

THE IMPACT OF MIDDLE SCHOOL PRINCIPAL LEADERSHIP ON THE
INTEGRATION OF TECHNOLOGY IN SELECTED MIDDLE SCHOOLS WITHIN
THE INDIANAPOLIS PUBLIC SCHOOL DISTRICT

by

Dexter Suggs, Sr.

Dissertation submitted to the Faculty

Department of Graduate Studies in Leadership and the

College of Graduate Studies

in partial fulfillment of the requirements for the degree of

Doctor of Education

Organizational Leadership

Indiana Wesleyan University

COMMITTEE CERTIFICATION

The Dissertation Committee for Dexter Suggs Sr. certifies that this is the approved version of the following dissertation:

THE IMPACT OF MIDDLE SCHOOL LEADERSHIP ON THE INTEGRATION OF
TECHNOLOGY IN SELECTED MIDDLE SCHOOLS WITHIN THE INDIANAPOLIS PUBLIC
SCHOOL SYSTEM

Committee:


Vern Ludden, Ed.D. - Committee Chairperson


Larry Lindsay, Ed.D. - Committee Member


Boyd Johnson, Ph.D. - Committee Member

CHAPTER 1

Introduction

This study examined the impact of middle school principal leadership on the integration of technology in selected middle schools within the Indianapolis Public School District. According to D. Crenshaw Director of Informational Technology, the Indianapolis Public School District has invested millions of dollars in an attempt to implement technology into the classrooms of selective middle schools within its school district in order to enhance the overall education of inner city students (personal communication, May 31, 2007). However, questions have been raised regarding the leadership role of the middle school principals and their ability to effectively implement technology within their schools.

General Background of Study

The technology revolution is upon us. However, ...the success record in education is still not encouraging; in fact, the way most teachers teach has changed little since the days of the one-room school-house. We tend to teach as we were taught or we adopt the teaching methodology of the teachers around us. (Heide & Henderson, 2001, p. 12)

According to middle school principals, classroom observations have proven that if one walked into a classroom in many middle schools within the Indianapolis Public Schools (IPS), the largest public school district in the state of Indiana, one would often observe teachers continuing to educate students using outdated traditional methods. Students are usually sitting in straight rows in the classroom and are required to listen to the teacher lecture for three-fourths of the class period. Afterwards, the students are often given

worksheets or textbooks to recite information covered during the lecture. “Emphasis is still on rote learning, following instructions, and performing routine tasks” (Heide & Henderson, p.12). Current methods and best practices, including the enhanced use of technology, have become a major topic of debate for middle school principals and central office personnel within IPS.

“Many corporate leaders, academics, and practitioners believe that traditional forms of teaching (i.e. reliance on textbooks, whole class instruction, lecturing and multiple choice tests) are obsolete in the informational age” (Cuban, 2001, p. 14). To combat outdated teaching methods and strategies, an emerging effort can be seen among the middle school principals and central office administrators within the Indianapolis Public Schools to engage every student in a relevant, challenging, integrative, and exploratory curriculum through the integration of technology in the classroom. “The mission for technology in IPS is to provide resources and support so that educators can engage students in rich learning experiences so that they can meet academic and technology standards and participate successfully in the digital age” (Indianapolis Public Schools, 2006).

This study examined three selected middle schools within the Indianapolis Public School District. The focus of this research was to study what school principals have done to increase the use of technology within the middle school. Each of the three middle schools, John Marshall located on the eastside of Indianapolis, Margert McFarland located on the Southside of Indianapolis, and H. L. Harshman located in Center Township of Indianapolis, are identified as three of only four magnet middle schools in the state of Indiana with a technology theme embedded into their curriculum.

The three selected middle schools consist of grades seven and eight. John Marshall Middle School's ethnicity included 85% White, 6% Black, 6% Hispanic, and 2% multiracial. The average age of the 2006 -2007 teaching staff was 44 years. Students who attend John Marshall are engaged in a curriculum that utilizes the Problem-Based Learning process to study real world environmental issues. Technology is used as a research and presentation tool to aid the Problem-Based Learning program. The program offers unique technology opportunities at each grade level through troubleshooting, web design, and video journalism (Indianapolis Public Schools, 2005).

Figure 1.1. Ethnicity data for John Marshall Middle School.

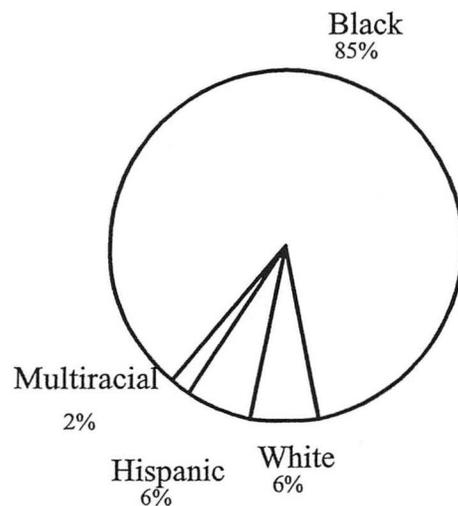


Figure 1.1. John Marshall Middle School ethnicity data for 2006-07 provided by the Indiana Department of Education school web site www.doe.state.in.us: 2007.

Margaret McFarland Middle School's ethnicity included 46% black, 28% white, 24% Hispanic, and 2% multiracial. The average age of the 2006 – 2007 teaching staff was 44 years. McFarland is considered the sister school of John Marshall, and the curriculum focus is the same as Marshall's. Students who attend McFarland engage in a curriculum that utilizes the Problem-Based Learning process to study real world environmental issues. Technology is used as a research and presentation tool. The program offers unique technology opportunities at each grade level such as troubleshooting, web design, and video journalism (Indianapolis Public Schools, 2005).

Figure 1.2. Ethnicity data for Margaret McFarland Middle School.

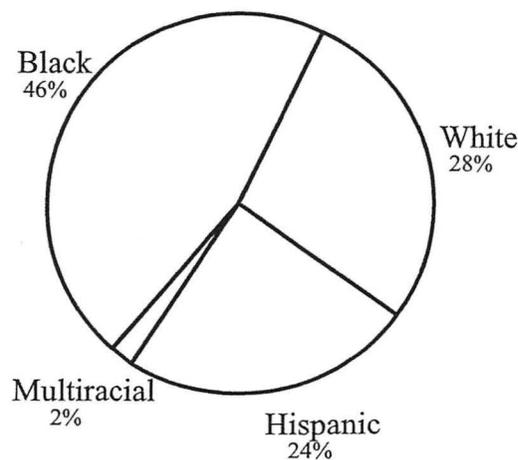


Figure 1.2. Margaret McFarland Middle School ethnicity data provided for 2006-2007 by the Indiana Department of Education school web site www.doe.state.in.us: 2007.

H. L. Harshman Middle School's ethnicity broke down to include 61% black, 24% white, 12% Hispanic, and 3% multiracial. The average age of the 2006 - 2007 teaching staff was 43 years. Students who attend Harshman are engaged in a curriculum that focuses on applying scientific and mathematical principles to the process of solving real world problems. The math and science curriculum is accelerated and centers on providing opportunities for students to apply their knowledge and skills when approaching and solving problems. A technologically advanced setting that includes computer access in a wireless environment, digital multimedia hardware, and newly updated science labs is available for student usage. Students are expected to use the Internet, PowerPoint, Microsoft Office, and other software to research and produce individual group presentations for interdisciplinary projects (Indianapolis Public Schools, 2005). *Figure 1.3. Ethnicity data for H. L. Harshman Middle School.*

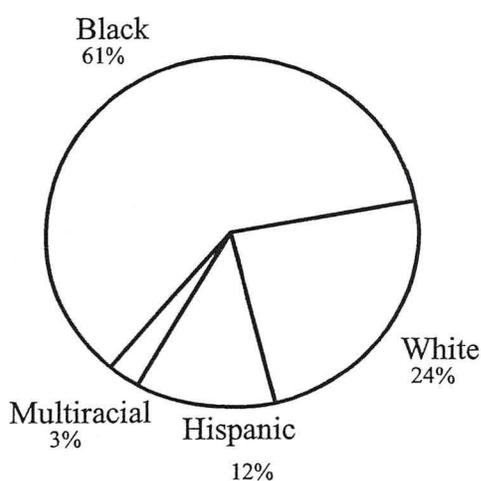


Figure 1.3. H. L. Harshman Middle School ethnicity data for 2006-07 provided by the Indiana Department of Education school web site www.doe.state.in.us: 2007.

Statement of the Problem

According to D. Crenshaw during the 2006 - 2007 school year, IPS invested over 3.5 million dollars in technology hardware, software, and maintenance of equipment within the IPS magnet program (personal communication, March 4, 2008). The superintendent and the school district's director of technology are interested in the integration and return value of these investments. They are now asking the question: How effective is the school leader (principal) in implementing, monitoring, and measuring the integration of technology into learning assignments of the middle level students? In sum, what influence does the school leader have on effectively integrating technology to enhance the engaged learning of middle school students in the three-targeted IPS middle schools?

Guiding Question

What is the impact of middle school principal leadership on the integration of technology in selected middle schools within the Indianapolis Public School District during the 2006 – 2007 school year?

Significance of the Problem

D. Crenshaw (personal communication, May 31, 2007), estimated that in the next five years, the district will invest nearly 25 million dollars in laptop and desktop computers alone. In considering the role that middle school principal leadership plays in the successful use of technology for urban middle schools, one must first consider the overall role of the school leaders. "Today's school leaders are responsible for setting the vision, managing day-to-day business, setting instructional standards, and communicating with parents" (Fischman, Gomez, & Soloway, 2000).

There continues to be growing discussion among IPS middle school principals, district directors, and the assistant superintendent over whether school leadership practices at the middle school level are outdated and in desperate need of restructuring. Much discussion is centered on the impact of technology in education and the major role that technology will play in the future within IPS.

Recent evidence suggests that states'

...school leaders will have to become very comfortable with technology. This comfort will be important so that they can use technology to help them lead and model its use for others. A high comfort level with technology will also be important so that leaders will know when the use of technology is not appropriate.

(Hoerr, 2005, p. 174).

This level of comfort with technology may impact the overall use of technology within the schools of the principals within this study.

Over the years, educational leaders at the middle school level within the Indianapolis Public Schools have mistakenly assumed that spending money on technology hardware would automatically lead to more usage in the classroom and improvement in instructional practices. However, based on low standardized test scores, one would assume that instructional practices in the classrooms are not changing. Cuban (2001) pointed out decades ago, "that the presence of new technologies (radio, television) repeatedly raises the expectations of an educational revolution" (p. 86). Cuban also asserted "that this lack of revolution does not result from the usual arguments of teacher resistance, lack of training or insufficient funds. The real barrier to change comes from the unwavering nature of school itself" (p. 87).

Principals are held responsible for implementing and ensuring that the instructional tools within their buildings are used effectively in order to enhance the educational opportunities of all students. Creighton (2003) asserted that “for improvement in technology integration, principals must be willing to alter existing leadership practices evident in most schools” (p. 2).

There are several reasons why educational leaders (i.e. district directors, assistant superintendent, and school superintendent) of the Indianapolis Public School District expect principals at the middle school level to ensure that technology is being utilized in the classrooms, especially when accessing and finding information for creating and communicating new knowledge. These include the need to prepare our students to function and compete in an information-based, Internet using society and the need to make education within IPS at the middle school level more engaging and results oriented. Principals must help students become technology literate, as well as ensuring that the technology in their schools is not being used as expensive decorative pieces.

McKenzie (2002) maintained, “Smart uses of new technologies are more likely to thrive in schools whose principals play a central, encouraging role. When principals act as instructional leaders, and they model discerning as they lead staff through wise choices to sound daily practice, the program is much more likely to thrive” (p. 1). “Today’s rapidly changing environment requires the principal as technology leader to become involved in discovering, evaluating, installing, and operating new technologies of all kinds, while keeping teaching and student learning as the guide and driving force behind it all” according to Creighton (2003, p. 3). The principal will then be able to provide the student with the tools needed to compete in a global society.

The integration of technology has allowed students the opportunity to be immersed in computers and technological advances in their daily lives via games, personal computers, and other technology based items. D. Crenshaw stated, "It is becoming apparent that technology should be incorporated in all aspects of the curriculum if the students are to compete and learn in a global society" (personal communication, May 31, 2007). In this study, the aim was to assess what leadership role a principal should take in the middle schools within IPS in leading technology integration in the classroom. Through qualitative interviewing, the researcher explored the leadership role and strategies that principals of selected middle schools in IPS incorporated to effectively integrate technology in the classroom.

Summary of the Research

Through technology, students now have the ability to sit in their classrooms and engage in conversations with other students across the world. They are also seeing sites that a decade ago could only be read about in textbooks. School districts all over the United States are pressed by legislatures, educators, and parents to integrate technology instruction for the achievement potential of students (Brooks-Young, 2000). One of the most critical educational leadership challenges for administrators is the successful integration of technology into classrooms (Hall, 2001). Administrative support is a key factor in the success of any kind of school reform, particularly reform dealing with technology integration (Brooks-Young, 2001). Administrators are the decision makers, role models, and main supporters for assimilation of technology in schools (Hall, 2001). The Office of Technology Assessment (1995) found that principal leadership is one of the most important factors that affect the use of technology in the classroom. Principals

who model the use of technology are instrumental in furthering computer technology use in the classroom (Kincaid & Feldner, 2002). Support from principals is crucial in determining whether teachers integrate technology into their classrooms.

Costello (1997) observed that school leaders must not become part of the issue regarding technology integration; school leaders who do not have knowledge of basic technology skills can be a deterrent to the process. Principals provide leadership by becoming aware of basic technology skills, including creating a vision, sharing the vision, funding, planning the process, coordination, curriculum development, training, and creating technology standards.

Purpose of the Research

The purpose of this study was to examine the impact of middle school principal leadership on the integration of technology in selected middle schools within the Indianapolis Public School District. Creighton (2003) “discussed the relationship between leadership and technology and suggested that leaders must play a more proactive role in implementing technology” (p. 2). The issues within this qualitative study focused on leadership practices of principals within the three selected middle schools and the ability to effectively integrate technology into the schools. The results of this study, coupled with recommendations, will be used to help the Indianapolis Public School District superintendent and the director of technology information. Thus, the objective was to better understand the role of leadership and how to effectively blend technology in the curriculum of secondary schools within the school district.

Type of Study and Method

Kvale and Brinkman (2009) defined qualitative research interview as “attempts to understand the world from the subjects’ point of view to unfold the meaning of peoples’ experiences, to uncover their lived world prior to scientific explanations” (p. 28). In qualitative interviewing, the interest is focused on the interviewee’s point of view. Interviewee is often encouraged to expand on a question and provides additional information, even if unrelated to the question.

Qualitative interviews are also viewed as “conversations in which a researcher gently guides a conversational partner in an extended discussion. Each conversation is unique, as researchers match their questions to what each interviewee knows and is willing to share” (Rubin & Rubin, 2005, p. 18). According to Rubin and Rubin, “qualitative interviewing is flexible, but it is not random or happenstance. Rather, it adapts as circumstances change” (p. 16).

“When the researcher spends enough time in the environment where the data are collected, the interview process can yield a thick description of the phenomena being studied” (Fraenkel & Wallen, 1993, p. 380). Informal in-depth interviews that were conducted during this study tended to resemble a casual conversation between the researcher and participant. “The researcher has a journal, pen, and tape recorder with cassette tape to take specific notes while at the scene” (Emerson, 1995, p. 64). These methods of documentation ensured that the researcher gathered accurate information from each interviewee throughout this process.

The researcher conducted in-depth interviews with middle school principals and faculty members of the three selected schools. The researcher drew upon data analysis

guidelines suggested by Strauss and Corbin (1998) and Miles and Huberman (1984), which utilize different levels of coding schemes. The researchers use the data source, procedures, and designs (Fraenkel & Wallen, 1993) to provide a vivid description of their studies. Due to the large staff turnover within the school district, the data for this study were collected using words via interviews with nineteen professional educators within the Indianapolis Public School District.

Limitations of the Study

This study was limited due to school district cutbacks, lay-offs, school closings, reorganization, and a large proportion of staff turnover, 58% on average among the schools within this study. These factors limited the number of educators participating in this study. As a result of high staff turnover, teachers struggle to develop working relationships through teaming and collaboration. These factors may not allow for on-going growth among the teaching staff within the school.

This study was also limited to selected middle schools based on their magnet school theme within the Indianapolis Public Schools; limited related research; and a small sample size, due to the limited number of staff members within each school who actively used technology within their classroom. To further validate this research, additional interviews and analysis across the nation would be helpful to more fully support the conclusions of this study.

A major limitation of this study was the inability of the researcher to conduct follow-up interviews with the participants. Two of the principals within this study were terminated from their position as principal, and the third principal was reassigned to another school. Two of the schools closed, and one was restructured and converted into a

high school. All of the technology coordinators' jobs were lost at the conclusion of the school year due to budget issues. The teachers at two out of the three schools were reassigned throughout the district due to closure or restructuring of a school.

Definition of Terms

Theme. Appear as major findings in qualitative studies and are stated under separate headings in the findings section of the studies (Creswell, 2003, p. 194).

Instructional leader. School principal who makes a commitment to learning, and connects the work of improved student learning and teaching by building strong teams of teacher leaders (Zepeda, 2007, p. 11).

Technology integration. The use of computer-based or electronic media resources as tools for student learning. The use of technology in the classroom can effectively impact student learning when the technology is fully integrated into the teaching (Indianapolis Public Schools, 2005, p 8).

Magnet school. A public school which offers specialized courses or curricula. The term magnet school is mostly associated within the United States. The use of the word magnet refers to magnet schools drawing students from across normal boundaries defined by authorities (usually school boards) as school zone that feed into certain schools, or a school within the Indianapolis Public School system that offers a specialized curriculum that enables students to take advantage of additional resources and techniques that focus on the individual talents and interests of students" (Indianapolis Public Schools, 2005, p. 4).

Principal. The educator who has executive authority for a school (Word net).

Middle school. A period of education that straddles primary/elementary education and secondary education, serving as a bridge between the two for students in grades seven and eight (Indianapolis Public Schools, 2006).

i-book. Laptop computer targeted to consumer and education market segments. Instead of the common market practice of selling yesterday's professional technology to consumers, Apple engineered the iBook as a derivative of its professional laptop computer, the PowerBook G3, adopting several key features that had made it an early market success. Sold by Apple Inc. between 1999 and 2006. it was targeted at the consumer and education markets (Apple, 2006).

Problem based learning (PBL). Students work in teams to explore real-world problems and create presentations to share what they have learned. Compared with learning solely from textbooks, this approach has many benefits for students, including deeper knowledge of subject matter; increased self-direction and motivation; and improved research and problem-solving skills (Indianapolis Public Schools, 2006).

