructure could use some work in order to be able to integrate technology effectively. The building is scheduled to go through an eighteen million dollar renovation which will offer the students opportunities to attain the necessary twenty-first century skills.

Principal J stated,

Our building is incapable of integrating a wireless network. Because of this, we could not receive the Classrooms for the Future technology grant. That grant could have provided up to \$500,000 dollars for the integration of technology into the building. This was a huge loss for the district.

Consensus Theme	Supported Theme	Individual Theme
The infrastructure of the building is not preventing or slowing down the integration of technology. The building was either built capable or renovations have taken place to make the building capable.	The infrastructure of the building is preventing or slowing down the integration of technology. The building was either built incapable or renovations need to take place to make the building capable.	

Figure 11- Research question #4f- Are there problems with your building's infrastructure that are preventing or slowing down the integration of technology?

Themes that came from research question 5

IV.B.5. Research Question #5

What is the most effective professional development program that the high school principals have utilized when integrating technology?

The additional specific interview questions asked of the principals to acquire data to answer research question number five were:

- What specific professional development appears to be the most effective when integrating technology?

Themes that came out of research question #5a- What specific professional development appears to be most effective when integrating technology?

Consensus Theme

Theme 1: The most effective professional development when integrating technology is establishing technology coaches and utilizing peer support. Seven principals stated this.

Principal A stated,

We utilize our own staff to provide the support and training when integrating technology. I believe this is the best professional development because of the trust factor between staff members. Staff members feel more comfortable asking questions to the people they work with and respect as opposed to an outside group. What we do is have the outside group present and train a core group, who are already tech savvy, and then this core group works with the entire staff.

Principal C stated,

We always try to offer the staff choices, so they can choose what appears to be the most beneficial training for them. In my opinion, the key to training staff is offering them the support they need. We offer the support through technology coaches and peer support from within our own faculty. This increases the staff's level of comfort which helps to lower the resistance toward the integration.

Principal D stated,

Getting a core group of tech savvy teachers involved in the integration process first is very important. Once this core group is trained, they can act as peer coaches and offer the necessary support to the staff. Because this core group is offering the support as opposed to an outside agency, the staff is usually more receptive to the integration process.

Principal E stated,

The best method of professional development when integrating technology is peer coaching. This allows the staff who may need the support and training to feel more comfortable because they are asking help from their peers as opposed to outside agencies. In addition, it is important to offer the staff time to observe and train.

Individual Theme

Theme 2: The most effective professional development when integrating technology is to provide the staff time and compensation to become comfortable with the technology. Two principals stated this.

Principal G stated,

The most effective professional development is offering the teachers time to learn and work with the technology being integrated. In our building, we provide substitute teachers for the teachers that are going to receive the training. Another way to effectively provide professional development is by providing compensation in the summer for teachers to train and learn the programs and tools that are going to be implemented.

Principal J stated,

The most effective professional development is offering teachers the time to train. Currently, I am providing the staff with the time to complete some online training on using technology in the classrooms. Many of these classes are offered through the Intermediate Unit. Many of these courses utilize Blackboard and offer training to the teachers on how to utilize Blackboard in their own classrooms. Once teachers are

provided the time to learn how to use these tools, the administration must follow up ensuring that what they have learned is being utilized in their classrooms.

Theme 3: The most effective professional development when integrating technology is to integrate technology at a slower more comfortable pace, so that the staff can keep up and utilize an effective technology coordinator to not only in-service the staff but provide support and training throughout the process. One principal stated this.

Principal H stated,

The building has an excellent technology coordinator, who provides training on the new technology at our in-service days. In addition, he also offers the staff the one-on-one training and support that they need. We are integrating technology into our building at a much slower pace to allow the teachers to become comfortable with the technology and get the necessary training. This allows for the staff to be more receptive and less resistant.

Consensus Theme	Supported Theme	Individual Themes
The most effective professional development when integrating technology is establishing technology coaches and utilizing peer support.		The most effective professional development when integrating technology is to provide the staff time and compensation to become comfortable with the technology.
		The most effective professional development when integrating technology is to integrate technology at a slower more comfortable pace so that the staff can keep up and utilize an effective technology coordinator to not only in-service the staff but provide support and training throughout the process.

Figure 12- Research question #5a- What specific professional development appears to be most effective when integrating technology?

IV.B.6. Research Question #6

Where is technology moving to in the future? How will it affect education, and what can school principals do to ensure success of their students and teachers?

Themes that emerged from research question #6- Where is technology moving to in the future? How will it affect education, and what can school principals do to ensure success of their students and teachers?

Consensus Theme

Theme 1: Technology is moving at a rapid pace. Every child will have a laptop. Schools will be blended between face to face and online instruction, and there will be an increase in cyber schooling due to the influx of technology. Curriculum and grades will all be completely done online, and educators will have to utilize technology to benefit student achievement and give them the necessary twenty-first century skills. Eight principals stated this.

Principal C stated,

Technology is moving at a rapid pace. I see it being used in all facets of education. All grades, curriculum, attendance, and discipline that are not already available online will be made available online in the future. Everything will be made public and up to date modifications and updates will be performed daily. The concept of blended schools will be implemented in all districts, and there will be more alternative courses for students to take. Finally, administrators and teachers alike will have to have a technology certification to go along with their education certificate.

Principal D stated,

I see technology being used by students' everyday in the future at school, work, and home. I see technology integration as a necessity because the students need these technological skills to compete in the twenty-first century. At school, I see a laptop computer on every student's desk. The issue that will arise is how to pay for updates and repairs. Technology will be a necessity in the future.

Principal E stated,

Teaching in ten years will not resemble anything of today. Every teacher and student will have a laptop and be connected to the Internet. Cyber schools, blended schools, and online curriculum will try to take over, and if districts do not adapt, they will fall behind. Although the school provides instruction the old fashioned way, which proves to be positive when it comes to student achievement, there are many advantages to using technology. With the use of my hand held palm pilot, I have the opportunity to pull up student information from anywhere at anytime. Although I believe that old fashioned instruction from a good teacher cannot be replaced, I see a movement toward more integration of technology and less face to face instruction.

Individual Theme

Theme 2: Technology is moving at a rapid pace. Every child will have a laptop. Schools will be blended between face to face and online instruction, and there will be an increase in cyber schooling due to the influx of technology. Students will lose the personal relationships present in today's educational setting and lose the much needed socialization as well. The students' education will be less personalized and individualistic, which is a concern. Two principals stated this.

Principal A stated,

Technology is around us in every facet, and our future schools will be overcome with technological innovations. Although I see the benefits in using technology, I have some real concerns with it as well. I am concerned that technology is taking over for thinking, and I fear our students are relying too heavily on computers. Students believe

everything they read off the Internet, and it is not always valid or reliable. In addition, schools offer students opportunities to interact and practice their social skills. If technology creates an increase in distance education, it will create some major social issues. Also, I have a concern with the cost to train staff and to integrate, update, maintain, and repair the technology. Will this cost truly benefit student achievement?

Principal B stated,

Technology will continue to be implemented at a fast pace into our schools. Online courses and distance education, such as cyber and blended schools, will take over. Every child will have a laptop computer with Internet access, and most will take their courses online even at school. This movement, I see in a negative light because it is less individualistic and personal, but educators will have to adapt.

Consensus Theme	Supported Theme	Individual Theme
Technology is moving at a rapid pace. Every child will have a laptop. Schools will be blended between face to face and online instruction, and there will be an increase in cyber schooling due to the influx of technology. Curriculum and grades will all be completely online, and educators will have to utilize technology to benefit student achievement and give them the necessary twenty-first century skills.		Technology is moving at a rapid pace. Every child will have a laptop. Schools will be blended between face to face and online instruction, and there will be an increase in cyber schooling due to the influx of technology. Students will lose the personal relationships present in today's educational setting and lose the much needed socialization as well. The students' education will be less personalized and individualistic, which is a concern.

Figure 13- Research question #6- Where is technology moving to in the future. How will it affect education, and what can school principals do to ensure success of their students and teachers?

Following the interviews, the principals were asked to complete a ranking form that rated the strengths identified by principals from most beneficial to least beneficial. The ranking form also asked the principals to rate the barriers from most detrimental to least detrimental. Figure 14 below is the ranking form that was provided to the principals:

IV.C. RANKING FORM

Please rank the following aspects of technology from one (most beneficial) to five (least beneficial). These were developed based upon the responses of the interviewees.