Active learning. This happens when students are given the opportunity to take a more interactive relationship with the subject matter of a course, encouraging them to generate rather than to simply receive knowledge. In an active learning environment, teachers facilitate rather than dictate the students' learning (Bonwell & Eison, 1991).

Summary

This dissertation is organized into five chapters. The first chapter started with an introduction of the problem followed by the background of the study, statement of the problem, significance of the research, summary of the research, purpose of the research, type of study and method, limitations of the research, and the definition of terms.

Chapter 2 consists of a literature review from a collection of sources and examines research on leadership and technology in schools. Chapter 2 also provides an overview of leadership theories, such as transformational leadership, situational leadership, contingency leadership, and path-goal leadership as they relate to this study.

Chapter 3 outlines the methodology that was used in this study, including instrumentation, the collection and sources of data, and the analysis of data and participants. The researcher discusses the qualitative interview design utilized which provided an in-depth view of leadership of selected middle schools within the Indianapolis Public School District and the leadership techniques used to increase the use of computer technology.

Chapter 4 presents the analysis of the data collected, using the methodology and instrumentations which were discussed in Chapter 3. The descriptive data analysis of Chapter 4 identified the relationship between school principal leadership and the implementation of technology. The analysis discovered five major categories that highlighted the impact of principal leadership on the implementation of technology in schools.

Chapter 5 provides a summary of review and offers a discussion of findings presented in the preceding chapters. Summary overview, conclusions, limitations of this study, and recommendation for future research are highlighted in this chapter.

CHAPTER 2

Review of Literature

As a transformation takes place with technology integration, it becomes important to explore what school leaders are doing to incorporate technology into the classroom and how they are implementing best practices for teaching with technology and ways to promote meaningful learning for students. In recent years, an increased interest in the use of technology within schools has become evident. In schools today,

...new technologies help teachers to respond to different learning styles of students and to develop new attitudes toward teaching and learning. In previous years, the pen, pencil and textbook were the student's tools, and learning meant memorization or lower level cognition demonstrated by performance on tests. (Heide & Henderson, 2001, p. 8)

This chapter outlines the literature relevant to the research question of this study.

School districts all over the United States are pressed by legislatures, educators, and parents to integrate technology instruction in order to increase the achievement potential of students (Brooks-Young, 2000). One of the most critical educational leadership challenges for administrators is the successful integration of technology into classrooms (Hall, 2001). Administrative support is a key factor in the success of any kind of school reform, particularly reform dealing with technology integration (Brooks-Young, 2000). Administrators are the decision makers, role models, and main supporters of assimilation of technology in schools (Hall, 2001). The Office of Technology Assessment (1999) found that principal leadership is one of the most important factors that affect the use of technology in the classroom. Principals who model the use of

technology are instrumental in furthering computer technology use in the classroom (Kincaid & Feldner, 2002). Previous studies have reported that support from the principal is crucial in determining whether teachers integrate technology into their classrooms.

Technology use in schools evolved during the last few decades from teaching programming and utilizing drill and practice to implementing integrated learning systems, addressing computer literacy skills, and participating in web-based communities (Dias & Atkinson, 2001). Current technology integration in schools involves the practices of using technology as part of the curriculum to meet content objectives such as communication, collaboration, and creative problem solving.

Principals' modeling of technology behavior conveys the instructional direction of their schools. A school leader must model professional growth by participating in professional learning activities, particularly in the area of technology applications that generate fear, apathy, or resistance among staff (Paben, 2002). Costello (1997)

...observes that educational leaders must not become part of the problem when integrating technology; principals who do not have knowledge of basic technology skills can be a hindrance to technology integration. Principals provide leadership by becoming aware of basic technology skills including creating a vision, sharing the vision, funding, planning process, coordination, curriculum development, training, and creating technology standards. (p. 25)

Technology Integration

“Technology integration is a term used by educators to describe effective uses of technology by teachers and students in K-12 and university classrooms. Teachers use

technology to support instruction in language arts, social studies, science, math, or other content areas” (Apple Inc., 2006). Technology integration involves systematic planning to use computers and technology tools in conjunction with educational resources and curriculum objectives to actively engage students in the process of learning (Brooks-Young, 2000). Brooks-Young goes on to say that “technology integration is a powerful tool to increase motivation, communication and hands-on active learning. By learning independently and collaboratively, students can construct knowledge in multiple ways, using prior knowledge and computers as research tools” (p. 2).

School principals play a prominent role in promoting the effective integration of technology in their schools (Barth, 2002). The importance of the role of the school principal in the success of technology integration cannot be understated. Principals must be involved in and support technology initiatives (Coley, Cradler, & Engell, 1997). Coley et al. noted that research has consistently found that when school leaders are informed about and comfortable with technology, they become key players in leading and supporting technology integration activities. “School principals must model the purposeful use of technology and ensure that teachers and students integrate technology into daily classroom practice” (Paben, 2002, p.27).

The way school principals incorporate technology on a daily basis can set a precedent for how technology will be used throughout a school. Just as technology should be incorporated as an integral element of daily instruction rather than an add on, school leaders must reflect the appropriate use of technology in their daily work. (The Education Alliance at Brown University, 2007)

According to Creighton (2003),

...the principal's leadership plays a significant role in the successful implementation of technology, the lack of appropriate leadership can squander the educational potential of technology, creating environments that have little effect on teaching and learning, and often supporting more traditional strategies and practices such as pen, pencil, and textbook activities. (p. 87)

In maintaining the status-quo, limitations are placed on students and they are denied the opportunity to be active participants in the global society through technology.

Leadership

Many prominent leadership researchers have defined leadership (Clawson, 2003; Daft & Lane, 2005; Gardner, 2000; Northouse, 2004; & Yukl, 1994). As a result, a large number of leadership definitions exist. Northouse stated that there are almost as many different definitions of leadership as there are people who have tried to define it.

Clawson (2003) stated that there are three key components of leadership. "First, leadership is the ability to influence others; second, the willingness to influence others; and third, the ability to do that in a way such that they respond willingly" (p. 36).

Daft and Lane (2005) stated, "leadership involves influence, it occurs among people, those people intentionally desire significant changes, and the changes reflect purpose shared by leaders and followers" (p. 5). Gardner (2000) "defined leadership as the process of persuasion or example by which an individual (or leadership team) includes a group to pursue objectives held by the leader/shared by the leader and his/her followers" (p. 3).

Yukl (1994) “describes leadership as an influence process, which involves the modification and interpretation of events for followers, as well as the selection of organizational objectives and directed activities to accomplish those objectives through the upkeep of relationship and teamwork” (p. 22).

Northouse (2004) pointed out that some definitions view leadership as the focus of group process. From this perspective, the leader is at the center of group change and activity and embodies the will of the group. While another group of definitions conceptualizes leadership from a personality perspective, which suggests that leadership is a combination of special traits or characteristics that individuals possess and that enable them to induce others to accomplish tasks. Other approaches to leadership have defined leadership as an act or behavior, the things leaders do to bring about change in a group. “Principals must have more than one approach to leadership and must understand when a particular style or set of behaviors is most appropriate. Successful leaders recognize that each situation may require them to modify their style to meet the needs of people and the requirements of the situation” (Valdez, 2004 p. 7).

Transformational leadership. Transformational leadership, which has been the focus of much research dating back to the 1980s, requires leaders to identify and address the need for change within an organization. “It is a process that changes and transforms individuals. It is concerned with emotions, values, ethics, standards, and long-term goals, and includes assessing followers’ motives, satisfying their needs, and treating them as full human beings” (Northouse, 2004, p. 169). Burns (1978) “defines transformational leadership as a process whereby an individual engages with others and creates a

connection that raises the level of motivation and morality in both the leader and the follower” (p. 20).

The objective of technology leadership, according to Ho (2005), is to “influence teachers to use computer technology in their instructional practices.” Bass (1985) stated, “transformational leadership motivates followers to do more than the expected by doing the following: (a) raising followers’ levels of consciousness about the importance and value of specified and idealized goals, (b) getting followers to transcend their own self-interest for the sake of the team or organization, and (c) moving followers to address higher-level needs” (p. 20).

Avolio (2000) discussed the relationship between leadership and technology and suggested that leaders must play a more proactive role in implementing technology. “Transformational leaders also act as change agents who initiate and implement new directions within organizations. To create change, transformational leaders become strong role models for their followers” (Northouse, 2004, p. 183).

“To carry out the integration of technology, principals must be willing to alter existing leadership practices evidenced in most schools; and they must also be open to the probability of participating in a transformation of traditional leadership skills, knowledge, and dispositions” (Creighton, 2003, p. 2).

Situational leadership. Developed by Hersey and Blanchard, situational leadership has been widely recognized for its approach (as cited in Northouse, 2004). “Situational leadership stresses that leadership is composed of both directive and a supportive dimension; situational leadership focuses on leadership in situations” (Northouse, p. 87). Hersey and Blanchard (1993) emphasized that the most effective leadership style is

situational because its focus highlights not just one best style of leadership. Instead, leadership styles should be adapted to the requirements of the situation and needs of the individual.

Hersey and Blanchard (1993) suggested that leaders use one of the four leadership styles to meet the individual needs of followers based on their behavior. These include

1. Directing in which the “leader assists group members in goal accomplishment through giving directions; often one-way communication, what is to be done, how it is to be done, and who is responsible for doing it” (Northouse, 2004, p. 90).

2. Supporting in which the “leader does not focus exclusively on goals but uses supportive behaviors such as listening, praising, asking for input, and giving feedback” (Northouse, 2004, p. 90).

3. Coaching in which the “leader focuses communication on both goal achievement and maintenance of subordinates socioemotional needs” (Northouse, 2004, p. 90).

4. Delegating in which the “leader offers less task input and social support, facilitating employees’ confidence and motivation in reference to the task” (Northouse, 2004, p. 90).

Contingency leadership. Contingency theory is a leader match theory in which a leader’s style is matched to the appropriate situations. Fred E. Fiedler, the developer of the contingency theory, highlighted that the contingency theory is concerned mostly with styles and situations (Northouse, 2004). Fiedler also stated that, “Within the framework of the contingency theory, leadership styles are described as task motivated or relationship motivated. Task-motivated leaders are concerned primarily with reaching a

goal, whereas relationship motivated leaders are concerned with developing close interpersonal relations” (as cited in Northouse, 2004, p. 110). Northouse noted that within the contingency theory approach, certain styles will be effective in certain situations. For example, task-orientated leaders will do well when things are going well or in a crisis, while relationship-orientated leaders will do better in moderate situations.

Fiedler (1967) discriminated between leadership behaviors and leadership style. He believed that leadership style is a stable quality related to fundamental traits.

By leadership behavior we generally mean the particular acts in which a leader engages in the course of directing and coordinating his group members . . .

Leadership style will be defined here as the underlying need structure of the individual which motivates his behavior in various leadership situations.

Leadership style thus refers to consistency of goals or needs over different situations . . . The distinction between leader’s style and leadership is critical for understanding the contingency theory. (p. 36)

Path-goal leadership. Formulated by Robert House, Path-Goal Leadership proposes that the leader can affect the performance, satisfaction, and motivation of a group in different ways (e.g. offering rewards for achieving performance goals, clarifying the path towards these goals, and removing obstacles to performance) (Northouse, 2004). For principals, “the challenge is to use a leadership style that best meets subordinates’ motivational needs. This is done by choosing behaviors that complement or supplement what is missing in the work setting” (Northouse, p. 123).

House and Mitchell (1974) found that leadership generates motivation when it increases the number of kinds of payoff that subordinates receive from their work.

Leadership also motivates when it makes the path to the goal clear and easy to travel through coaching and direction when it removes obstacles and roadblocks to attaining the goal and when it makes the work itself more personally satisfying. Northouse (2004) wrote that “path-goal theory is designed to explain how leaders help subordinates along the path to their goal by selecting specific behaviors that are best suited to subordinates’ needs and to the situation in which subordinates are working; thus increasing subordinates’ expectations for success and satisfaction” (p. 124).

Principal as Instructional Leader

“The key factor to an individual school’s success is the building principal, who sets the tone as the school’s educational leader, enforces the positive, and convinces the students, parents and teachers that all children can learn and improve academically. The school principal has the greatest single impact of student performance” (McEwan & McEwan, 2003, p. 2). “Research on school effectiveness concluded that strong administrative leadership was among those factors within the school that make a difference in student learning” (Quinn, 2002, p. 451). The principals who seem to be making a difference in successful schools exercise a special kind of leadership called instructional leadership.

Instructional leadership has been described by King (2002) “as an integral, almost invisible, part of how a school community works, lives, and learns together” (p. 63). Instructional leadership affects student achievement, teachers, and the school culture: “A strong instructional leader is not necessary in providing exceptional teaching that occurs in isolation. Such leadership is however crucial in creating a school that values and continually strives to achieve

an exceptional education for all students” (Quinn, 2002, p. 468). “The instructional leader sets the tone and direction for change, and acts as a facilitator and resource person” (Williamson, 1995, p. 18).

“The definitions of instructional leadership have been influenced by the attributes needed to develop an instructionally effective school” (Smith & Andrews, 1989, p. 82). For example, according to (Hoerr, 2005), an effective principal focuses on instruction, has high expectations, works on ensuring a common curriculum, and provides the leadership that teachers need. The *National Staff Development Council’s Standards for Staff Development* (2001) defined the instructional leader as “sharing authority and responsibility, establishing a culture that supports high achievement, and continuously using information about student performance to guide improvement and holds groups accountable for their work” (p. 3). Kouzes and Posner (1990) tended to define instructional leadership by describing the common practice associated with successful leaders: challenging the process, inspiring a shared vision, enabling others to act, modeling the way, and encouraging the heart. Instructional leadership is also defined as “those actions that a principal takes or delegates to others, to promote growth in student learning” (Kouzes & Posner, p. 1).

Although there are different descriptions of the jobs that instructional leaders perform, the most detailed description of instructional leadership has been developed by The National Association of Secondary School Principals (NASSP). The NASSP has identified six standards that characterize instructional leadership. The focus of the standards are that “student learning must be the center of what

schools are all about and should drive the decisions school leaders make”

(NASSP, 2001, p. 2).

Principal as technology leader. For decades, the principal has been described as the school’s instructional leader (DuFour, 2002). However, “today’s rapidly changing environment requires the principal as technology leader to become involved in discovering, evaluating, installing, and operating new technologies of all kinds, while keeping teaching and student learning as the guide and driving force behind it all” (Creighton, 2003, p. 3). Kearsley (1990) advocated that principals are responsible for the overall operation of their organization. Through the implementation and effective use of computer technology, successful educational leaders have less difficulty supervising routine functions, solving problems, and making decisions.

Effective school leaders are extremely important in determining whether technology use will improve learning for all students. Because technology is credited as being a significant factor in increasing productivity in many industries, some people believe that more effective use of technology in schools could do more to improve educational opportunities and quality (Valdez, 2004).

Technology is a part of our children’s everyday lives. They don’t know a time without space travel, pagers, cell phones and the Internet. While most educators concur that technology is important to student learning, many are finding that integrating technology into the education systems and using it in ways that increase student learning and achievement are far more complex tasks than expected. The digital age is literally knocking on the schoolhouse door. The unique combination of what is known today about brain research and cognitive

learning theory, combined with the high-speed, networked computers that are slowly making their way into schools, presents educators with opportunities never before possible. The question is whether or not educators and the education system will act strategically enough to capitalize on this unique opportunity.

According to MacNeil and Delafield (1998), "the role of the principal demands skills in enhanced team building, shared decision making, and increased technological competency." Reidl, Smith, Ware, Wark, and Yount (1998) stated, "Even though schools have technology equipment, schools are unprepared to integrate computer technology into their everyday instruction. One reason for this is that leaders who are expected to provide support do not understand the technology nor the human elements necessary to make technology an effective instructional tool." Kearsley and Lynch (1992) noted that the success of school leaders in their efforts to utilize and encourage the use of computer technology is dependent upon their knowledge and skills. They advocated that technology leadership exclusively involves issues centered on new procedures and policies, while leadership usually addresses one main issue revolving around change. Reidl (1998) et al. further discussed the need to understand reform problems and issues so instructional technology implementation will be effective. Anderson and Dexter (2005) reported on the analysis of data from the 1998 *Teaching, Learning, and Computing* survey of more than 800 schools in the USA and concluded:

Technology infrastructure is important, for educational technology to become an integral part of a school, technology leadership is even more necessary. Technology leadership was treated as a school characteristic, consistent with the emerging consensus concerning distributed leadership,

and measured by the sum of eight dichotomous variables. Technology leadership had a significant positive correlation with each of the outcome variables. Because technology leadership has a greater leverage on desired outcomes than does technology infrastructure and expenditures further research into the nature of technology leadership is needed to address the challenges inherent in the educational applications of technology. (p. 73)

Other recent studies confirmed the importance of leadership as an influence on teacher's use of technology. Piper and Hardesty (2005) "obtained data from 160 teachers in Pennsylvania. Their instruments included measures of teacher's attitudes towards learning about and working with computers and their perceptions of school leadership. Their analysis suggested that different leadership styles or behaviors were effective for encouraging positive attitudes in different circumstances" (p. 1839).

Polonili (2001) stated that it is not necessary for principals to become computer experts in order to understand the most effective methods of technology integration. Instead, a strong grounding in the components of good pedagogy is essential alongside a basic understanding of the technology available. However, principals support technology integration through their actions; as a technology leader, "the principal . . . must remain visible and involved in guiding the process of implementing technology with teaching and learning as the driving force" (Creighton, 2003, p. 23). As a supporter of technology, principals "directly impact the barriers to successful integration including access to technology, creating the time for teachers to learn the technology, the monies to fund the resources to support the technology including professional development and

maintenance, and the direct modeling of technology use through their own technology expertise” (Rodgers, 2000, p. 5).

Principal technology leadership competencies. The body of knowledge surrounding principal technology competencies is thought by some researchers (Bowman, Newman, & Masterson, 2001; Holland & Moore-Steward, 2000) to be an important factor in technology integration success. Principals who promote technology integration for collaboration and stimulation for learning experiences will notice far greater student achievement (Hughes & Zachariah, 2001).

Technology in education had many educational critics who now support technology as an instructional tool necessary to increase student gains and apply information to complex tasks (Hughes & Zachariah). Cuban (2001) voiced an opposite point of view: schools need to take a "broader vision of the social and civic role that schools perform in a democratic society, our current excessive focus on technology use in schools runs the danger of trivializing our nation's core ideals" (p. 197). Despite opposing positions, studies indicate that the proper and appropriate use of technology to support instruction has improved student academic gains across the curriculum (Hughes & Zachariah, 2001). “The leadership principals provide for teachers is one of the most important factors that influence the effectiveness of technology programs” (Crenshaw, personal communication, May 31, 2007).