____ - Utilizing Data: housing, accessing, and managing data effectively in order to make data driven decisions that will benefit students and staff and will increase student achievement.

____- Communication: email, cell phone, website information, etc. to staff, students, parents, community members, school boards, and any other stakeholders.

____ - Safety: cameras, alarm/alert systems, etc.

____- Improve Instruction: improvement of instruction by using innovations such as smart boards, power point, podcasts, blogs, blended schools, etc.

____- Management of Daily Duties: effective software to deal with duties such as attendance, discipline, scheduling, etc.

Please rank the following barriers to successful use of technology from 1 (most difficult to overcome) to 6 (least difficult to overcome).

____- Resistance from staff.

____- Funding for software and hardware updates.

____- Appropriate use of technology by students and staff.

____- Risks: cyber bullying, pornography, gambling online, cheating, inappropriate cell phone usage, and abuse of the Internet, etc.

____- Glitches: software or hardware malfunctions.

____- Infrastructure: building incapable of effectively handling and maintaining the amount of technology that is needed to be integrated.

Figure 14- Sample principal ranking form.

All of the above mentioned strengths and weaknesses were identified throughout the interview process. This form allows consensus themes, although all important, to be ranked against each other. Then, this determines both which strength is the most strong and also which barrier is the most detrimental. The results follow in Figure 15 below. Figure 15 provides a visual of the average scores from the ranking form in order:

IV.D. RESULTS PRODUCED FROM RANKING FORM

The chart below shows the results of a ranking form completed by principals in the second semi-structured interview to show how the top strengths and barriers ranked against each other.

Top Five Strengths Identified : from one (most beneficial) to five (least beneficial)	Top Six Barriers Identified: from 1 (most difficult to overcome) to 6 (least difficult to overcome)
#1- with a score of 2.3 on a scale of 1 to 5. - Utilizing Data: housing, accessing, and managing data effectively in order to make data driven decisions that will benefit students and staff and will increase student achievement.	#1- with a score of 2.5 on a scale of 1 to 6. - Resistance from staff.
#2 - with a score of 2.4 on a scale of 1 to 5. - Improve Instruction: improvement of instruction by using innovations such as smart boards, power point, podcasts, blogs, blended schools, etc.	#2- with a score of 2.8 on a scale of 1 to 6. - Funding for software and hardware updates.
#3- with a score of 3.1 on a scale of 1 to 5. - Management of Daily Duties: effective software to deal with duties such as attendance, discipline, scheduling, etc.	#3- with a score of 3.2 on a scale of 1 to 6. - Infrastructure: building incapable of effectively handling and maintaining the amount of technology that is needed to be integrated.
#4- with a score of 3.3 on a scale of 1 to 5. - Communication: email, cell phone, website information, etc. to staff, students, parents, community members, school boards, and any other stakeholders.	#4- with a score of 3.7 on a scale from 1 to 6. - Glitches: software or hardware malfunctions.
#5- with a score of 3.7 on a scale from 1 to 5. - Safety: cameras, alarm/alert systems, etc.	#5- with a score of 3.8 on a scale of 1 to 6. - Appropriate use of technology by students and staff.
	#6- with a score of 4.4 on a scale of 1 to 6. - Risks: cyber bullying, pornography, gambling online, cheating, inappropriate cell phone usage, and abuse of the Internet, etc.

Figure 15- shows the data from the ranking form.

CHAPTER V: PERSONAL REFLECTIONS, CONCLUSIONS, AND RECOMMENDATIONS

V.A. OVERVIEW

The purpose of this study was to focus on how the high school principal's role has changed as a result of the integration of technology. This was a qualitative study, which utilized semi-structured interviews to obtain the data necessary from practicing high school principals in western Pennsylvania. The goal was to identify the strengths, weaknesses, and barriers of technology that have affected education and the role of the high school principal. Another goal was to identify what the principals found to be effective professional development from their perspective and how the principals perceived technology moving toward in the future. Finally, where technology is moving toward in the future was also addressed. Ten principals in Western Pennsylvania were voluntarily put through two semi-structured interviews to provide answers to the above mentioned issues.