However, principals must have sufficient knowledge of technology to guide them in their decision-making (Holland & Moore-Steward, 2000). Principals should understand the power of planning, and the need to create a technology plan to support

instructional goals and objectives of the school (Holland & Moore-Steward).

Principals should be strong visionaries with a good knowledge of technology and an understanding of the pedagogy that brings innovation to the classroom and to student learning (Hughes & Zachariah, 2001). Technology can be either a major catalyst for change or a waste of valuable resources. It is the choice and duty of principals to make the right decisions. Unfortunately, few studies and articles have been written regarding principals' roles and competencies in technology.

Bowman et al. (2001) published an in-depth qualitative study that tracked the development of a district's technology plan over a three-year period. The plan was incorporated into a recently passed district initiative to integrate technology. Data were collected through field notes, focus groups, interviews, group discussion, and observations. Data were analyzed through documented qualitative methods. District procedures and key administrative activities were identified which included technology planning, professional development training, development of technology supported curriculum, and technology implementation in the classroom. One important finding by Bowman et al. was that principals should have the knowledge and skills to develop technology that supports and trains teachers for successful technology integration.

Planning is the foundation of technology integration according to Cooley (1998), who identified technology plans as a blueprint for success. The blueprint required the involvement of teachers, administrators, students, parents, and community members in the development of the plan. Each of the stakeholders focused on investing in technology and sharing the vision of the school or district. Principals helped assure purposes, goals, and objectives were a common vision.

Cuban's (2001) framework for integrating technology into classrooms successfully included planning that precedes purchasing, and training that precedes implementation. Technology plans for schools are in the hands of the technology leader who makes decisions wisely and prudently for students, staff, and community. The ability to develop a technology plan is a skill that principals must have in order to implement technology in schools.

In the fall of 2003, The International Society for Technology in Education (ISTE) organized and sponsored a collaborative effort that researched and established a set of technology standards for school administrators. McCampbell (2001) discussed the organization and sponsorship of The Collaborative for Technology Standards for School Administrators (TSSA Collaborative). The project established a national consensus on what school administrators should know and be able to do with technology (McCampbell). The TSSA Collaborative identified knowledge and skills that constitute core technology requirements for pre K-12 administrators (McCampbell).

The core technology knowledge extended to specific needs of administrators in three job roles: superintendents and cabinet-level leaders; district-level leaders for content specific or district programs; and campus level leaders, principals and assistant principals. The ISTE National Educational Technology Standards and Performance Indicators for Administrators (2003) were identified as:

1. "Leadership and Vision: Educational leaders inspire the development of a shared vision for comprehensive integration of technology and foster an environment and culture conducive to the realization of that vision" (p. 15).
2. "Learning and Teaching: Educational leaders ensure that curricular design,

instructional strategies and learning environments integrate appropriate technologies to maximize learning and teaching” (p. 15).

3. “Productivity and Professional Practice: Educational leaders apply technology to enhance their professional practice and to increase their own productivity and that of others” (p. 15).

4. “Support, Management, and Operations: Educational leaders provide direction to integrate technology tools into productive learning and administrative systems” (p. 15).

5. “Assessment and Evaluation: Educational leaders use technology to facilitate a comprehensive system of effective assessment and evaluation” (p. 15).

6. “Social, Legal, and Ethical Issues: Educational leaders understand the social, legal, and ethical issues related to technology and apply that understanding in practice” (p. 15).

The standards should be part of a system that "involves reflective practice, capacity building, accountability, and continuing revision of the standards" (McC Campbell, 2001). The standards are accompanied by guidelines for their effective adoption, implementation, and a strategy for coordination among participating organizations to embody the standards for preservice and in-service professional development of administrators (McC Campbell). Administrators are responsible for technology implementation in the schools, and these leaders depend more and more on teachers to utilize technology and to model its use. Technology innovation in our schools requires collaboration and team building. “Administrators need to allow others to contribute to innovative instructional practices and to demonstrate the value they place in members of the organization to integrate

technology” (Hughes & Zachariah, 2001).

Communicating vision. “A vision is a clear picture of what the leader sees his or her group being or doing. According to a survey reported by *Leadership* magazine, communicating a vision is one of the most frustrating areas of leading an organization” (Maxwell, 1993, p. 149).

Visions excite people by appealing to their emotions. To some employees visions might seem almost impossible to meet; it is the leader’s responsibility to bolster their courage with understanding. Experienced leaders do this so naturally that people do not even realize how courageous they are; their only concern is to do whatever is needed in pursuit of the vision. (Snyder & Graves, 1994).

Sergiovanni (2001) argued, (as cited in White, 2006),

The heart of leadership has to do with what a person believes, values, dreams about, and is committed to—the person’s personal vision. An effective leader also has a compelling vision that guides daily actions. To a successful school principal, this means having a clear vision of what the educational facility can be and communicating that vision to all stakeholders. (p. 44)

Snyder & Graves (1994) stated that,

Vision refers to the force within a leader that spreads like a wildfire when properly communicated to others. A leader must communicate his vision to others for it to become a shared vision. When employees understand a leader’s vision, they understand what the organization is trying to accomplish and what it stands for. Each employee can see what the future holds as a rational extension of the present.

Senge (2000), “recognized four processes to developing a shared vision that includes recognizing the tensions, generating ideas, expressing hopes and expectations, and acting in a satisfactory process. Although symbolic, these processes take place in real settings, such as meetings, where the leaders have an opportunity to build a vision and mission” (p.32).

“To be effective, leaders cannot force their vision upon organization. Under an autocratic leader, imposing a vision on the organization results in compliance rather than commitment, which is required for the long-term success of a vision. Ideally, a leader shares that vision with people in the organization” (Snyder & Graves, 1994).

“Sharing a vision and a mission is a task that reorganizes social and human resources as the school community restructure the way they interact and the individual and collective system of belief. Because these interactions take place in formal and informal meetings, restructuring of time is also necessary to developing a shared culture” (Senge, 2000, p. 34).

Technology leader and professional development. “A major role for the principal as instructional leader and technology leader is to provide appropriate staff development programs that allow teachers to enhance skills and remedy deficiencies” (Creighton, 2003, p. 48). The International Technology Education Association defines professional development as “a continuous process of lifelong learning and growth that begins early in life, continues through the undergraduate, pre-service experience, and extends through the in-service years” (ITEA, 2003, p. 40). This continuous learning correlates with the changes that are happening with technology. As more changes occur with technology, ongoing staff development will be needed. The members of the CEO Forum on

Education & Technology (CFET) believe professional development for teachers is an ongoing and long-term commitment. "Current teachers and administrators should be proficient in integrating technology into the curriculum, and every professional development program should integrate technology as a part of all training components" (CFET, 2001, p. 22). Fullan and Steigelbauer (1991) expanded the definition to include "the sum total of formal and informal learning experiences throughout one's career from pre-service teacher education to retirement" (p. 326).

Considering the meaning of professional development in the technological age, Grant (1996) suggested a broader definition of professional development that includes the use of technology to foster teacher growth:

Professional development ... goes beyond the term 'training' with its implications of learning skills, and encompasses a definition that includes formal and informal means of helping teachers not only learn new skills but also develop new insights into pedagogy and their own practice, and explore new or advanced understandings of content and resources. [This] definition of professional development includes support for teachers as they encounter the challenges that come with putting into practice their evolving understandings about the use of technology to support inquiry-based learning.... Current technologies offer resources to meet these challenges and provide teachers with a cluster of supports that help them continue to grow in their professional skills, understandings, and interests. (p. 2)

“Whether technology should be used in schools is no longer the issue in education. Instead, the current emphasis is ensuring that technology is used effectively to create new opportunities for learning” (Rodriquez, 2000). Staff development is considered one of the most important aspects of any approach to improvement in education (Goldberg, 2001). “However, traditional sit-and-get training sessions or one-time-only workshops have not been effective in making teachers comfortable with using technology or adept at integrating it into their lesson plans” (Rodriquez).

In the 1995 U.S. Congress, Office of Technology Assessment (OTA) (1995) report, it is noted that on average, "school districts devote no more than 15 percent of technology budgets to teacher training" (p. 2). Market Data Retrieval data (Ansell & Park, 2003) showed little change over time in the 1995 OTA report numbers; the 2003 data revealed that 66% of school technology budgets was spent on hardware and 19% on software, and staff development typically received 15% of school technology budget funds. In 1998, the ratio of students to Internet connected computers was 20:1; in 2002, that ratio had improved to 5.6:1. Despite this increase in Internet connected computers in schools, the portion of money spent for professional development so that teachers could learn new instructional methods utilizing the technology did not increase. In response to the call for adequate professional development in the area of technology, the No Child Left Behind Act of 2001 includes a provision that requires states to designate 25% of federal educational technology money for staff development purposes.

For staff development to be effective, it must be ongoing, integrated with the school district and individual school strategic plans, integrated with the teachers' instructional priorities, and offered collaboratively within a curricular context. “Lack of

professional development is often cited as the most common barrier to effective technology integration” (Rodriguez, 2000).

Recent research, as highlighted in chapter 2 of this study, has shown the importance of current professional development emphasizing hands-on technology use. In fact, Teachers who received technology training in the past year are more likely than teachers who hadn't to say they feel better prepared to integrate technology into their classroom lessons” (Rodriquez, 2000). “An effective professional development program provides sufficient time and follow-up support for teachers to master new content and strategies and to integrate them into their practice” (Corcoran, 1995). Teachers also need time to discuss technology use with other teachers, whether face-to-face, through e-mail, or by videoconferencing (David, 1996).

Role of technology in student learning. Educating students is the primary goal of middle schools within the Indianapolis Public School District. However, reaching that goal depends on understanding the student learner. “Only by understanding our students can the Indianapolis Public School District create a learning environment that optimizes the students’ strengths and minimizes his or her weakness. Technology is changing the way we teach in the Indianapolis Public Schools” (E. G. White, personal communication, August 1, 2007).

As the world becomes more complex, the skills that students need to acquire and master are quickly changing. The rise of the global economy, an increasingly multicultural society, and rapid changes in technology require students to learn and apply new skills in their academic and career endeavors. Students need to learn to communi-

cate more effectively, both through speech and the written word.

Perhaps most important, students need to discover the joy of learning.

If students are to function effectively in this ever-changing world, they must continue to learn every day of their lives. Technology can help instill in students an eagerness to learn that will follow them throughout life and better enable them to reach their goals. (Apple Inc., 2006, p. 2)

“One of the primary factors influencing the integration of technology into student learning is access to the technology” (Apple Inc., 2006). “Technology-enriched learning environments have the potential to deepen classroom instruction, to make it more meaningful, and to assist in the development of higher order thinking skills.”

D. Crenshaw (personal communication, May 31, 2007) estimated that in the next five years, the Indianapolis Public School System, the largest school district in the state of Indiana, will invest 20 million dollars in laptop and desktop computers. This is a significant investment for an urban school district that is struggling to improve student achievement at all levels.

A great deal of importance has been placed on two improvement strategies in middle schools, including increasing the use of instructional technology and integrating content across the curriculum (James & Lamb, 2000). “The addition of technology in the classroom has helped students’ master reading, writing, math and science inquiry skills that provide a foundation for future learning. Students, especially those with few advantages in life, learn fundamental skills better and faster if they have been using technology” (Apple Inc., 2006). Cradler and Bridgforth (1996) maintained technology is related to increases in student performance when interactivity and other significant

aspects of instructional design are applied to its use.

Engaging student learning through technology integration. “Student achievement must be improved in order to prepare students to succeed in the global economy. Many observers liken the need for a world class, high- quality educational system to a national security issue” (CEO Forum on Education and Technology, 2001, p. 4). As a result “a shift has taken place in recent years from teaching students how to use technology to focusing on using technology to support content. Technology can no longer be looked at in isolation but rather as part of a carefully planned program of school change as it relates to student achievement” (Technology Briefs for NCLB Planners, 2002, p. 2).

It is believed that technology will have the greatest impact on student learning when integrated into the curriculum to achieve clear, measurable educational objectives (Honey, Culp, & Spielvogel, 1996). In studies by CEO Forum on Education and Technology (2001) and the *National Staff Development Council's Standards* (2001), it was proven that student performance increases when technology is an integrated part of the curriculum.

The use of computers in instruction has proven to (a) “engage and motivate students to achieve performance levels and improvements consistent with the nation’s educational goals as both students and parents report increased motivation” (Glennan, 1998, p. 3), (b) “allow students to take more interest in and control of their learning” (Allen, 2001, p. 2), and (c) “actively engage students in learning and subsequently improve retention and student achievement” (McCullen, 2003, p. 36).

“As a motivational tool, technology positively impacts student attitudes toward learning, self-confidence, and self-esteem” (U.S. Department of Education, 2006).

Researchers have found that students using technology are more successful and motivated to learn. Students perceive computers as having a positive effect on their learning and are more likely to exhibit on-task behavior when technology is involved (Sivin-Kachala & Bialo, 1994).

Technology can have many positive benefits, but the benefits depend on how the technology is used (Archer, 1998). Many researchers recommend using technology to support higher-order thinking, problem-solving, and problem-based learning (Herrington & Oliver, 1999; Sage, 2000). Other researchers note that using technology provides students with the opportunity to learn and apply real-world skills (Ivers & Barron, 2002).

Technology “creates environments and presents content in ways that are more engaging and involve students more directly than do textbooks and more traditional teaching tools” (Office of Technology Assessment, 1995). “Technology gives teachers tools that help with the differentiation of lessons for students with different learning styles or special needs; when technology is integrated, classroom activities can be planned that promote individualized independent learning that better meets the needs of individual students” (Glennan, 1998).

Organizational leadership. With the help of technology, especially the Internet, new information in schools is being produced at an unimaginable rate. Ideas and solutions minted just a few years ago have quickly lost their luster. Much of the content learned within recent years may become the subject of museum displays in the near future. School leadership must be willing to change and oversee the change process within their buildings. They must also play an active role in the change process through their role as a leader.

“Leadership is defined as the ability to identify compelling needs and envision solutions that require collaborative action, and to influence people and resources to create a better future” (Lindsay & Smith, 2007, p. 71). Vision is an essential element for leadership to possess in the change process because it mobilizes people to accomplish a goal (Fullan, 2002). With the trend of globalization, change management skills become a critical trait of leaders and are established in the context and interwoven with complex and dynamic relationships in systems (Wheatly, 1992).

“Today’s rapidly changing environment requires the principal as technology leader to become involved in discovering, evaluating, installing, and operating new technologies of all kinds, while keeping teaching and student learning as the guide and driving force behind it all” (Creighton, 2003, p. 3). During the past 30 years, the role of the principal has evolved from a building manger to instructional leader. Principals have taken on responsibilities as visionaries who must understand the diversity of their school communities, effectively engage staff in professional development to ensure classroom success, and promote success for every student. Today’s principals are accountable for student learning, and for many principals, job security demands success in this area (E. G. White, personal communication, August, 1, 2007). Barth (2002) defines leadership as “making happen what you believe in” (p. 441).

This is accomplished through symbolic and expressive leadership behaviors. From the symbolic perspective, a principal models and forces individual attention on what is important. From the expressive side of leadership, principals talk with teachers, help crystallize and communicate the rationale for a vision. (Robbins & Alvy, 2004, p. 6)

Effective leadership may be one of the most essential factors associated with successful integration of technology at the middle school level. The principal must have vision for the integration of technology within his or her school. Kouzes and Posner (1995) stated, “leaders inspire a shared vision” (p. 11). In moving an organization to process the shared vision, a leader must discover and appeal to a common purpose; communicate expressively, thereby bringing the vision to life in such a way that people can see themselves in it; and sincerely believe in what they are saying and demonstrate their personal conviction (Kouzes & Posner, p. 129).

Laine (2000) “refers to schools being structured around a process of participatory endeavors that rely on collaborative skills to facilitate shared vision. Shared visions and collaboration of decision-making activities adds efficacy to the vision for the leadership and the organization at large” (p. 88). Shared vision establishes a foundation on which the organization can stay focused in order to meet its goals and objectives. Kouzes and Posner (2003) stated, “When leaders clearly communicate a shared vision of an organization, they enable those who work on its behalf. They elevate the human spirit” (p. 46). Middle school principals within the Indianapolis Public School System can help incorporate a strong technology program that will help in the academic learning process for all students by communicating and supporting the integration of technology (Crenshaw, 2007). “If a principal can define, articulate, and sell a specific image of tomorrow, that image will, in fact, become the future” (Ramsey, 1999, p. 28).

Summary

This chapter presented a review of existing literature regarding the school principal’s role in the integration of the technology process and leadership. This

literature review was informed by relevant current research from the areas of education, leadership, and technology. One of the more significant findings to emerge from this literature review is that the demand for technology use in schools will continue to excel the way in which students are educated in schools. School principals will play a major role in determining whether the integration of technology into the classrooms is successful. The impact of principal leadership within a school setting is perceived as a major factor in determining the successful integration of technology.

CHAPTER 3

Methodology

This chapter explains the methods used to perform this study. This study's qualitative research employed an interview research design. The study design utilized interviews, which allowed the researcher to provide an in-depth view of the leadership in selected middle schools within the Indianapolis Public School District (IPSD) and the impact of middle school principal leadership on the integration of technology in those schools

Qualitative research has been referred to as an umbrella covering several forms of inquiry; with as little disruption as possible to the natural settings, understanding and meaning of social phenomena is explored (Merriam, 1998). Where quantitative research takes apart phenomenon to examine component parts, also known as variables, qualitative research reveals how all the parts work together to formulate a whole. The assumption is made that meaning is embedded in people's experiences and that this meaning is mediated through the investigator's own perceptions (Merriam).

Patton (2002) explained it this way:

Qualitative research is an effort to understand situations in their uniqueness as part of an end in itself, so that it is not attempting to predict what may happen in the future necessarily, but to understand the nature of that setting – what it means for participants to be in that setting, what their lives are like, what's going on for them, what their meanings are, what the world looks like in that particular setting – and in the analysis to be able to

communicate that faithfully to others who are interested in that setting.

The analysis strives for depth of understanding. (p. 1)

The researcher is the primary instrument for data collection and analysis.

Gathered information can be expanded through nonverbal communication. Information can be processed immediately, clarified, and summarized by the researcher as the study evolves (Guba & Lincoln, 1981).

The researcher interviewed nineteen professional educators who told their stories from their perspectives of working in the field of education every day. It was the researcher's desire to capture true to life experiences of the interviewees in an effort to understand their knowledge of technology. Moreover, the researcher attempted to discover how these experiences informed their thinking and decision-making as it related to the integration of technology. The study specifically sought to understand how the use of technology in the three schools where these educators work was impacted by the leadership of the principals in those schools.