For the first part of the project, the researcher used a research approach. This included looking at how technology has affected society, the nation, the world, business, and finally education. In the second tier of this research project, the researcher sought out ten principals who were willing to participate in a semi-structured interview process in order to address questions on how technology has affected their role as a building principal. The strengths of integrating technology, barriers of integrating technology, appropriate integration techniques, and professional development were additional items explored in the second phase.

This research was done in a qualitative manner, which is defined by Hsieh & Shannon (2005) as "a research method for the subjective interpretation of the content of text data through the systematic classification process of coding and identifying themes or patterns"

(p.1278). Qualitative content analysis focused on identifying common themes and patterns as opposed to just counting words or averaging numbers. Since this study identified common themes or patterns from the interviews, this method was a good fit for the data analysis. The researcher conducted semi-structured interviews because it was the best way to obtain the appropriate data to subjectively interpret the data and classify it into themes, which provided an understanding of how technology integration is affecting the building principal's role.

For this study, all of the data collected from each interview was identified, and themes emerged. Lincoln and Guba (1985) stated three ways themes can be identified: consensus themes - when the majority of the principals stated the same theme, supported themes - when approximately half of the principals stated the same theme, and individual themes - when only one or two principals stated the same theme. The consensus themes were operationally defined by the researcher, as between six to ten subjects supporting it. Supported themes were operationally defined by the researcher, as between three to five subjects in support of the theme. Finally, individual themes were operationally defined by the researcher, as having only one or two individuals supporting the theme.

In many qualitative research studies, the researcher will take the already developed themes and relate or connect them back to the literature. The following addressed each research question by relating some of the stronger connections between the literature and the themes from the principal interviews.

V.B. COMPARISONS BETWEEN THE INTERVIEW/LITERATURE

The literature stated that the building principal is already a position of many titles: instructional leader, building manager, and the provider of

effective professional development, to name a few. With the innovation of technology, the building principal must support the technology movement and adopt yet another role, the role of technology leader. Ausbrooks (2000) stated that effective twenty-first century school administrators will be those who are able to harness the power of technology, via powerful browsers, search engines, the Internet, or other technologies and communicate effectively with others at all organizational levels in order to make informed, intelligent decisions (p.8). The high school principal must have the necessary technology skills to guide his or her teachers in a positive direction that supports strong classroom practices, assessments, and curriculum in order to increase student learning and achievement.

Principals, as the leaders of the buildings, must be knowledgeable, supportive, and motivating through the integration of technology process. Teachers will not buy into the implementation of technology, if the principal does not. As Geer (2002) stated, "School administrators are the impetus for successful technology use in schools" (p.57). Principals must be prepared to deal with teacher resistance to technology being integrated into the curriculum. They have to provide extensive teacher training in the integration of technology into the curriculum (Weiss, 1994). If administrators buy in and lead their teaching staff effectively, efficiently, and supportively, the integration process will run a lot smoother; the use of technology will increase; and the building will achieve sustainability.

The principals stated that it can appear to be a challenge initially to some, but actually, it is very beneficial to all in the end. The fact is that an increase in technology has given the principals an easier more efficient means of communication.

The principal must embrace the movement and utilize technology themselves if they expect the staff to adapt and use technology without resistance. This will make the teachers feel more comfortable knowing that

the building leader is competent and willing to utilize technology him or herself. The concept of leading by example almost always proves to be beneficial to the implementation or integration of any new movement.

The study also looked at what strengths had been identified by the implementation and integration of technology into the schools. The literature stated that the use of academic tools to improve instruction and offer students additional options is identified in the research as being important and effective. For example, Langhorst believed that like him, other teachers should use the same tools that make online learning successful to expand learning opportunities in the classroom. Students already used technology to interact socially (using blogs, wikis, podcasts, You Tube, etc.), so teachers can use them to provide students with additional learning opportunities to learn outside of the classroom (p.74). This is adapting to the way that students are learning today.

The principals stated that technology was improving instruction by providing tools to analyze data that will drive instruction to promote student achievement and by providing tools that are used to improve instruction and keep students attentive and active. In addition, a few of the other principals stated that the implementation of technology only helps instruction when data is analyzed to determine where instruction can be improved. Furthermore, technology integration cannot replace good instruction.