Type of Design

This study used a qualitative interviewing methodology. Qualitative interviewing is an attempt to understand the world from the subjects' point of view and to uncover their lived world. The main task in interviewing is to understand the meaning of what the interviewees say (Kvale & Brinkman, 2009). In qualitative interviewing, the interest is focused on the interviewee's point of view. Expanding on the question and providing additional information, even not related to the question, is often encouraged in qualitative interviewing.

Qualitative interviews are particularly useful for getting the story behind a participant's experience. The interviewer can pursue in-depth information around the topic (Rubin & Rubin, 2005). The researcher for this study conducted face-to-face interviews with participants and engaged in focus group interviews with three or more interviewees in each group. The focus group interviews consisted of teachers from the three participating schools.

The researcher gathered information by talking with and listening carefully to the participants of this study. "At times, qualitative interviewing may depend on a personal relationship or a high level of trust between interviewer and interviewee. Information shared during the interview may result in exchange of private or dangerous information to the interviewee; the interviewer incurs serious ethical obligations to protect the interviewee" (Rubin & Rubin, 2005, p. 36). Each participant was given a letter of participation before any interview was conducted with that participant. The letter (Appendix A) outlined the precautions that would be taken to ensure that the identity of the participants was not revealed.

In using the qualitative interviewing method, it allowed the researcher the ability to investigate and conduct in-depth interviews with people working in the field of education. This approach also allowed the researcher the opportunity to gain a better understanding of the impact that middle school principals have in the areas of leadership, communication, and implementation of professional development.

Purpose of the Study

The purpose of this qualitative study was to examine the impact of middle school principal leadership on the integration of technology in selected middle schools within

the Indianapolis Public School District. The issues within the qualitative study focused on leadership qualities of principals within the three selected middle schools and the effective or non-effective uses of technology in the schools. The results of this study, coupled with the recommendations, will be used to help the IPSD superintendent and the director of technology information to better understand the role of leadership in addressing the needs of how to effectively utilize the technology in middle schools within the school district.

Research Question

What was the impact of middle school principal leadership on the integration of technology in selected middle schools within the Indianapolis Public School District during the 2006 – 2007 school year?

Selection and Description of Participants

In 1979, the United States District Court Southern District of Indiana ruled that over the years, the Indianapolis Public Schools had created a dual school system with white and black children being educated in separate schools containing few or none of the other race, with teachers of like color. The United States District Court Southern District of Indiana ordered IPSD to desegregate its schools, faculty, and staff. In the fall of 1981, the IPSD implemented a court-approved plan for desegregation and opened its first nine magnet schools at the elementary and secondary levels. The IPSD currently operates twenty-two magnet schools.

Today, the Indianapolis Public School District magnet schools are also designed to further the purpose of the No Child Left Behind Act of 2001 by reducing minority group isolation in schools, expanding public school choice, achieving academic

excellence for all students, and developing and designing innovative educational methods and practices in order to strengthen student knowledge of academic subjects.

In 2004, the three middle schools in this study were selected to become magnet schools based on their location. Technology themes were chosen for the new sites by reviewing results from a parent survey conducted at the district's magnet fair; input from staff, parents, and students at the magnet sites; and school board recommendations.

The participants in this study were selected through purposeful sampling. "Purposeful sampling is based on the assumption that the investigator wants to discover, understand, and gain insight and therefore must select a sample from which the most can be learned" (Merriam, 1998, p. 61). With the assistance of the school technology coordinators and principals, teachers who actively used technology in their classroom during the 2006-2007 school year were invited to participate in the study along with the principals and technology coordinators.

This qualitative study examined three middle schools within the IPSD. Each of the three middle schools, John Marshall, located on the eastside of Indianapolis, Margert McFarland, located on the Southside of Indianapolis, and H. L. Harshman, located in Center Township of Indianapolis, are identified as magnet schools with a technology theme embedded into their curriculum. The following data referencing the three selected schools within this study were obtained from the Indianapolis Public Schools 2007 web site. Within the website, each school provided information regarding its student population, free lunch recipients, and years of experience and the average age of the school's teaching staff.

The three selected middle schools consist of grades seven and eight. John Marshall Middle School's ethnicity included 85% Black, 6% White, 6% Hispanic, and 2% Multiracial with 71% of the students receiving free lunches. There were a total of 39 teachers assigned to John Marshall. The average age of the 2006 -2007 teaching staff was 44 years, and the average years of experience was 14 years. Student enrollment at John Marshall was 657 students. The principal had been assigned to the school as principal for two years and had 11 years of experience in which four had been as a school administrator. The technology coordinator had been assigned to the school for four years. Students who attend John Marshall are engaged in a curriculum that utilizes the Problem-Based Learning process to study real world environmental issues. The program offers unique technology opportunities at each grade level, such as troubleshooting, web design, and video journalism (Indianapolis Public Schools, 2005).

Margaret McFarland Middle School's ethnicity included 46% Black, 28% White, 24% Hispanic, and 2% Multiracial with 78% of the students receiving free lunches. There were a total of 22 teachers assigned to McFarland. The average age of the 2006 – 2007 teaching staff was 44 years, and the average years of experience was 12 years. Student enrollment at McFarland was 351 students. The principal had been assigned to the school as principal for three years and had 18 years of experience in which nine had been as a school administrator. The technology coordinator had been assigned to the school for seven years. Students who attend McFarland engage in a curriculum that utilizes the Problem-Based Learning process to study real world environmental issues through the use of technology (Indianapolis Public Schools, 2005).

H. L. Harshman Middle School's ethnicity included 61% Black, 24% White, 12% Hispanic, and 3% Multiracial with 76 % of the students receiving free lunches. There were a total of 32 teachers assigned to Harshman. The average age of the 2006 - 2007 teaching staff was 43 years, and the average years of experience was 13 years. Student enrollment at John Marshall was 513 students. The principal had been assigned to the school as principal for six years and had 20 years of experience in which 10 had been as a school administrator. The technology coordinator had been assigned to the school for nine years. Students who attend Harshman are engaged in a curriculum that focuses on applying scientific and mathematical principles to the process of solving real world problems through the use of technology (Indianapolis Public Schools, 2005).

Teachers who participated in this study were chosen based on their use of technology on a daily basis within the classroom, according to the schools' technology coordinators. At the request of the researcher, the technology coordinators facilitated and arranged the meetings between the researcher and the teachers, as well as issuing the letter of participation (See Appendix A) to each perspective interviewee. However, it is important to note that the teachers at each school did not wish to participate in one-on-one interviews and insisted on being interviewed at the same time within a group.

Data Collection Strategy

To successfully conduct the qualitative interviewing technique, Yin (1994) recommends that the researcher possess or acquire certain skills. Among these is the ability to ask good questions and interpret the responses, be a good listener, and be flexible so as to be able to react to various situations. The researcher must also have a

firm grasp of issues being studied and maintain an unbiased view of the information received from the interviewees.

“In qualitative interviewing one of the most common forms of interview is the person-to-person encounter in which one person elicits information from another; it is a conversation with a purpose” (Merriam, 1998, pp. 71-72). Interviews were particularly useful for getting the story behind a participant’s experiences.

Interviews

Nineteen staff members including building level and central office administrators, technology coordinators, and teaching staff participated in individual interviews and focus group interviews that each lasted an average of thirty minutes in length. Interviews were conducted from December 2007 to June 2008, regarding the 2006 – 2007 school year. Interviews took place after school for all participants in the study. All interviews were digitally recorded and later transcribed and analyzed.

To begin each interview, the researcher spent time informing the participants about the purpose of the study. The researcher also reviewed the letter of participation, and the researcher invited each participant to engage in dialogue if they had questions regarding the study.

Group interviews were utilized with the teachers at their request and in order to accommodate all of the teachers who agreed to participate in the study. It should also be noted that prior to conducting the interviews at John Marshall Middle School, which was the last of the three schools interviewed, it was requested by the building union representative that permission from the school union be granted before the researcher be allowed to conduct interviews at that school. Therefore, the researcher contacted the

director of the Indiana State Teachers Association and explained the study on the phone, and approval was granted within a short time period. According to G. Limpkin (personal communication January 23, 2008), director of the Indiana State Teachers Association, permission is not required from the union to conduct teacher interviews for research within the Indianapolis Public School District. The staff member who requested that the researcher first seek approval from the union was not part of the interview process. The researcher was informed that she did not integrate technology in her classroom.

Focus groups are unique in their explicit use of group interaction to produce data (Patton, 2002). As a method, focus groups are based on two fundamental assumptions. "The first is that individuals can provide a rich source of information about a topic. The second is that the collective and individual responses encouraged by the focus group setting will generate material that differs from other methods" (Barbour & Kitzinger, 1998).

Although the sessions were initially planned for 30 minutes, they all went over the set time frame. As teachers became familiar with the researcher, they sought the researcher out as a listening ear with which they could share their concerns and frustrations. The semi-structured interviews were conducted in a teacher's classroom or school cafeteria after school. Interview questions (Appendix B2) were sent to the technology coordinator of each participating school. He or she then forwarded the e-mail to all teachers who had agreed to participate in the study. The technology coordinator only sent the letter of participation to teachers who actively used technology in the classroom.

The school principals were interviewed for approximately 30 to 45 minutes each.

Though sessions were initially planned for 30 minutes, they often went over that time as well. The semi-structured interviews were conducted in the principal's office or conference room of each school. Interview questions (Appendix B1) were sent to the principal via e-mail two days before the interview.

At the request of the researcher, each principal provided a copy of their school's technology plan. (Appendix C, D, E) According to the principal, the technology plan was to serve as the blue print for guiding the school in its technology integration process. Each plan included areas such as the technology mission, school expectation for integrating technology, activities that the school would engage in, professional development, assessment process, principal's role, teacher's role, and the technology coordinator's role. After handing the technology plan to the researcher, each of the participating principals stated before the researcher could ask the question that the plan had been placed on a bookshelf or in a file cabinet, and it was not being used to guide the school through the integration process. Therefore, the technology plans of each participating school was used as a reference and referred to throughout chapters 4 and 5 of this study

The school technology coordinator was interviewed for approximately 50 minutes each. Due to the high volume of information provided during the interview from each of the technology coordinators, the session went over the planned 30 minutes. The semi-structured interviews were conducted in the office of the technology coordinator. Interview questions (Appendix B2) were sent to the technology coordinator via e-mail two days before the interview.

The superintendent was interviewed for approximately one and a half hours

although the session was planned to last for 45 minutes. The researcher attempted to end the interview several times in respect of the superintendent's schedule. However, he expressed that he had a number of things he wanted to share about leadership and he had the time. The interview format was semi-structured in that pre-established topics and questions were developed but were used in a flexible manner in order to follow the participant's interest and concerns. The topics that were discussed included, but were not limited to, educational leadership, technology integration in middle schools, middle school leadership, the role of the principal in the middle school, and student achievement.

Methods of Verification

Ensuring validity and reliability in qualitative research involves conducting the investigation in an ethical manner. Though specific guidelines date back to approximately 1940, only recently has attention been given to ethical concerns in regard to the uniqueness of qualitative research (Merriam, 1998). "In qualitative interviewing, the researcher is the instrument. The credibility of qualitative methods, therefore, hinges to a great extent on the skill, competence, and rigor of the person doing the fieldwork" (Patton, 2002, p. 14). "Validity and reliability can be approached by giving careful attention to the study's conceptualization and the manner in which the data is collected, analyzed, and interpreted, as well as how the findings are presented to the public" (Merriam, 1998, p. 165). Opportunities for interviewees to provide feedback and other researcher audits through follow up interviews were used to ensure maximum reliability of the measuring instruments and the validity of findings for this research study.

Data Analysis Strategy

Bogdan and Bilken (1998) asserted that “the interview is used to gather descriptive data in the subjects’ own words so that the researcher can develop insights on how subjects interpret some piece of the world . . . qualitative interviews offer the interviewer considerable latitude to pursue a range of topics and offer the subjects a chance to shape the content of the interview” (p. 94).

Principals, technology coordinators, and teachers were interviewed for this study. The digital recording of the interviews ensured accuracy and allowed the researcher to produce transcripts, and highlighting of the transcribed interviews helped to discover coding categories. Three qualitative data analysis computer-based software were used to help develop and uncover the themes. They included (a) NVivo 8, which was used to analyze and archive qualitative data, (b) Hyper Research, which enabled the researcher to establish non-hierarchical coding, and (c) Inspiration, which was used to help enhance the visual graphs. In using multiple computer-based software NVivo 8, Hyper Research, and Inspiration provided the basis for some key analysis of the data.

The term “eclectic” describes the data analysis process best, implying that there is no one right way to make sense of qualitative data (Tesch, 1990). The researcher must be someone who is comfortable in making comparisons and contrasts as categories are developed (Creswell, 2003). Information from all sources was crosschecked to find support for possible results. The data were examined to see if what the leaders planned, said, and documented was having an effect on technology integration in middle schools. Themes were formulated from the information obtained from interviews and analyzed across the three schools to pursue commonalities, as well as disparities. Great care was

taken to code and analyze data in order to gain the truths, realizations, and lessons learned by the participants in the study.

Key themes that emerged from data collected and analyzed in this study are highlighted throughout Chapter 4. Each theme was examined utilizing questions that were asked of the principals, technology coordinators, and teachers with the focus of the responses on the principal. Based on their school location, principals' views were compared to that of their staff to determine what common themes existed within the data gathered.

Content Analysis

To supplement the researcher's core method of data collection, which was in-depth interviewing, content analysis of each subject's school technology plan was used in order to gain a better understanding of the subjects. "The raw material for the researcher using content analysis may be any form of communication, usually written materials (i.e. textbooks, novels, newspaper, or documents). Content analysis usually aims at producing descriptive information, cross-validating research findings, or testing hypotheses; it can be conducted without disturbing the setting in any way" (Marshall & Rossman, 1989, p. 98).

Summary

This chapter focused on the qualitative interview method of the study. An interview research design study was conducted to explore the leadership in selected middle schools within the Indianapolis Public School District and the impact of middle school principal leadership on the integration of technology in those schools. This study used a qualitative interview method in conducting individual and group interviews with

19 Indianapolis Public School educators including middle school teachers, middle school principals, middle school technology coordinators, school district superintendent, and school district director of technology.

After analyzing the data, five themes were identified by the researcher. The themes were a result of data analysis of the interview questions that the researcher asked during the interview sessions with the teachers, principals, and technology coordinators. The repeating codes and themes throughout the analysis process helped to clearly identify the five key themes.

A major limitation of this study was the inability for the researcher to conduct follow-up interviews with the participants. Two of the principals within this study were terminated from their position as principal, and the third principal was reassigned to another school. Two of the schools closed, and one was restructured and converted into a high school. All of the technology coordinators jobs were lost at the conclusion of the school year due to budget issues. The teachers at two out of the three schools were reassigned throughout the district due to closer or restructuring of their schools.

CHAPTER 4

Results

This study examined the impact of middle school principal leadership on the integration of technology in selected middle schools within the Indianapolis Public School District during the 2006 – 2007 school year. Nineteen principals, technology coordinators, teachers, district superintendent, and district technology director were interviewed for this research project. Each interview, after being transcribed, was read from beginning to end and then read a second time with the purpose of writing a brief summary of the themes and meanings from the text as a whole.

The following research questions were asked of principals, technology coordinators, and teachers. Some questions, not listed below, were used simply to acquire background information in order to understand the school's state of technology and its perception of the school's principal, regarding technology integration. A complete listing of the interview questions can be found in Appendices B1, B2, and B3.

Principal questions.

1. How do you define technology integration?
2. What is the principal's role in implementing the integration of technology at your school?
3. How does the principal facilitate change in instructional practices in your school, especially in the area of technology integration in classroom instruction?
4. How often does professional development focusing on technology take place in your school?

5. What procedures are in place to insure the sustainability of technology integration in your school?
6. What is your level of knowledge regarding computer technology?
7. How would you describe your leadership style?
8. Who is the technology leader in your school?

These questions were important to get an understanding of the school's principal's relationship with and understanding of technology integration. Specifically, the questions offered background information regarding how the school used technology and the principal's role in the use of technology within the school, according to the principal.

Technology coordinator questions.

1. How do you define technology integration?
2. What role has the principal taken in the integration of technology at your school?
3. How are the results of technology integration monitored by the principal at your school?
4. How often does professional development focusing on technology take place in your school?
5. What procedures are in place to insure the sustainability of technology integration in your school?
6. What is the overall perception regarding your principal's attitude toward technology?
7. Who is the technology leader in your building?
8. How would you describe your principal's leadership style?

These questions were important to get an understanding of the school's technology coordinator's perception of the principal's relationship and understanding of technology integration. Specifically, the questions provided an overview of the coordinator's observations regarding the principal's desire or determination to actively integrate technology within the school.

Teacher questions.

1. How do you define technology integration?
2. What role has the principal taken in the integration of technology at your school?
3. How are the results of technology integration monitored by the principal at your school?
4. How often does professional development focusing on technology take place in your school?
5. What procedures are in place to insure the sustainability of technology integration in your school?
6. What is the overall perception regarding your principal's attitude toward technology?
7. Who is the technology leader in your building?
8. How would you describe your principal's leadership style?

These questions were important to get an understanding of the classroom teacher's perception of the principal's relationship and understanding of technology integration. The questions also helped provide an overview of the teacher's observation regarding the principal's desire or determination to actively integrate technology within the school. These questions were asked of both the technology coordinators and teachers

in an effort to see if there was a difference in answers and to give insight into the implementation of the school's technology plan (Appendices C, D, & E).

Data collection began in December of 2007 and was completed by June 2008. Each of the nineteen participants received a participant letter (Appendix A) which detailed the purpose of the study. Participants were assured that their comments would remain confidential and that their personal identity would not be released in the study. Principals and technology coordinators were interviewed one-on-one by the researcher. Teachers were interviewed as a group; the groups were formed based on the location of their school. Although the initial plan was to interview each teacher separately, the teachers requested that the interviews be conducted in a group format and that the technology coordinator of the school be present during the interview process.

When analyzing the interview transcripts, the researcher focused on discovering patterns that emerged into themes. Bryman & Burgess (1994) stated, "Theme analysis involves a search for the relationship among parts that make up understanding and how they are linked together as a whole" (p. 61). According to Creswell (2003), "These themes are the ones that appear as major findings in qualitative studies and are stated under separate headings in the findings section of the studies" (p. 194).

Each interview was digitally recorded to ensure accuracy and allowed the researcher to produce transcripts. Analysis of the transcribed interviews helped to discover coding categories. "Coding is the process that involves taking text data and placing it into categories, and labeling those categories with a term, often a term based in the actual language of the participants" (Creswell, 2003, p. 192).

The researcher used three qualitative data analysis computer-based software programs to help develop and uncover the themes and to help ensure accuracy and validity of the study. In using multiple, computer-based software, it provided the basis for some key analysis of the data. First, the researcher used NVivo 8, which is a qualitative data analysis (QDA) software program, to analyze and archive qualitative data. NVivo 8 software aided the researcher in identifying key elements in the transcripts, which helped in developing themes.

A second qualitative data analysis software that was utilized was HyperResearch, which enabled the researcher to establish non-hierarchical coding (flat coding), retrieve codes, and conduct ongoing analyses of the data. HyperResearch also allowed the researcher to work with both text and graphs in order to illustrate the findings. It also enabled the researcher to develop a conclusive codebook of key terms and phrases, which helped in developing the themes that emerged during the analysis.

A third software, Inspiration, initially designed to support visual thinking during instructional presentations in schools but now also used for qualitative data analysis, was utilized during this process to enhance the visual graphs used in HyperResearch. Combining all of interview transcripts into Inspiration helped in identifying themes and codes within this study. The automatic underlining and highlighting performed by the software helped further identify themes reported in this chapter.

After the researcher transcribed and coded all of the interviews using the QDA software, the researcher developed a list of categories and themes. According to Rubin and Rubin (2005), "Once you have coded your interviews, you determine what the coded data mean" (p. 224). The researcher must begin by "clarifying and summarizing

concepts and themes, grouping information around particular events and sorting information by groups of interviewees” (Rubin & Rubin, p. 225). As a result of the coding process which made themes emerge, patterns began to display redundancy in responses from the interview questions asked of the technology coordinators, teachers, and principals. Responses to the questions began to overlap, and the themes that would shape and guide this study began to surface.

The researcher then reviewed all of the transcripts and the coded data one final time to ensure that the findings and themes were consistent among the three data analysis programs. The researcher identified five key or overarching themes that emerged from the analysis of the data, as a result of the interview questions. They are as follows: (a) defining technology integration, (b) principal’s role in implementing the integration of technology, (c) professional development focusing on technology, (d) principal’s leadership style, and (e) technology leader of the school.

The analyzed data is presented visually and in a narrative summary. The key or overarching theme that emerged from the analysis of the data is listed in the box located on the left side of the figure. The participants of the study are identified in the middle of the figure. The themes that were identified as a result of the coding process appear on the right side of the figure. The figures are used in the study to show relationship between the groups and to provide a visual display of the findings and an overview of the analysis process.

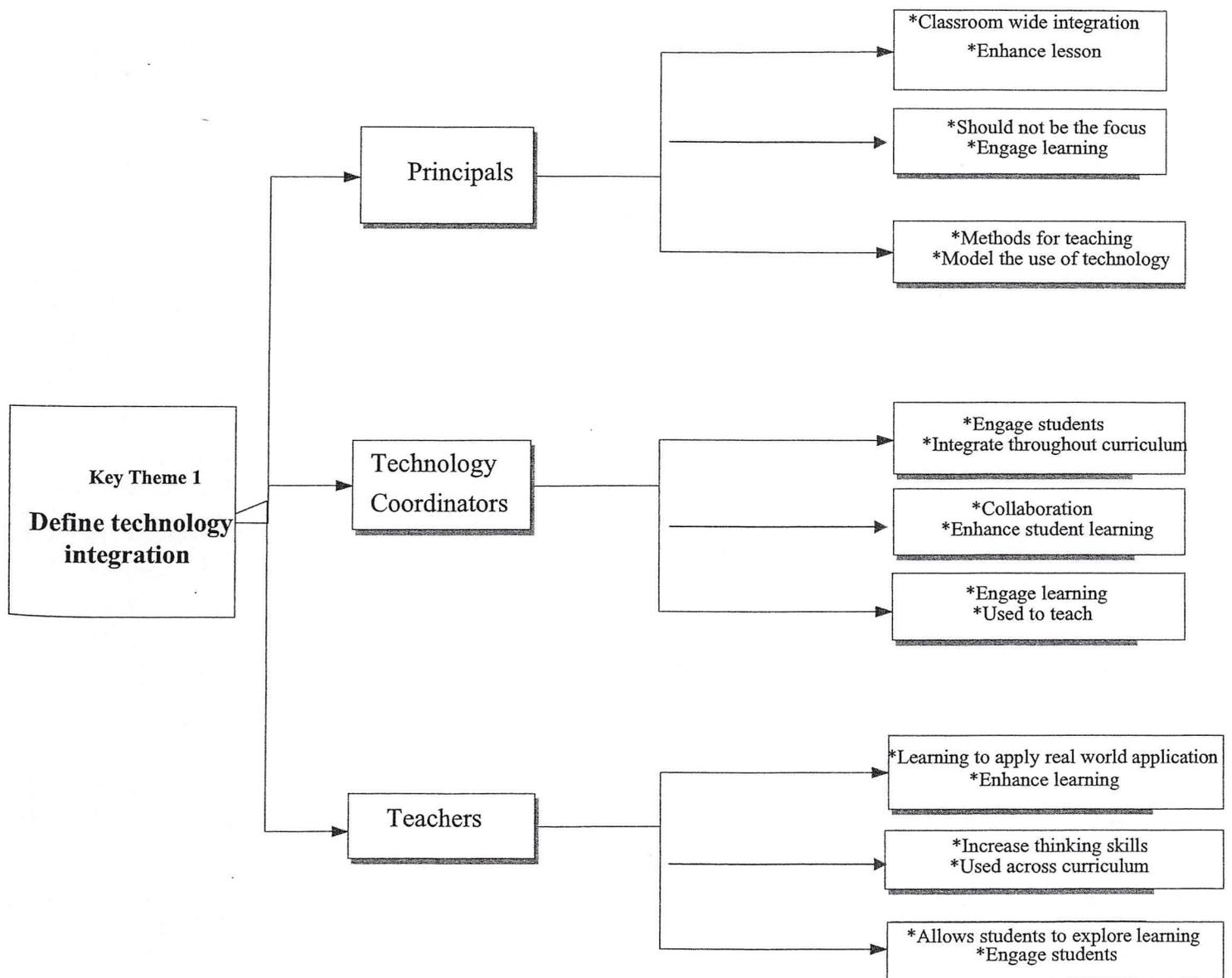
Within the five themes, there were many commonalities and some distinctly different points of view regarding technology integration. These commonalities and

disparities are highlighted throughout this chapter in the themes that emerged throughout the data collection process.

Defining Technology Integration

Figure 2.1 is a visual summary of the first key theme, and the coded responses (most frequent) given by each group. The themes that emerged from the data are listed in the boxes located on the right side of the diagram.

Figure 2.1. Visual summary of question 1.



The analysis revealed that principals defined technology integration as methods or instruments used for technology learning and emphasized the use of pod casting, chat rooms, online conferencing, and distance learning. Principals stressed that technology should be incorporated into the lesson plans in order to enhance the lesson but should not be used as a crutch, and should not be the focus the overall curriculum in education. The modeling and use of technology was discussed during interviews conducted with middle school principals as it related to defining technology integration in the school. Implementation by teachers, students, administration, and parents was also accentuated. One principal replied:

Technology integration in terms of an educational setting is using technology to enhance lessons, lesson plans, but is already rich and just need an extra boost. I don't think that it should be a crutch, and I don't think it should be too much of a focus. I think it should just enhance what is already a good lesson plan.

The technology coordinators described technology integration as being used to teach and engage students in their learning, which allows the teacher to work more efficiently. One technology coordinator stated, "within the process, students engage in real world learning through the use of images, sound, and text and are given access to up-to-date primary source material, allowing the teacher to work more efficiently within all subject areas."

Another technology coordinator emphasized:

Technology integration is about using technology throughout the school day, not in one particular classroom like teaching computers, but instead

as integrated through all the subject areas, and the technology is used to teach and engage the students in their learning and also allows the teachers to work more efficiently.

Creighton (2003) identified technology integration as a term used by educators to describe effective uses of technology by teachers and students across the curriculum. Not only does this definition differ from that of the principals, but overall it corresponds with that of the technology coordinators and teachers.

To ensure that students were engaged in the learning process and that active learning through the use of technology was taking place within the classroom, the principal needed to have a clear understanding of technology integration. According to the principals within this study and their schools' technology plans (Appendices C, D, & E), principals in the Indianapolis Public Schools were ultimately responsible for guiding the establishment and implementation of a set of clear expectations and definitions for the integration of technology within their schools.

One principal, when asked to define technology integration, exhibited an unclear understanding of technology integration. After pausing for a few seconds, he proceeded to define technology integration in terms of the activities technology enables a person to perform.

I'm looking at technology integration in the classroom or education in general. In fact from my standpoint, pod casting, online conferencing in the classroom, online courses. What's another good one? I heard someone else talking about it the other day, the distance learning. Although it's not really technology, it's getting to the point now where you can integrate

your power points and other graphic details into the distance learning environments. Classroom-wide integration of technology is in the overall learning picture by pod casting, which is new. I still don't know about it that much, but it's new. Online courses, online correspondence, where it may be [what do you call, what do the kids call it? Not conference room but] a chat room, where you can do things after hours, as well as distance learning, where you can use the technology. So I'm looking at technology integration as it encompasses all, in particular the newest one, pod casting.

Anderson and Dexter's research confirmed, "Although technology infrastructure is important, the principal's technology leadership skills are even more important in effecting the use of technology as a learning and productivity tool in schools" (2005, p. 68). Before a school principal can lead their teachers in the integration of technology, the principal must be very clear about what he or she believes about technology and its use in the classroom (Cuban, 2001). It may be that principals of the schools, based on the data, have a lack of understanding of what technology integration is, and therefore, an inability to effectively articulate and/or define technology integration.

Unlike the principals within this study, teachers and technology coordinators shared common beliefs in their definition of technology integration. When asked to define technology integration, the staff members of each school provided a clear, concise definition of technology integration, highlighting the importance of engaging students and enhancing learning. One teacher defined technology integration as "A phrase used by the educational community to describe uses of technology in the classroom. Teachers

today primarily incorporate the Internet, computers, digital cameras, and smart boards as a vehicle to enhance learning.” Another teacher (December 18, 2007) highlighted:

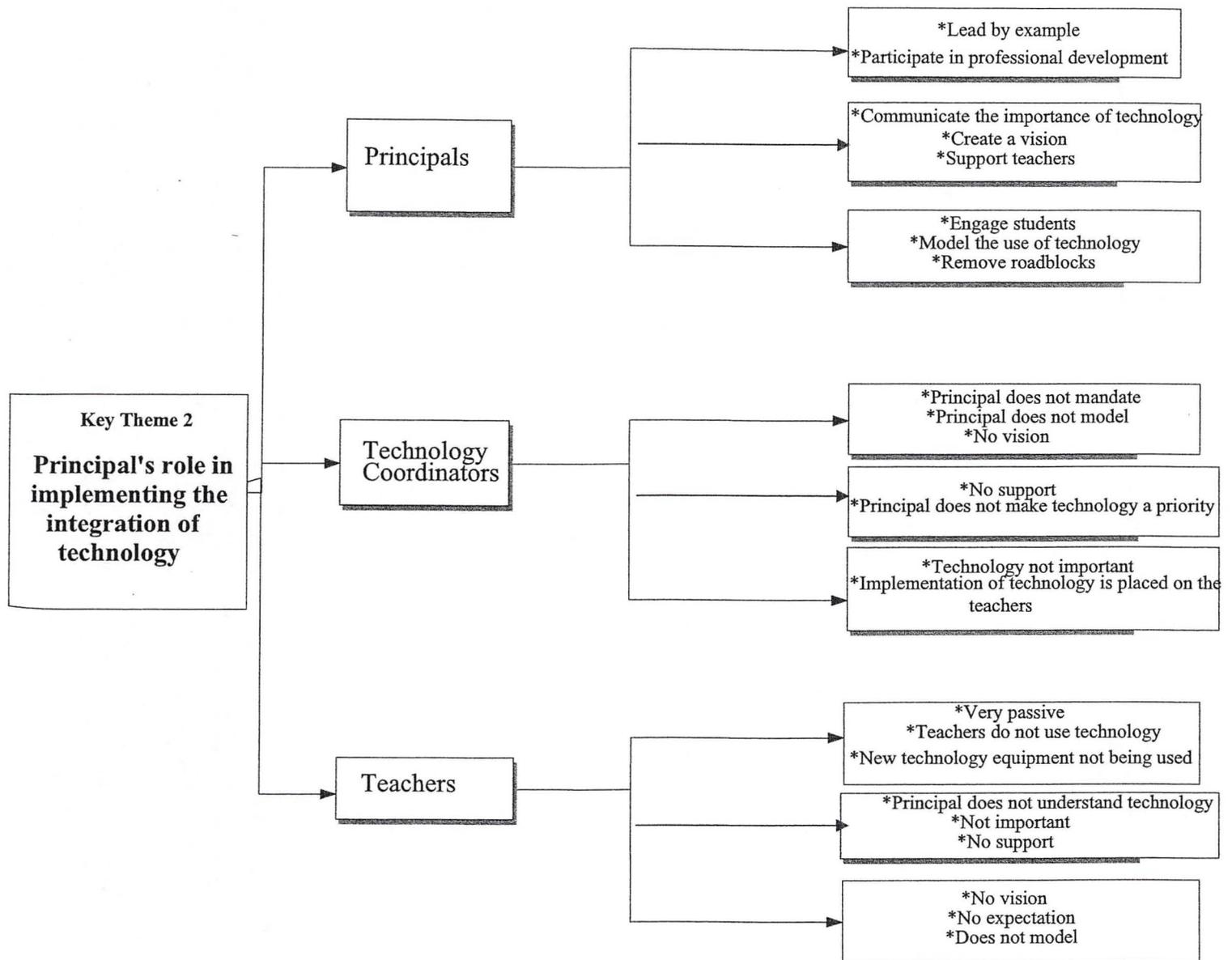
Technology integration is using computers effectively and efficiently in the general content areas in order to better engage students in the learning process. Technology integration is using software supported by real-world applications, so students learn to use computers flexibly, purposefully, and creatively; it is having the curriculum drive technology usage.

It should be noted that all teachers and technology coordinators, based on the researchers observations during the interviews, seemed to display a sense of confidence when asked to define technology integration as displayed in the opening line of their response, “technology integration is” instead of “I think that technology integration is,” which is how the principals within this study began their responses.

Instructional Leader of Technology

Figure 2.2 is a visual summary of the second key theme and the coded responses (most frequent) given by each group. The themes that emerged from the data are listed in the boxes located on the right side of the diagram.

Figure 2.2. Visual summary of question 2.



The themes from the principals included participating in professional development, modeling the use of technology, communicating the importance of technology, and incorporating it into the vision of the school. Principals emphasized the importance of connecting teachers to resources that would help them in the technology integration process. One principal (December 12, 2007) highlighted that principals should not allow their lack of knowledge regarding technology to block the integration of technology into the classroom, and that it was important to remain unbiased about integrating technology.

I believe that the principal should model using technology. Remove any roadblocks for teachers to use technology, and then also connecting the teachers to resources. So, even though I don't have all the answers, but [I'm] able to know where to go to get them answers and hook them up with that. I think that as a building principal, you need to know enough to be dangerous. Even if you yourself don't know how to utilize it or use it, you have to know it's there and open the door for somebody else to use it.

To gain an understanding of the principals' vision for their schools and their efforts to ensure that technology was implemented into the daily lessons, the researcher asked technology coordinators the following question: What is the principal's role in implementing the integration of technology at your school? In an interview with Indianapolis Public School Director of Technology D. Crenshaw (personal communication, May 31, 2007), she highlighted that building level principals must model the use of technology and support the use of technology if it was going to serve students effectively in the education process; they must lead by example.

However, technology coordinators' themes revealed that principals do not mandate technology integration, nor do they model the use of technology. In one school, the technology coordinator and teachers discussed the abundance of technology equipment (i-books) within the school that was not being used. Principals were perceived as having no vision as and not making technology integration a priority. Other themes that surfaced were limited discussion around technology use in the classroom. During the interviews with the technology coordinators, the following was highlighted by the technology coordinators: lack of accountability for using technology in the classroom and limited access to the equipment, along with technology equipment sitting unused. One technology coordinator (November 15, 2007) stated:

The principal has asked the teachers to use it and emphasized that we do have access to it in our building, and we have quite a bit of technology in the building. However, it's not a mandate, or he's not forcing anybody to use it, or he's not even modeling using the technology himself.

A review of the interview data revealed a contradiction of perspectives when comparing the principals' responses to that of the technology coordinators and the teachers. Principals highlighted leading by example and modeling the use of technology, creating a vision for implementing technology, participating in professional development that focuses on technology integration, and being very supportive of the integration process.

However, the teachers and technology coordinators presented a different view of what the principals' role had been in the implementation of technology. Themes from the teachers and technology coordinators revealed a lack of support from the school principal

for teachers in implementing the integration of technology into the classroom, little to no professional development, and principals not having a vision or expectations for technology integration throughout the school. Teachers and technology coordinators felt that integrating technology in the classroom was not important to the principal.

Other themes discovered from the teacher interviews supported those that emerged from the technology coordinator interviews. They included the lack of importance regarding technology in the classroom, teachers not being required to use technology in the classroom, lack of direction from the principal regarding the integration of technology in the classroom, and lack of support for technology integration within the classroom. One teacher (January 17, 2008) in a focus group stated:

The principal has taken a very passive role in implementing technology throughout the school. The only people who actually used technology on a regular basis within the classroom are the three of us sitting at this table. Although we are a technology magnet school, thousands of dollars have been wasted on technology. We have brand new equipment from last year still in boxes.

Based on the technology plans (Appendix C, D, & E) of the three middle schools, the principal's role in implementing and facilitating the integration of technology within the schools should be a key factor in the successful implementation process. The plans stated principals would promote the use of technologies to support and enhance instructional methods that develop higher-level thinking, decision-making, and problem-solving skills. The plans also emphasized other objectives: (a) principals would facilitate and support collaborative technology enriched learning environments leading to

improved student learning, (b) principals would provide for and ensure that faculty and staff takes advantage of quality professional learning opportunities for improved learning and teaching with technology and, (c) principals would inspire a shared vision for comprehensive integration of technology and foster an environment and culture conducive to the realization of that vision. However, during interviews with the technology coordinators and teachers, the researcher discovered and confirmed in the answers of the technology coordinators and teachers that the above objectives or responsibilities were not being followed or implemented.

According to one technology coordinator (November 22, 2007):

I have heard nothing more than a lot of lip service from the principal regarding integrating technology into the classrooms. The technology plans have become nothing more than a document used for show, when needed or requested by central office. It is not a working and living document.