Therefore both the literature and interviews produced data that clearly stated the major impact that technology is having on instruction and student achievement.

This study also looked at the barriers that building principals and other staff face when implementing and integrating technology into the schools. The literature addressed the facts that the twenty-first century skills must be taught, but that funding is a major barrier. Fisch (2003)

stated that the top ten in-demand jobs for 2010 did not exist in 2004, so educators are preparing students for jobs that are not even here yet, and that will use technology that is not even invented yet, to solve problems that are not even problems yet. To do this, schools will need to be up to date with the latest technology innovations, which will cost districts large sums of money. The Simba Information Electronic Education Report (2007) stated that more than half of parents and teachers who participated in the Project Tomorrow-NetDay 2006 Speak Up survey said their schools are not doing a good job in preparing students to compete for jobs and careers in the twenty-first century.

In addition, many school districts cannot afford to create the technological savvy environment, and education funding is always an issue. With technology always changing and requiring updates and upgrades, it can become not only difficult but very costly as well for a school district to operate under the current technological standards. For example, Palozzi & Spradlin (Spring 2006) stated that costs go far beyond faculty, software, and transmission systems, and include such services as academic, computing, and telecommunications support, with scalability and course development, the two most important factors in determining technology costs (p. 6). Technology requires a lot of support in order for it to be utilized effectively and efficiently. This support is very expensive, and at times can be unaffordable for the district.

The principals stated that funding is an obstacle when integrating technology, and it remains an obstacle when trying to maintain and update technology. A majority of the initial funding comes from grant money, and the money for updates often comes from the district's budget and many issues may arise. Other principals however felt that funding is not an issue. When technology is necessary, the districts find ways to get the necessary funds

for technology, such as applying for grants and asking the board of education for funds.

The connection between the literature and the interview responses is that the technology integration is important, so that students are prepared to live in the twenty-first century, but funding may become an obstacle. The consensus theme stated that funding is an issue, but the supported theme claims if principals can justify the need for technology by stressing the importance of the twenty-first century skills, the funding will be provided. This aligns with the literature, since it stresses both the need for technology and its importance. In addition, the literature also indicates the cost factor related to technology integration.

The literature also identifies some barriers or challenges that either are occurring or could occur. One issue stated by Hsi (2007) is the possibilities of Internet addictions, gambling, cyber bullying, online thefts, and exposure to pornography. These are just some of the many risks posed by engaging in networked digital technology (p. 1512).

The principals interviewed stated that some of the common risks or concerns are a lack of funding to support the level of technology integration and the possibility that technology is not benefiting student achievement. Some common issues of misuse or abuse by students are the use of inappropriate websites and plagiarism. Teachers must ensure confidentiality is protected when using email or looking at student test scores and student information.

The literature identified a concern of misuse due to the integration of technology. The principals also were in agreement with the literature identifying misuse as an issue when integrating technology. This is an excellent connection between the study and the literature.

In addition, the study looked at what the most effective professional development that high school principals have utilized. The literature placed

emphasis on the impact of appropriate professional development has on the integration of the technology process. Educational leaders must utilize professional development opportunities to show the importance and offer the appropriate training and support to ensure the teachers' successes with technology. In dealing with professional development, Burkhouse, Loftus, Sadowski, and Buzard (2003) stated that, "a focused professional development experience led by qualified teachers, mentors, and colleagues is the indispensable foundation for competence and high quality teaching" (p. 7). Louie (2006) stated that because professional development is so important, the Massachusetts Department of Education encourages districts to apply the NCLB guidelines to all of their technology spending, allocating a minimum of 25% of their technology budget for professional development (p.15). Professional development opportunities can be provided through workshops, classes, mentor programs, and co-teaching experiences. Holland (2001) argued that peer coaching "is an excellent way for teachers at a mastery level to continue to develop in their knowledge and use of technology, particularly in their use of technology in their classrooms" (p. 254).

The majority of the principals that were interviewed stated that the most effective professional development when integrating technology is establishing technology coaches and utilizing peer support. Another principal that was interviewed stated that the most effective professional development when integrating technology is to provide the staff time and compensation to become comfortable with the technology. Yet another principal that was interviewed stated that the most effective professional development when integrating technology is to integrate technology at a slower more comfortable pace, so that the staff can keep up. The staff can utilize an effective technology coordinator to not only in-service the staff but provide support and training throughout the process.

One of the connections between the literature and interviews is the fact that funding must be available. The literature outlines how much should be put aside, and the principals talk about compensation, appropriate support, and training which will all cost a significant amount of money. The other major correlation between the literature and interviews is the importance placed on skilled peer coaches to offer the training and support to the entire staff.

Finally, the study addressed where the principals see technology moving toward to in the future. The literature states students learn differently these days, and education is going to have to adapt to the technological movement. As Hsi (2007) outlined some of the implications for educational practices with regard to technology and the impact of digital kids, Hsi stated that because children can competently perform complex tasks outside of school with digital technologies, but they may not display the same skills on school-type tasks. It will be important for both research and practice to understand the nature of learning in out-of-school settings and how to build upon the practices of youth in digitally mediated learning environments to support learning in multiple settings including school classrooms through teacher professional development (p. 1522). As educators prepare students for the global world they will enter, it is important they stay updated and adapt to the new ways in which students learn.

Hsi (2007) also stated that there is large societal concern that exists among adults, including parents, school administrators, education policy-makers, and teachers alike, that this engagement with and attraction to media and digital based ways of playing are actually interfering with children's development, health, and schooling, influencing social behavior, and consequently distracting youth's attention away from learning new content, participating in civically minded activities, and acquiring future work place skills.

The majority of the principals interviewed stated that technology is moving at a rapid pace. Every child will have a laptop. Schools will be blended between face to face and online instruction, and there will be an increase in cyber schooling due to the influx of technology. Curriculum and grades will all be completely online, and educators will have to utilize technology to benefit student achievement and give them the necessary twenty-first century skills. One of the principals that was interviewed also stated that technology is moving at a rapid pace. Every child will have a laptop. Schools will be blended between face to face and online instruction, and there will be an increase in cyber schooling due to the influx of technology. Students will lose the personal relationships present in today's educational setting and lose the much needed socialization as well. The students' education will be less personalized and individualistic, which is a concern.

The literature first outlines the fact that students learn differently and that the teachers and administrators must adapt. The principals who were interviewed came to a consensus theme that technology will continue to grow, and that it is important that education adapt and provide the students with the much needed twenty-first century skills.

However, the literature also stated that digital based ways of playing are actually interfering with children's development, health, schooling, influencing social behavior, and consequently distracting youth's attention away from learning new content, participating in civically minded activities, and acquiring future work place skills. This was also identified as an individual theme by two principals who were interviewed. They stated that students will lose the personal relationships present in today's educational setting and lose the much needed socialization as well. The students' education will be less personalized and individualistic, which is a concern. The interaction between the literature and what the principals stated provided a strong connection.

V.C. CONCLUDING REMARKS

The results from this study showed how ten western Pennsylvania high school principals perceived their roles, and how education as a whole is changing due to the integration of technology. A majority of the principals saw the integration of technology as a positive factor. Technology has impacted their role as a principal by making them readily available, and they view this notion as a strong asset. The principals interviewed found themselves utilizing technology to complete many of their daily duties and to communicate with staff and parents more effectively and efficiently. The principals identified both strengths and weaknesses of the integration of technology.

This study showed that a majority of the principals interviewed identified strengths such as the ability to complete daily duties more effectively, improvement of instruction through teacher tools, provisions for a safe environment for students and teachers, effective and efficient communication medium with the staff, parents, and community, and analysis of data to drive instruction and improve student achievement. These were some of the highest ranking strengths or benefits identified by the principals from the interview process.

This study also showed some of the barriers or negative aspects of the technology integration movement. A majority of the ten principals found the following items to be significant barriers when integrating technology into their building: staff resistance, funding for software/hardware/repairs, misuse and abuse by students, major glitches that detract from the education process or slow down the daily operations within a building, and issues with the building's infrastructure. These issues emerged from the data collected as barriers and weaknesses throughout the technology integration process.