According to a teacher (February 13, 2008) in another focus group:

The small amount of information given to the staff from the principal during staff meetings regarding technology was not followed up with support in the classroom. Instead, teachers are left on their own to integrate the technology in the classroom. The majority of the teaching staff was unwilling to revise their lesson plans in order to integrate the technology, and without the principal mandating that technology must be used in the classroom, teachers are not willing to change.

The literature review in Chapter 2 of this study emphasized that in order for the

teachers to integrate technology into the classroom, it is important they receive support from the principal (Dias & Atkinson, 2001). According to the technology coordinators in this study, most teachers would not adopt technology into the curriculum and their instructional practices unless it is communicated to them by the principal that the integration of technology is expected in their lessons.

One technology coordinator (November 15, 2007) stated, "If you don't get the principal behind it, then a lot of people won't take part of technology . . . we only have three teachers who actually use technology on a regular basis within the classroom."

During the interviews, technology coordinators highlighted that their principals' lack of desire to support technology integration resulted in students receiving more lecture based instruction from their teachers, instead of computer generated instructions from their teachers.

One technology coordinator (November 23, 2007) affirmed, "Students received a limited learning experience compared to what is possible. The potential use of technology in the classroom could be used as a tool to help address different learning styles within the classroom and in the lesson." Another technology coordinator (November 22, 2007) accentuated:

Principals are missing out on a possible opportunity to help their teachers better prepare students in an engaging manner. A few teachers that had a desire to integrate the use of technology into the classroom took time to teach themselves, and as a result, they are able to expand their pedagogy; however, their colleagues want nothing to do with it.

One technology coordinator (November 15, 2007) emphasized that although the school is a technology magnet school, the teacher evaluation instrument does not cover technology use as part of the evaluation. "Many teachers do not consider it worth the time it would take to implement technology in their classroom because it is not required by the principal, and it is not part of the teacher evaluation."

According to the teachers and technology coordinators of the three schools, a lack of vision from the principals may have been a major contributor to the lack of commitment from the teachers. One technology coordinator (November 15, 2007) stressed that, "Without guidance and direction from the principal for the school, teachers, and students, there is no purpose or meaning for integrating technology."

During analysis of the interviews with the teachers and technology coordinators, the qualitative data analysis revealed a common theme of no vision or a lack of vision from the principals. One teacher (January 17, 2008) stated, "We have been operating without a vision or a true focus as to how we are to use technology in the classroom in order to help educate our students."

It is important at the building level that the principal has a vision for integrating technology and communicates that vision and his or her expectations to their staff.

The principal also needs to get the staff to buy-in and share in the vision of technology integration in the classroom if the implementation is going to be successful in helping better educate the student. (E. G. White, personal communication, August 1, 2007)

Teachers also emphasized the lack of support from their principals and that their principals did not expect to see technology used in the classroom. Also, according to

teachers, principals did not highlight the few teachers who attempted to use technology in the classroom to improve student achievement.

Teachers felt that their principals acquired technology for the sake of being able to say that they had technology. Although the three schools' magnet theme was technology, "the use of technology within the schools is not the focus," according to a teacher and technology coordinator. A tour of one of the schools revealed a great deal of technology equipment stored in boxes and cabinets. In another school, 25 to 30 computers sat in classes and were seldom or never used for instructional purposes.

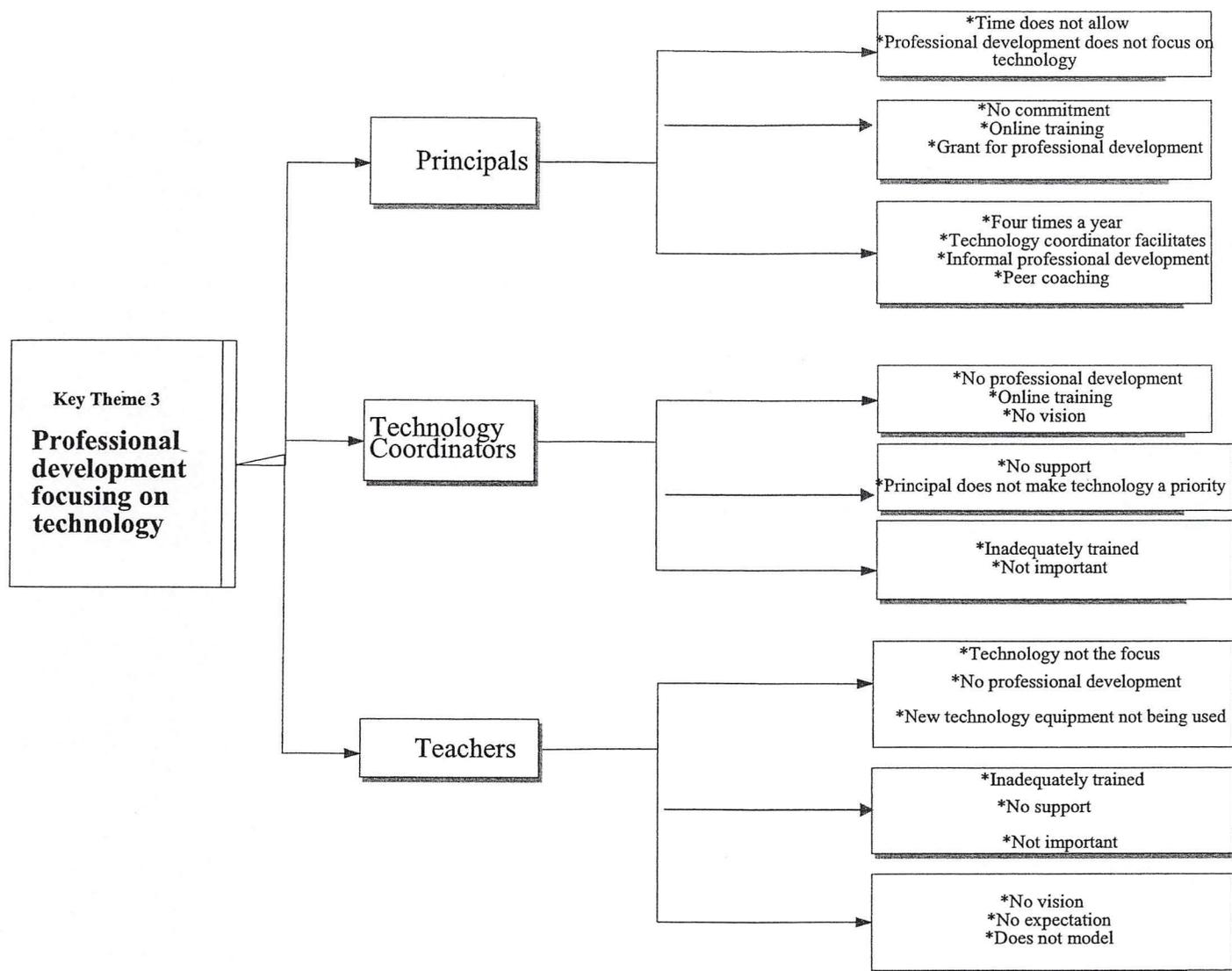
Teachers and coordinators indicated principals were often in the classrooms conducting observations or classroom walk throughs. However, no mention had ever been made about the computers that were sitting in the classrooms and not being used to possibly advance the learning experiences of the students.

One teacher (December 18, 2007) stated, "I'm not sure there was a monitoring process, other than the walk-through that was performed weekly. We have never been asked for any data or input on the integration of technology."

Implementation of Professional Development

Participants in this study were all asked the question: How often does professional development focusing on technology take place in your school? Figure 2.3 is a visual summary of the third question and the coded responses (most frequent) given by each group. The themes that emerged from the data are listed in the boxes located on the right side of the diagram below.

Figure 2.3. Visual summary of question 3.



As stated in Chapter 2 of this study, effective professional development requires careful planning, job-embedded and hands-on activities directly linked to the curriculum, plenty of follow-up, and the willingness of educators to take on new and expanded roles. According to E. G. White (personal communication, August 1, 2007),

Professional development focusing on technology should be an integral part of the school technology plan and performance based accreditation days if technology is to serve as a tool to improve student achievement. For teachers to implement technology in the classroom to increase engaged learning and improve achievement among their students, a well-planned professional development program for technology must be put into place by the principal,” according to Dr. Eugene White Superintendent of the Indianapolis Public School District.

After conducting interviews with principals, technology coordinators, and teachers of middle schools within the Indianapolis Public School District, themes that emerged in relation to the research question included (a) professional development not focusing on technology, (b) professional development focused on improving instruction through traditional lecture, or (c) rote memorization methods.

This point was illustrated by one principal (January 10, 2008) who responded:

Being in an urban school environment (and this could happen in suburban sectors), we continue having to focus on improving instruction, the basics of instruction; therefore, I don't have the time, the time or the need right now to integrate technology. Because of the fact that I got to focus on the basics, we have to get on. In my situation, I have got to do more academic rigor, tie instruction to the standards, and get back to the basics. The things that some districts take for granted, we have to teach. So right now, I can't focus on technology, because I got to focus on just the basics of instruction.

The data analysis of the principal groups revealed that professional development took place (three to four times a year) through online training or informal training facilitated by the schools' technology coordinators.

The analysis revealed similar related themes between the technology coordinators and the teachers as a result of the coding process. They included (a) very little to no professional development focusing on technology integration, (b) limited training was not taken serious by principal and staff, (c) principals did not support the use of technology in the classroom, (d) teachers did not use technology in the classroom, (e) technology not being modeled throughout the school, and (f) principals' not monitoring classrooms to ensure that technology was being used with the curriculum.

The literature review in Chapter 2 of this study emphasized that the principal has a vital role in leading and giving credibility to professional development activities, and if technology is to work within the schools, it is the principal who must be the main cheerleader for the implementation of technology in the classroom (Paben, 2002). This very sentiment was the perspective of the technology coordinators and teachers who participated in the interviews.

As explained by one group of teachers (February 13, 2008):

We have had two, at the most, professional development sessions focusing on technology use in the classroom. The principal spent most of the time checking his e-mail during the training; therefore, no teacher took the training serious. This was the first in-service focused on how to use the computer to input grades, take attendance, and etc. If we had real professional development that focused on implementing technology into

the curriculum, and the principal enforced the use of it in the classroom, we would have more teachers using it to help our students learn better.

According to E. G. White, (personal communication, August 1, 2007),

Educating and supporting teachers is important in any major change that a school attempts to implement. In the case of integrating technology in the classroom, educating and supporting the teachers through professional development is necessary not only for the educating of teachers in its use, but also, for the implementation of the technology into the classrooms.

Encouragement from the principal for teachers to use the technology in their lessons can also add a major boost to the implementation process.

The perception of the teachers and technology coordinators indicated that the principals have neglected to invest in professional development in order to ensure that teachers gain an understanding of how to effectively integrate technology into the classroom. During interviews with the teachers, the researcher observed closets full of unused technology, supporting the teachers' claims of a serious lack of visible use of technology in the classrooms.

Technology coordinators implied that as a result of the principals' failure to recognize that integrating technology into the classroom curriculum required a great deal of professional development, teachers had failed to implement the technology into their lessons, and the students are missing out on an opportunity to enhance their learning experience.

One technology coordinator (November 23, 2007) stated:

Although we have an i-book computer for every student in the building to have his or her own, very few teachers are using them, and the principal does not emphasize the use of the i-books. We have thousands of dollars just sitting around collecting dust.

According to the teachers, the training received at some schools was inadequate; the focus was on administrative responsibility such as attendance, inputting grades, and discipline referrals. No focus was placed on integrating technology into the classroom.

In Chapter 2 of this study, the literature indicated that formal professional development or workshops that are conducted for the staff during staff development days should be endorsed through the active presence of the principal, even when he or she has no active role in the activity (Coley, Cradler, & Engell, 1997). Teachers felt that the principal's presence would have encouraged teachers and staff to cooperate in the change. Many teachers felt that getting the principal's endorsement was important when change was involved, especially for those who were entrenched in maintaining their old ways of doing things, regardless of the impact on the students.

As highlighted in Chapter 2 of this study, the No Child Left Behind Act legislation emphasizes the importance of leveraging the power of technology in all areas of K-12 education, from reading to science to special education (No Child Left Behind Act of 2001, Public Law).

According to D. Crenshaw (personal communication, May 31, 2007):

principals are expected to develop plans that effectively employ technology to enhance learning and increase student achievement. Magnet schools are provided federal funding to implement the theme of the school. At the three magnet

schools in this study, funds were provided to purchase equipment, software, and support professional development.

However, according to teachers and technology coordinators, professional development has not taken place in schools. One of the technology coordinators (November 22, 2007) stated:

Many teachers can take advantage of professional development opportunities offered at the district level, such as implementing different software programs, email, and other district level applications during the summer. Although none of the workshops offered by the district during the summer focused on how to integrate technology into the curriculum or instructional practices in order to enhance students' level of academic achievement. The workshops were designed to provide a base level of knowledge, and help improve the comfort level of non- technological teachers and administrators.

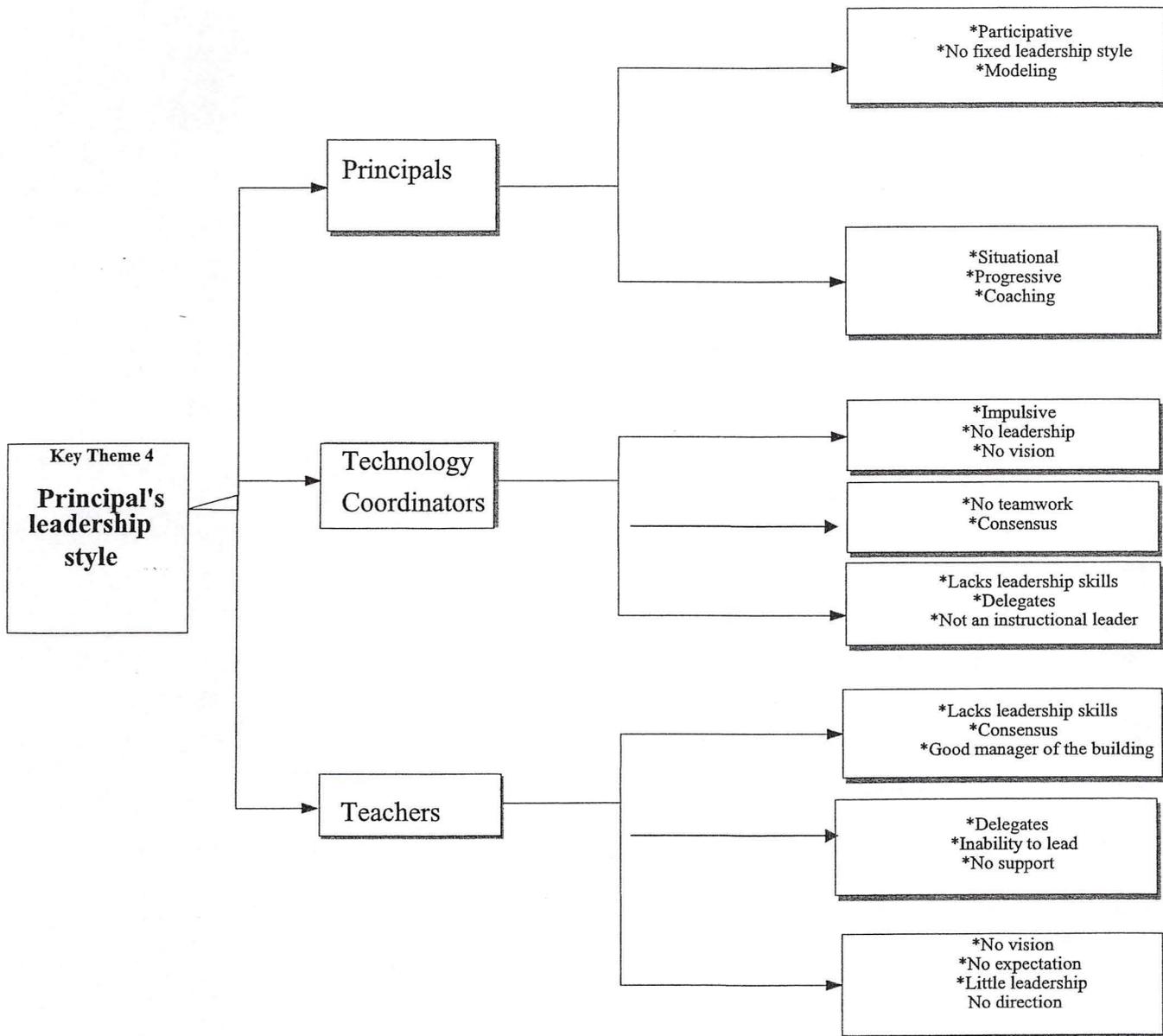
According to D. Crenshaw (personal communication, May 31, 2007), in the Indianapolis Public School District, magnet school principals whose schools have a technology theme are responsible for the implementation of technology in their schools and for ensuring that professional development focusing on integration of technology in the classroom occurs.

Principal's Approach to Leadership

The subjects of this study were asked how they would describe their principal's leadership style. Figure 2.4 is a visual summary of the fourth question and the coded

responses (most frequent) given by each group. The themes that emerged from the data are listed in the boxes located on the right side of the diagram below.

Figure 2.4. Visual summary of question 4.



The themes that emerged from the interviews with the principals were (a) progressive in terms of integrating technology within a school, (b) participative, (c) situational, and (d) no fixed leadership style. According to one principal (January 10, 2008):

There is no specific set of fixed leadership skills that a school principal can universally apply to any setting. Just as teachers differentiate their instructional strategy in the classroom to accommodate all individual learners in their classroom, we must differentiate our leadership style to accommodate the situation in which is being dealt with at the given time.

Themes that emerged from the analysis of the technology coordinator interviews based on the questions emphasized inconsistency from the principals, principal lacking in the ability to lead a school through the integration process, leadership often being delegated to the technology coordinator, and reactions from the principal were normally based on impulsive behavior. The themes also revealed that the perception from the technology coordinators was that principals within their schools had no sense of teamwork or instructional leadership. A technology coordinator (November 23, 2007) stated, "I don't think that the principal is a leader in the use of the technology or recognizes the importance of technology, and I don't think that he feels comfortable using technology." Another technology coordinator (November 22, 2007) stated, "I would have to say very inconsistent. He's just inconsistent. I mean one day he's okay with it, and the next he's not. I would just have to say inconsistent."

The analysis of the data revealed that teachers supported the views of the technology coordinators. Categories revealed throughout the multiple coding helped

form the themes that highlighted the lack of leadership from their principals in the technology integration process. The coded themes of responsibility being delegated to the technology coordinator and leadership by consensus appeared frequently. One teacher (December 18, 2007) stated:

As far as ensuring the implementation of technology within the school, there is no leadership. The principal does not want to upset anyone. The majority of the school's decisions regarding technology are based on the consensus of the school; however, the majority of the teachers in our building have little to no desire to use technology in their class.