The study's purpose was also to identify the most effective professional development indicated by the majority of the administrators interviewed. Most found that the peer support and technology coaches offer the best professional development. Teachers felt more comfortable asking for help from their peers whom they can trust. In addition, some principals stated that giving the teachers the time and/or compensation may allow for a more positive attitude toward the integration process. This perspective is opposed to the conception that technology integration simply adds more work to teachers' already busy instructional day. Finally, a few administrators felt that utilizing an effective technology coordinator and online training courses will provide the much needed training.

This study also attempted to identify where technology is moving to in the future and how it will affect education. Many of the principals interviewed made it clear that they believe that technology will continue to increase as time goes on. They felt that every student will have a laptop and that the way we educate students presently will soon be outdated. Classes will be online, and the personal and social aspects of education will no longer exist. Districts will use the blended schools model, where courses are set up and are taught through both the Internet and classroom. The principals clearly foresee an increase in technology in the future, and that there will be some benefits, but there are also issues of concern that go along with the integration of technology as well.

V.D. PERSONAL REFLECTIONS

As I reflect on my journey through the doctorate course work at the University of Pittsburgh and the writing of this dissertation, many factors have contributed to a shift in my personal paradigm and has challenged my previous ways of thinking. I have grown not only as a professional in the classroom, but as scholar and as a thinker as well. This is important because I value the foundation that has been built, which has allowed me to continue to challenge myself and others to think about issues such as technology. Technology integration has affected not only the principal's role but also the improvement of daily instruction and ultimately student achievement.

When I began to think about my dissertation topic, I knew that I needed to write about something that was not only educational, but also about something that interested me and would benefit principals and the field of education as a whole. In talking with my academic adviser at the time, I mentioned that during my k-12 administration and curriculum and supervision internship, there were many technology issues that emerged. The administrators that I was working under grew very frustrated with technology throughout my time there. However, they valued and stressed the importance of utilizing technology effectively and efficiently. My adviser who works closely with schools and administrators agreed that this was a relevant topic. After reading the research, I identified that a study on how the principal's role has changed on account of technology integration would be important. Also, I sought to identify strengths and weaknesses of implementing technology, as well as what would comprise the most effective professional development program when integrating technology. Finally, it would also be beneficial to determine where technology is moving to in the future.

Some key findings that I have learned from conducting this study are listed below:

- I was surprised on how little research has been completed on the implications of the role of the principal on account of the technology integration movement.
- The following strengths were identified by the principals. The strengths are listed by most beneficial to least: Utilizing data to make data driven decisions, improving instruction, management of daily duties, communication, and safety.
- The following barriers were identified by the principals. The barriers are listed by most difficult to overcome to least difficult to overcome: Resistance to staff, funding, infrastructure of the building, glitches in the hardware and software, misuse and abuse, and the risks that accompany the benefits of technology.
- Having the opportunity to talk with ten western Pennsylvania principals was truly a great experience. We had some fantastic discussions about how technology is or is not improving instruction, student achievement, and communication just to name a few items. As a teacher in my fifth year who will be looking for an administrative/leadership position in the near future, it was a great experience to talk with some excellent professionals in the field of administration.
- I learned first hand from the administrators that when integrating technology or any other movement, it is important to offer the teachers peer support. This increases the level of comfort and allows them to be more

open to the movement. It is also important to offer the teachers the time and to clearly identify how this will both benefit them and their students, as opposed to something added onto their already busy days that will phase out shortly.

- Due to my opportunities to sit down with ten principals, I found out that a majority consider funding an issue when integrating technology. It was interesting to see the grant money that is available. The current grant "Classrooms for the Future" is providing funds to many of the buildings in which I interviewed the principal. Another interesting point with regard to funding it that even with grant money, districts must set aside money for technology updates and repairs and upgrades if the movement is going to be sustainable and successful.
- In addition, many other topics were discussed on the effects of technology integration to the high school and the impact of the role of the principal. A book, survey, or reading other dissertations can help, but none of which can replace the experience of conducting my own survey.
- After interviewing the principals, it was apparent that a majority or eight out of the ten principals were both knowledgeable and skilled in technology. This was an interesting point because I can see the importance of having a tech savvy leader when integrating technology.

V.E. RECOMMENDATIONS FOR HIGH SCHOOL PRINCIPALS

The following are my recommendations that are offered to high school principals who are integrating technology into the high school:

- Research and call other local administrators who have a similar school and budget to see what they have integrated as far as technology goes and how effective it truly is or was.
- Build a team of core individuals to help identify what is needed and to serve as a support team throughout the integration process.
- Have the team conduct a needs assessment of what your building really actually needs and what technology programs would best fit these needs.
- Identify how the integration of technology will benefit the staff and students. For example, show how it analyzes data effectively and efficiently to drive instruction and boost student achievement.
- Begin to look at some common barriers such as your building's infrastructure, funding, and staff resistance in order to determine if in fact the building is ready to handle the type of technology integration you have outlined.
- Make sure that the software programs are effective and that you are able to receive the support and training throughout both the integration process and the life of the software.

- Ensure that you have knowledgeable peer coaches and a dependable and knowledgeable technology coordinator to address issues and support staff.
- Allow the staff to take ownership of the movement and utilize the core team to help with the implementation process. This should limit or reduce the resistance from the staff; in particular, the more veteran staff, which may be less willing to be taught new skills.
- In order to help the integration process go smoother or to go at all for that matter, the principal must be tech savvy or at least have mastered the skills he or she is asking his or her staff to do. The principal must be both flexible and patient with the staff, students, and software/hardware in order for it to be successful.

V.F. RECOMMENDATIONS FOR FURTHER RESEARCH

- Replicate this study with elementary and/or middle school principals that are integrating technology into their buildings.
- Replicate this study with an entire k-12 building.
- Replicate this study and analyze student achievement scores and overall grades, while looking at the positive and negative effects of technology integration.
- Conduct a study on how tech savvy the principals are and the speed at which the building is integrating technology. Then, look at how much staff resistance is a result of each of these two factors.

- Conduct a study on the future implications of the integration of technology on education.

APPENDICES

APPENDIX A

Principal Ranking Form

Please rank the following aspects of technology from one (most beneficial) to five (least beneficial). These were developed based upon the responses of the interviewees.

____ - Utilizing Data: housing, accessing, and managing data effectively in order to make data driven decisions that will benefit students and staff and will increase student achievement.

____ - Communication: email, cell phone, website information, etc. to staff, students, parents, community members, school boards, and any other stake holders.

____ - Safety: cameras, alarm/alert systems, etc.

____ - Improve Instruction: improvement of instruction by using innovations such as smart boards, power point, podcasts, blogs, blended schools, etc.

____ - Management of Daily Duties: effective software to deal with duties such as attendance, discipline, scheduling, etc.

Please rank the following barriers to successful use of technology from 1 (most difficult to overcome) to 6 (least difficult to overcome).

____ - Resistance from staff.

____ - Funding for software and hardware updates.

____ - Appropriate use of technology by students and staff.

____ - Risks: cyber bullying, pornography, gambling online, cheating, inappropriate cell phone usage, and abuse of the Internet, etc.

____ - Glitches: software or hardware malfunctions.

____ - Infrastructure: building incapable of effectively handling and maintaining the amount of technology that is needed to be integrated.

APPENDIX B

NO WAIVER WAS NECESSARY, BUT THIS IS THE STATEMENT I READ TO THE PRINCIPALS WHEN ASKING THEM TO PARTICIPATE IN THE STUDY:

The purpose of this research study is to determine the strengths and barriers that the high school principal encounters when integrating technology into the high school, what effective professional development is available to help the integration process, and finally, how the principal's role has changed with regard to the integration of technology and where technology is moving in the future. For that reason, I will be surveying high school principals from a number of high schools in western PA and ask them to participate in a one to two hour semi structured interview. If you are willing to participate in the interview, it will focus on how your role as a high school principal has changed due to the integration of technology and the most and least effective strategies as well as effective professional development, and also, to find out where you see this heading in the future. There are no foreseeable risks associated with this study, nor are there any direct benefits to you. This is an entirely anonymous interview, so your responses will not be identifiable in any way. All responses are confidential and will be kept under lock and key. Your participation is voluntary, and you may withdraw from the project at anytime. This study will be conducted by Joseph W. Pasquerilla, and he can be reached at (724) 977-8507.

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