Another teacher (January 17, 2008) stated that her perception was:

The principal's leadership approach was to put the decisions in the hands of the teachers; however, if an issue went wrong, teachers were also blamed for that decision. The "Buck" did not stop at his desk. It appeared the "Buck" was passed to the employee who made that decision.

During the interviews with the technology coordinators and teachers, two common themes surfaced at each of the three schools' leadership by consensus and the principals' desires to delegate all responsibility. One coordinator (November 15, 2007) perceived that:

The principal often shifted the responsibility off on others and provided no support or guidance regarding the implementation of technology. His leadership approach put the decisions in the hands of the teachers; however, if an issue went wrong, teachers were also blamed for that decision.

The most pervasive perception among teachers was that without leadership and direction, the climate for learning would not improve. Teachers felt that students would continue to be taught in the way in which their teacher's teacher was taught, unless the building level principals began to understand that educators needed to prepare students for their future, not their past.

The principals are perceived as offering little input and little support regarding the integration of technology. The analysis revealed that there is little to no support throughout the three schools in implementing technology. One teacher (December 18, 2007) emphasized that,

The principal may engage in the initial meeting, afterwards, he would let a teacher or the technology coordinator takes responsibility for ensuring the successful implementation of the technology integration program without any additional support.

According to the literature review in Chapter 2, researchers give emphasis to principal leadership as being an important factor in the determination in teachers' effectively integrating technology into the classroom (Kincaid & Feldner, 2002). Dorothy Crenshaw, Indianapolis Public School Director of Technology, believes that the kind of principal leadership needed to lead the integration movement is one of "passion, commitment, expertise, and knowledge or desire to learn." During an interview, D. Crenshaw (personal communication, May 31, 2007) stated:

. . . I think it takes a principal who is willing to look at a model and admit that it's not a successful model, and then be willing to dig in and say, it's not working, and what is it that makes students get excited? . . . Everyone,

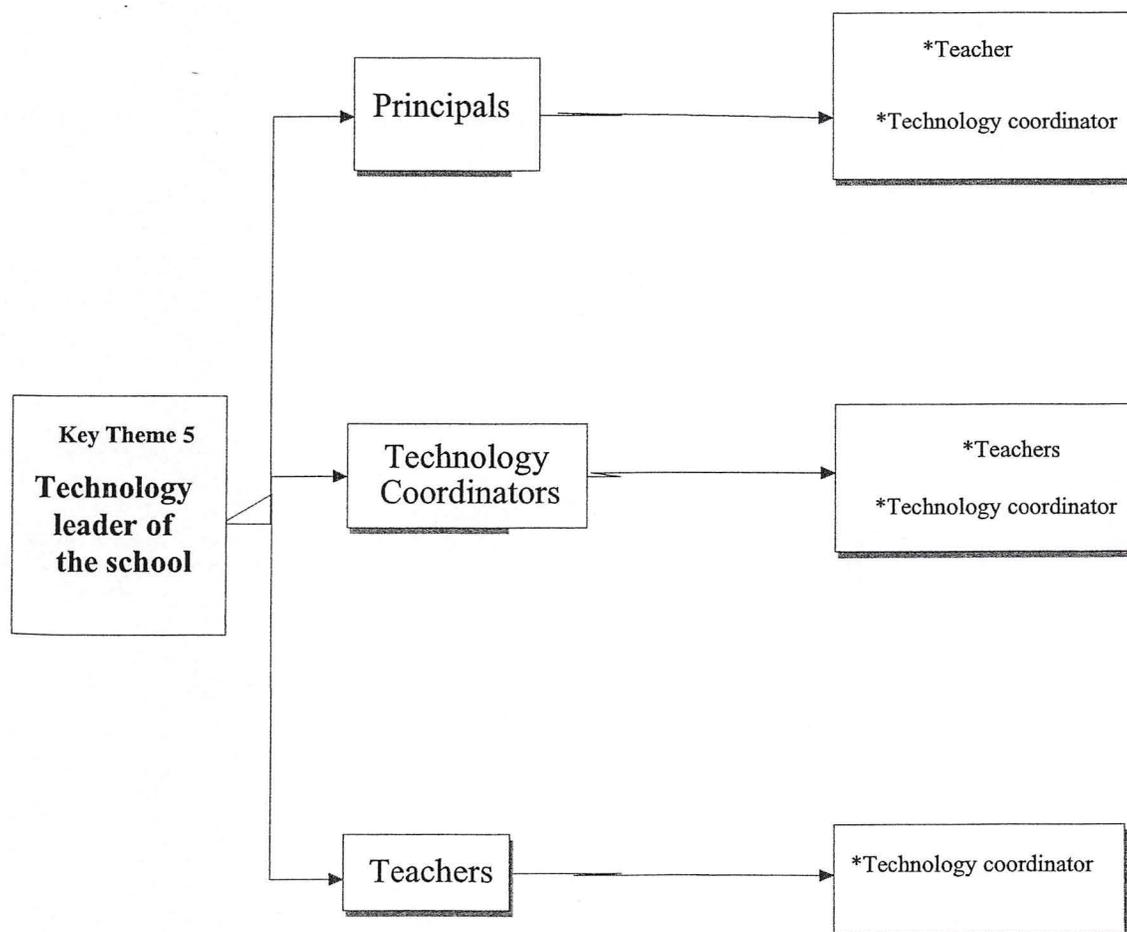
every kid needs a computer, and that's too expensive. We're never going to get that money. You've got to go there, after that, if you're the leader, you got to be in charge to figure that out. Money should not be something that drives that because you're never going to have enough money. Once a school has purchased the technology, the principal as the instructional leader must ensure that the technology is being utilized in all classrooms to ensure that our kids are able to compete successfully in a global society.

For the reason that technology continues to play an important role in modern industrial society, it is the assumption of Crenshaw that integrating technology into the Indianapolis Public Schools will help prepare students to succeed in a rapidly changing world.

Technology Leader

When asked the question, who is the technology leader in your school, the common theme that appeared throughout the data from the interviews with the principals, technology coordinators, and teachers was the perception that the technology coordinator was the technology leader of the school. Figure 2.5 is a visual summary of the last question and the coded responses (most frequent) given by each group. The themes that emerged from the data are listed in the boxes located in the bottom of the diagram below.

Figure 2.5. Visual summary of question 5.



One principal stated:

Most of the technology issues are left up to our technology coordinator. She ensures that the teachers' computers are working, and if there is a technology problem, she takes care of it. She also sets up any training that the teachers need to help them learn more about technology. I have not devoted a great deal of time to technology.

Another principal (December 20, 2007) said, "Our technology coordinator has been the key person in our school regarding technology, and a leader in helping teachers and students implement more technology in the classroom."

Teachers felt that the principal in their building had limited success being the technology leader of their school because of his/her lack of desire to embrace the implementation of the process within the school. One teacher (February 13, 2008) stated:

The principal has not initiated any technology within the building. His lack of knowledge regarding technology has handicapped him as a leader. He has not made any attempts to learn how technology could help our kids. The technology coordinator has done a good job in pushing technology on teachers, but without the principal support, there is no true implementation.

D. Crenshaw (personal communication, May 31, 2007) emphasized that in order for a principal to provide support in the area of technology, it can be argued that they themselves need to have basic technology skills, understand how technology can be used in the classroom for administrative and instructional tasks,

and have a guiding vision for the integration of technology into their school. Too often, principals place ownership for the implementation of the school technology plan onto technology coordinators.

One could maintain that it is not important for principals to have an understanding of technology and its uses in the classroom. However, the research in Chapter 2 of this study suggested that if a school is to effectively integrate technology into its classroom curriculum, the principal is the key to ensure that effective integration takes place. Another teacher (December 18, 2007) stated:

The technology coordinator is without a doubt the technology leader in our building. Not because she knows most, but because she is out in the front modeling technology and attempting to educate the staff about its many functions in the classroom. However, without the support of the principal, her efforts have been unsuccessful.

One technology coordinator (November 23, 2007) stated:

Without the principal's support, it is hard for me to enforce the use of the technology in the classrooms. I'm not an administrator. I'm a teacher on special assignment. The principal has been a passive participant, at most, and the teachers are well aware of his views regarding technology usage in the classroom.

According to one teacher, the technology coordinator was perceived as being the technology leader because she went out of her way in attempting to get teachers engaged in the use of technology. For example, she offered Saturday classes for any teacher who wanted training in ways to incorporate technology

into their lesson plans. The principal did not want to use staff meetings to focus on technology; therefore, technology integration was perceived as not being important by the staff. One teacher (December 18, 2007) affirmed:

Although only three teachers showed at the first and second meeting, it showed leadership on her behalf, and that she cared about implementing the technology into the classroom. The principal was in the building during the second meeting, but never came by the room to see how things were progressing or to show support, according to one of the teachers.

Another teacher (January 17, 2008) stated:

The principal's vision for the school is the same that it was when she arrived to the school ten years ago. The lack of vision by the principal and unwillingness to change from the staff and principal has resulted in a lack of technology use in the classroom. Our technology coordinator has attempted to enlighten the staff on the wonders of technology and has put in endless days creating lesson plans and strategies for teachers to use in the classroom. However, without the principal's support, none of the activities or lessons has seen the light of day, school wide.

Teachers emphasized that although the principal had a very basic knowledge of technology, the principal should not have allowed that to deter him or herself from embracing the integration of the technology, which was the attitude observed during the interviews. One technology coordinator (November 22, 2007) stated, "Without the principal's active participation, teachers did not feel a need to incorporate technology into the curriculum."

Summary

Chapter 4's data analysis revealed a possible relationship between school principal leadership and the implementation of technology. However, more research on this topic needs to be undertaken before a clear association between school principal leadership and the implementation of technology can be confirmed. The researcher discovered five key themes during the analysis process, chosen based in relation to the existing body of literature. All of the coded themes fell into one of the following key themes: (a) defining technology integration, (b) principal's role in implementing the integration of technology, (c) professional development focusing on technology, (d) principal's leadership style, and (e) technology leader of the school that highlighted the impact of principal leadership on the implementation of technology in schools. The researcher reread the transcribed interviews and the coded data several times to identify redundancy of themes, connections between themes, and difference between themes. Through this process, the researcher was able to identify the key themes. Each of those themes was further analyzed for congruency with this study, analyzing the data throughout the process.

The findings of the analysis revealed a contradiction in the perception of the principals' views regarding technology integration compared to the views of the technology coordinator and the teacher. The themes that surfaced after evaluating and comparing the principals' responses to that of the technology coordinators and teachers revealed a distortion or exaggeration of the themes that surface from earlier questions asked during the principals' interviews.

For example, after comparing the categories that emerged as a result of the coding, using the Qualitative Data Analysis software, the QDA coding software exposed that there has been very little to no professional development focusing on technology. According to the technology coordinators and teachers, the principals of the three schools in this study had given no support in implementing technology and providing professional development to teachers.

The analysis of the data also revealed that the teachers and technology coordinators of the schools within this study considered their principals as having either little or no leadership capacity in their ability to guide, coach, and direct their staff in integrating technology in the classroom. According to the teachers, principals did not participate actively in the implementation of technology, which led to the failure of the federally funded technology program. Information from the analysis of data will be used to further develop the conclusions and recommendations for future research and will be presented in Chapter 5.

CHAPTER 5

Discussion

This study examined three selected middle schools within the Indianapolis Public School District. The focus of this research was to study what school principals have done to increase the use of technology within the middle school building. Each of the three middle schools, John Marshall, located on the east side of Indianapolis, Margert McFarland, located on the south side of Indianapolis, and H. L. Harshman, located in Center Township of Indianapolis, are identified as magnet schools with a technology theme embedded into their curriculum. These are three out of only four magnet middle schools in the state of Indiana with a technology theme embedded into the curriculum. Chapter 5 will provide a summary of review and offer a discussion of results presented in the preceding chapters. Summary overview, conclusions, limitations of this study, and recommendations for future research are highlighted in the chapter discussion.

Summary Overview of Results

As the world becomes more dependent on technology, students and all educational stakeholders will continue to expect public education to include the integration of technology in student learning. The Indianapolis Public School District has begun to aggressively monitor the implementation of state technology standards into school curriculums. The district has also taken an assertive step in creating on-line computer courses for middle and high school students. In light of the current No Child Left Behind law, it is likely that other school districts in the state of Indiana will soon create similar courses in order to engage all students in the educational process by introducing new and challenging classes through an online environment.

The Indianapolis Public School District has invested millions of dollars in computers designed to help enhance the learning for students within the middle schools in the IPS school district. However, the use of the equipment has come into question, particularly at the middle school level. The school district's superintendent and director of technology are asking middle school principals what they are doing to ensure the effective implementation of technology as a learning tool for students.

The most obvious finding to emerge from this study is that principals who participated in this study should ensure that technology is used effectively in their schools in order to enhance the educational opportunities of all students. According to Creighton (2003), "Although the principal's leadership plays a significant role in the successful implementation of technology, the lack of appropriate leadership can squander the educational potential of technology" (p. 87).

One of the more significant findings to emerge from this study is that the three principals were not effective leaders in the implementation of technology within their schools. Principals did not take ownership of the implementation process, and as a result, teachers did not participate in the process. The data revealed that technology coordinators and teachers did not perceive the principals as effective instructional leaders.

Each technology coordinator emphasized that their principal did not support them in their attempt to implement technology throughout the school, nor would they enforce mandatory usage of technology within the curriculum. The data also revealed that teachers participating in this study perceived their principals as being ineffective in integrating the technology process and lacking the knowledge and leadership to effectively create a technology based climate within their school.

This study was guided by the following question: What impact does middle school principal leadership have on the integration of technology in selected middle schools within the Indianapolis Public School District? To support the recommendations of the researcher, the data in the study, highlighted three major areas of focus: (a) professional development, (b) principal's role in the integration of technology, and (c) principal leadership.

Professional Development

Today's rapid advancement and technological development has introduced Indianapolis Public Middle Schools to a new and exciting world that seemed unimaginable just a few decades ago. With the click of a mouse, technology continues to change the way teachers teach and the way students learn. The walls that surround them no longer restrict students to the IPS middle school environment, nor must students be covered in chalk dust after each class. Instead, students have the opportunity to explore the world at their fingertips and to take in vast amounts of information along the way. Based on the results of this researcher's study, IPS middle schools have yet to realize the potential of technology in helping to improve student learning and increase academic performance. With new and faster computers being developed at rapid speed, the promise technology holds for the future is endless. Yet, as we work our way through the 21st century, based on this study the three selected middle schools within IPS have been slow to implement a technology rich learning environment, which based on research, is crucial for tackling the challenges of the 21st century.

Despite a significant investment in technology and the promise it holds for students, it is clear that computers alone cannot improve middle schools within IPS.

Used incorrectly, technology may provide little benefit, and strip schools in IPS of scarce financial resources.

Many of the technology coordinators who were interviewed felt that teachers are generally unprepared to fully integrate technology into classroom instruction. The needs and concerns of the staff are not adequately addressed in technology workshops. Many of the interviewees expressed dissatisfaction in the one-time, quick-hit workshop sessions that are offered to staff members with the misguided belief that such training is sufficient. "The body of research concerning professional development emphasizes that the lack of professional development is often cited as the most common barrier to effective technology integration" (Rodriguez, 1997). Businesses in the United States alone spend over \$2 billion training their employees on the use of technology, but 90% of the teachers in America reported that they were 100% self-taught (Bingham & Byrom, 2001).

Recommendations for Professional Development "A major role of the principal as instructional leader and technology leader is to provide appropriate staff development programs that allow teachers to enhance skills and remedy deficiencies" (Creighton, 2003, p. 48).

1. All principals and teachers of the schools within this study should receive extensive professional development focusing on the integration of technology.
2. The principal should receive additional assistance in the areas of principal leadership and the role of the principal in the integration of technology.
3. The school staff should be provided with professional development that addresses the process of integrating technology into the curriculum and lessons.

4. Professional development should be hands-on in order for the staff to become more comfortable using the computer.
5. Professional development should be provided in a variety of ways (i.e. small groups, mentoring, teacher modeling, observations, and summer workshops).
6. Professional development should be provided during the school day and continue throughout the school year. Guest teachers will provide classroom coverage for the teacher while he or she is in training.
7. Professional development sessions should be evaluated by the staff, and the results of the evaluation should be shared with the central office personnel.

The middle school principals in this study must become the catalyst in their school for technology integration into the teaching and learning process. There must be improvements in the area of professional development in order to help the teachers of the schools within this study learn to actively use technology as an effective tool to help improve student learning in the classroom. Technology training should become a mainstay within professional development and must be on going if it is to be effective in supporting student learning. Teachers must be provided with meaningful training if they are going to effectively implement technology into their instructional practices and processes as a method for student learning.

The No Child Left Behind Act of 2001 emphasizes that effective integration of technology into the professional development of teachers, principals, and other school staff should take part in the school's professional development. Nevertheless, the three middle schools in the study have shown little effort of implementing technology into professional development.

The results of this study suggest that in order for technology to make an impact in the classrooms of the three selected technology based magnet schools in the Indianapolis Public School District, there must be an intentional effort to ensure that all teachers receive ongoing professional development in the area of integrating technology into the classroom via the curriculum and pedagogy. Through the ongoing engagement in professional development, the change to technology integration can be facilitated in ways that are meaningful to teachers and positively impact student learning. The three middle schools participating in the study have the equipment in place to provide each student with an engaging learning experience at the middle school level.

Principal's Role in the Integration of Technology

The results of the interviews revealed that IPS middle school principals must improve their role in incorporating technology into their schools to help ensure that students receive the best possible education. Interviews also exposed a needed growth by IPS middle school principals in the areas of leading change and implementing and communicating a vision for incorporating technology.

Data collected from the interviews revealed that the three principals took a very passive approach in the implementation of technology. The technology coordinators, whom at some schools were teachers on special assignments, were left to oversee and implement the school technology plan and ensure the integration of technology in the classrooms. Most of the technology coordinators stated that their principals took a more hands-off approach when it came to school wide technology; however, all principals interviewed stated that they did use technology on a daily basis for administrative

business. One principal in this study commented that he stays out of the way regarding issues that deal with integrating technology in the classroom.

Recommendations for Principal's Role in the Integration of Technology. The middle school principals in this study must become the catalyst in their schools for technology integration into the teaching and learning process. A digital culture within the three selected middle schools must begin with a vision, a desire, and a commitment to change, and that vision and commitment should come from the principal who is the educational leader of the school.

1. Principals should participate in ongoing professional development focusing on integrating technology into the classroom.
2. Principals should ensure that technology is being used throughout all subject areas (e.g. language arts, math, science, etc.).
3. Principals should implement technology programs that are student centered and related to the learning process.
4. Principals should ensure that professional development focusing on technology integration takes place often.
5. Principals should work with the staff to develop a working technology plan, and ensure that it is being implemented.
6. Principals should develop professional learning team consisting of teachers, parents, students, and community members.
7. Principals should model, articulate, and celebrate the use of technology in the classroom.

The principals of this study could only provide leadership in the area of technology if he or she put it on the agenda, and the data has revealed that technology has not been a priority within the three middle schools in this study. The principals should have developed new beliefs and skills for technology if it is to be successfully integrated and given the opportunity to help improve student learning and classroom instruction in the middle schools.

If principals are not equipped with the knowledge and skills of technology integration, they would be seriously inhibited in carrying out their role as instructional leaders. Technology is not only pervading society, but it has the potential to reform the way teaching and learning takes place in the classroom. The use of technology cannot be left solely to teachers. Principals need to lead in the area of technology integration.

Principal Leadership

The support of the school principal may be the most critical role contributing to the success or failure of the technology integration program at the three middle schools within this study. Southeast Initiatives Regional Technology in Education Consortium emphasized throughout their research focusing on technology integration that the most important ingredient for creating effective technology integration is good school leadership. “In working intensively with site schools and districts we have concluded that school leadership is the single most important factor affecting the successful integration of technology” (Bingham & Byrom, 2001).

Recommendations for Principal Leadership. The IPS principals within this study must become leaders who transform the educational setting from one that relies on paper, pencils, and textbooks to engage and educate students. To an education community of

rich, meaningful, hands on learning designed to engage and challenge all students.

1. Principals should use research based, technology performance standards.
2. Principals should satisfactorily complete online orientation course(s) focusing on technology integration.
3. Principals should provide opportunities for staff to learn research based strategies that address integrating technology.
4. Principals should identify with staff the knowledge and skills that teachers need to implement a working school technology plan.
5. Principals should support teachers in making the instructional changes necessary to support the technology integration process.
6. Principals should evaluate the collaborative skills of staff and support the needs with professional development.
7. Principals should nurture and develop the leadership capabilities of teachers.
8. Principals should ensure accountability of all teachers, and set clear objectives.
9. District level administrators should ensure accountability for principals to achieve technology outcomes for students.

The interviews have led the researcher to believe that the three principals not only need to learn to use the technology equipment, but more importantly, they need to recognize the importance of their role as the principal in implementing technology throughout their school. They also need to gain a better understanding of how to develop and communicate a vision of how technology can support student achievement.

The three middle school principals must become doers in the implementation of technology. Leadership is a thinking occupation, first and foremost, and principals must be leaders if their schools are to grow. As a school principal recognized by the Milken Family Foundation as the 2007 National Educator for outstanding school leadership, the researcher clearly understands that schools become more effective as their teachers grow and develop personally and professionally over time, so that they become increasingly effective not only in the classroom but as participants of work groups. It is the school principal that must facilitate the change process that will move the magnet schools to effectively implement technology.

Conclusion of Findings

If technology integration is to be successful within a school organization, it is important for the principal to work with their staff and support them. The middle school principal in an IPS school is generally seen, for all intents and purposes, as the leader and decision maker of a school building. Middle school principals in this study did not see their role as school leader involving the implementation of technology. Instead, the principal passed the responsibility on to the technology coordinator, and as a result teachers were not integrating technology into their lessons. Because principals did not take an active role in the implementation of the program, and did not communicate their expectations, define the task or overall objective, or develop ongoing benchmarks, the integration of technology throughout the schools never successfully happened. Teachers and technology coordinators stated that the principal's role throughout the process had been extremely limited. Principals did not model the use of technology or monitor the use

of technology in order to ensure that all teachers were actively using technology in the classroom to improve student academic performance.

As technology becomes more of a way of life and the world becomes more dependent on it, principals must become more aware of the relevant issues associated with effective integration of technology in schools. Moreover, principals need to lead in this area; everything related to technology cannot be left up to a technology coordinator. Many of the reviewed studies within this research identified the principal as the key person in affecting change within an organization. The schools within this study were organizations that needed to desperately unlearn old behaviors and to relearn new ones in order to successfully implement technology throughout their school; based on the data the principals failed to create an organization of learners. According to Senge (2000), “learning organizations with people constantly sharing and learning from each other, are a key to a brighter future. Sharing knowledge occurs when people are genuinely interested in helping one another develop new capacities for action” (p. 136 – 137).

The staff at the participating schools did not learn to use technology in an instructional context to support learning and teaching. Interviews revealed that very little professional development focusing on technology integration took place throughout the school year. The literature review revealed that for professional development to be effective within an organization, training should be ongoing, integrated with the lesson plan and instructional practices, and within all subject areas. In addition, coaching, modeling in the classroom, mentoring, large and small group workshops, observing expert teachers, providing individualized support, on-line tutorials, and classroom demonstrations may help support the technology integration process. Ongoing support,

including strong participation from principals, and technology coordinators can enable all teachers within the school to master new skills.

The principals allowed their lack of knowledge regarding technology to interfere with their job of ensuring that all students received a quality education. The interviews led the researcher to conclude that the three principals not only needed to learn to use the technology equipment even more importantly, they needed to recognize the importance of their role as the principal in implementing technology. A clear plan should have been developed for each school based on a shared vision. The data revealed that in the selected groups studied, principals lacked a clearly defined role in the implementation process which may have resulted in their inability to successfully implement technology within their school. As instructional leaders, the principals needed to be in the forefront of technology implementation and integration.

While the leadership of the principal has been reported widely in other research, this study highlighted the importance of the principal specifically to technology leadership within his or her school. Three urban middle schools, all magnet schools with a technology theme, were selected to participate. A qualitative interview methodology was used for this study. One-on-one and group interviews were conducted with nineteen district level and school level staff members. Interviews were conducted from December 2007 to June 2008, focusing on the 2006 – 2007 school year. Data from the interviews were collected, analyzed, and transcribed. Five key themes emerged from data collected and analyzed. The themes were a result of data analysis of the interview questions that the researcher asked during the interview sessions. Narratives of the findings were then documented.

Limitations of the Study

Qualitative studies cannot usually be generalized; however, schools implementing similar technology programs may use this study to see how the findings from this study might be beneficial to them. In the researcher's initial literature review for the research project, it became evident that there was a significant lack of discussion on the role that school principals play in the integration of technology.

In retrospect, some limitations existed that may have contributed to less detailed findings and a lack of generalized conclusions. According to the Indiana Department of Education (2007), over 74% of students fail the state-mandated Graduation Exam on their first attempt, and the poverty rate is over 75%. Many of those students bring the myriad of problems associated with poverty to school with them. In the last five years, a 300% increase in enrollment of English as a New Language students in the Indianapolis Public School District has been documented, and the school district is one of the fastest growing Hispanic student populations in the United States, according to Hispanic Consulate of Indianapolis.

This study was also limited due to school district cutbacks, lay-offs, school closings, and reorganization. Even more restrictive was the percentage of staff turnover from among the schools in this study at 58% and the limited number of educators who participated in this study. This study was also limited to select middle schools based on their magnet school theme within the Indianapolis Public Schools; limited related research; and a small sample size, due to the limited number of staff members within each school who actively used technology within their classroom. To further validate this

research, additional interviews and analysis, across the nation would be helpful to more fully support the conclusions of this study.

The inability of the researcher to conduct follow-up interviews with the participants was another factor in this study. Two of the principals were terminated from their position as principal, and the third principal was reassigned to another school. Two of the schools closed, and one was restructured and converted into a high school. All of the technology coordinators' jobs were lost at the conclusion of the school year due to budget issues. The teachers at two out of the three schools were reassigned throughout the district due to closure or restructuring of a school.

Implications for Future Research

The findings of this study support the research regarding the impact that school principal leadership has on the integration of technology in a school. Although the body of literature is sparse regarding the relationship between principal leadership and the integration of technology into the classroom, the data gathered in this study will help serve as confirmation for the school superintendent and the director of technology of the Indianapolis Public Schools that there is a need to address the role of the middle school principal.

Considerably more work will need to be done to determine if principal leadership totally influences technology integration in a school. Further research using a case study methodology to collect qualitative and quantitative data in order to examine the impact of the school principal leadership on the integration of technology in schools might investigate a larger sample group of teachers, technology coordinators, and principals from school districts across the nation; focusing on the impact that school principal

leadership has on the integration of technology into a school. The findings of this study are not generalizable to other populations; therefore, additional research needs to be replicated in other school districts with technology rich schools. Other areas of possible study include an in-depth evaluation of teacher preparation and professional development in implementing technology into the classroom. The examination of the principal's role in developing a technology integrated school is indeed a relevant topic for future research. Not only will the data and research add value to the body of knowledge within the subject area of principal leadership, but it will support and enhance the educational process and help improve student learning.

References

- Allen, R. (2001, Fall). Technology and learning: How can schools map routes to technology's promised land? *Curriculum Update*, pp. 1-8.
- Alvy, H. B. & Robbins, P. (2004). *The new principal's field book strategies for success*. Alexandria, VA: Association for Supervision and Curriculum Development.
- Anderson, R. E., & Dexter, S. (2005). School technology leadership: An empirical investigation of prevalence and effect. *Educational Administration Quarterly*, 41(1), 49-82.
- Ansell, S. & Park, J. (2003, May 8). Tracking tech trends. *Education Week*, 22(35), 43-48.
- Apple, Inc. (2002). *The impact of technology on student achievement*. Retrieved February 13, 2007, from <http://www.apple.com/education/research>
- Archer, J. (1998, October 1). The link to higher scores. *Education Week*, 18(5), 10.
- Avolio, B. J. (2000). *Full leadership development: Building the vital forces in organizations*. London: Sage.
- Barbour, R., & Kitzinger, J. (Eds.). (1998). Introduction: The challenge and promise of focus groups. *Developing focus group research*. London: Sage.
- Barth, R. (2002, May). The culture builder. *Educational Leadership*, 59(8), 6-11.
- Bass, B. M. (1985). *Leadership performance beyond expectations*. New York: The Free Press.
- Bingham, M., & Byrom, W. (2001). *Factors influencing the effective use of technology for teaching and learning: Lessons learned from SEIR-TEC intensive site schools*. North Carolina at Greensboro; Associated with the school of Education.

Bogdan, R., & Biklen, S. K. (1998). *Qualitative research for education: An introduction to theory and methods*. Boston: Allyn & Bacon.

Bonwell, C. C., & Eison, J. A. (1991). *Active learning: Creating excitement in the classroom*. *Eric Digest*. Washington, D.C.: ERIC Clearinghouse on Higher Education. (ED340272) Retrieved October 19, 2007, from <http://www.ntlf.com/html/lib/bib/91-9dig.htm>

Bowman, J., Newman, D., & Masterson, J. (2001). Adopting educational technology: Implications for designing interventions. *Journal of Educational Computing Research*, 25(1), 81-94.

Brooks-Young, S. (2000). Taking the lead. *Technology & Learning*, 21(5), 26-34.

Brooks-Young, S (2001). *Making technology standards work for you: National education technology standards and performance indicators for administrators*. Washington, D. C.: ISTE Publications.

Bryman, A., & Burgess, R.G. (1994). *Analyzing qualitative data*. New York: Routledge Publishing.

Burns, J. M. (1978). *Leadership*. New York: Harper and Row.

CEO Forum on Education and Technology (2001, June). *The CEO forum school technology readiness report: Key building blocks for student achievement in the 21st century*. Washington, D. C.: Author. Available from <http://www.ceoforum.org/reports.html>

Clawson, J. G. (2003). *Level three leadership getting below the surface* (2nd ed.). Upper Saddle River, NJ: Prentice Hall.

- Coley, R. J., Cradler, J. D., & Engel, P. K. (1997). *Computers and classrooms: The status of technology in U.S. schools*. Princeton, NJ: ETS.
- Cooley, V. (1998). Twelve strategies for implementing a major technology initiative in your school district. *The Clearing House*, 71(6), 350-354.
- Corcoran, T. B. (1995, June). *Helping teachers teach well: Transforming professional development*. New Brunswick, NJ: Consortium for Policy Research in Education. Retrieved from <http://www.ed.gov/pubs/CPRE/t61/>
- Costello, R. W. (1997). The leadership role in making the technology connection. *T.H.E. Journal*, 25(4), 58-62.
- Cradler, J., & Bridgforth, E. (1996). *Recent research on the effects of technology on teaching and learning*. [Policy brief]. San Francisco, CA: WestEd Regional Educational Laboratory.
- Creighton, T. (2003). *The principal as technology leader*. Thousand Oaks, CA: Corwin.
- Creswell, J. W. (2003). *Research design: Qualitative, quantitative and mixed method approaches* (2nd ed.). Thousand Oaks, CA: Sage.
- Cuban, L. (2001). *Oversold & underused: Computers in the classroom*. Cambridge ME: Harvard University Press.
- David, J. L. (1996). Developing and spreading accomplished teaching: Policy lessons from a unique partnership. In C. Fisher, D.C. Dwyer, & K. Yocam (Eds.), *Education and technology: Reflections on computing in classrooms* (pp. 237-245). San Francisco: Jossey-Bass.
- Daft, R. L., & Lane, P. G. (2005). *The leadership experience* (3rd ed.). Mason, OH: Thomson South-western.

- Dias, L. B., & Atkinson, S. (2001). Technology integration: Best practices--where do teachers stand? *International Electronic Journal for Leadership in Learning*, 5
Retrieved from <http://www.ucalgary.ca/iejll/vol5>
- DuFour, R. P. (2002). The learning centered principal. *Educational Leadership*, 59 (8), 12-15.
- The Education Alliance, Brown University (2007). *The 2006 school year brings an expanded science, technology, engineering, and math (STEM) work scope to The Education Alliance*. Retrieved August 19, 2007, from
http://www.alliance.brown.edu/news_06.php
- Emerson, R. M. (1995). *Contemporary field research*. Prospect Heights, IL: Waveland Press.
- Fiedler, F. E. (1967). *A theory of leadership effectiveness*. New York: McGraw-Hill.
- Fischman, B., Gomez, .L. M., & Soloway, E. (2000). *New technologies and the challenge for school leadership*. Retrieved from the School of Education/College of Engineering, University of Michigan Web site: <http://www.hi-ce.org/papers/2000/fostering/TechLeadWhitePaper.pdf>
- Fraenkel, J. R., & Wallen, N. E. (1993). *How to design and evaluate research in education* (2nd ed.). New York: McGraw-Hill.
- Fullan, M., & Steigelbauer, S. (1991). *The new meaning of educational change* (2nd ed.). New York: Teachers College Press.
- Gardner, J. W. (2000). The nature of leadership. In *Educational leadership* (pp. 3-12). San Francisco, CA: Jossey-Bass.

- Glennan, T. K. (1998). *Elements of a national strategy to foster effective use of technology in elementary and secondary education (Critical Technologies Institute, CT-145)*. Santa Monica, CA: RAND. Retrieved from <http://www.rand.org/scitech/stpi/Publications/education.html>
- Goldberg, M. (2001). *Lessons from exceptional school leaders*. Alexandria, VA: Association for Supervision and Curriculum Development.
- Grant, C. M. (1996). *Professional development in a technological age: New definitions, old challenges, new resources*. Retrieved from http://lsc-net.terc.edu/do.cfm/paper/8089/show/use_set-tech
- Guba, E. G., & Lincoln, Y. S. (1981). *Effective evaluation*. San Francisco: Jossey-Bass.
- Hall, G. (2001). Leading the charge. *Principal Leadership*, 1(9), 40-42.
- Heide, A., & Henderson, D. (2001). *Active learning in the digital age classroom*. Portsmouth, NH: Heinemann.
- Herrington, J., & Oliver, R. (1999). Using situated learning and multimedia to investigate higher-order thinking. *Journal of Educational Multimedia and Hypermedia*, 8(4): 401-421.
- Hersey, P., & Blanchard, K. H. (1993). *Management of organizational behavior: Utilizing human resources* (6th ed.). Englewood Cliffs, NJ: Prentice Hall.
- Ho, J. (2005). *Technology leadership*. Retrieved November 17, 2006, from http://www3.moe.edu.sg/edumall/rd/litreview/techn_leadership.pdf
- Hoerr, T. (2005). *The art of school leadership*. Alexandria, VA: Association for Supervision and Curriculum Development.

- Holland, L., & Moore-Steward, T. (2000). A different divide: Preparing tech-savvy leaders. *Leadership*, 30(1), 8-10, 37-38.
- Honey, M., Culp, K. M., & Spielvogel, R. (1996). *Critical issue: Using technology to improve student achievement*. Retrieved October 22, 2007, from <http://www.ceo.wa.edu.au/home/carey.peter/criticalissues1.html>
- House, R. J., & Mitchell, R. R. (1974). Path-goal theory of leadership. *Journal of Contemporary Business*, 3, 81-97.
- Hughes, M., & Zachariah, S. (2001). An investigation into the relationship between effective administrative leadership style and the use of technology. *International Electronic Journal for Leadership in Learning*, 5. Retrieved from http://www.ucalgary.ca/iejll/hughes_zachariah
- Indiana Department of Education: 2007 School Data. [Data file]. Available from Indiana Department of Education Web site: <http://www.doe.state.in.us>
- Indianapolis Public Schools. *Indianapolis Public Schools magnet & options catalog*. (2005). Indianapolis, IN: Author.
- Indianapolis Public Schools. (2006). *Information Technology Division*. Available from: Indianapolis Public Schools Web site: <http://www.ips.k12.in.us>
- International Technology Education Association. (2003). *Advancing excellence in technology literacy: Student assessment, professional development, and program standards*. Reston, VA: International Technology Education Association.
- Ivers, K.S., and Barron, A. E. (2002). *Multimedia projects in education: Designing, producing, and assessing* (2nd ed.) Westport, CT: Libraries Unlimited.

- James, R. K., & Lamb, C. E. (2000). Integrating science, mathematics, and technology in middle school technology-rich environments: A study of implementation and change. *School Science & Mathematics, 100* (1), 27-36.
- Kearsley, G. (1990). *Computers for educational administrators: Leadership in the information age*. Norwood, NJ: Ablex Publishing.
- Kearsley, G., & Lynch, W. (1992). Educational technology leadership perspectives. Thousand Oaks, CA: Corwin.
- Kincaid, T., & Feldner, L. (2002). *Leadership for technology integration: The role of principals and mentors*. *Educational Technology & Society, 5*(1), 75-80.
Retrieved from http://www.ifets.info/journals/5_1/kincaid.pdf
- King, D. (2002). The changing shape of leadership. *Educational Leadership, 59*(8), 61-63.
- Kouzes, J. M., & Posner, B. Z. (1990). *The leadership challenge: How to get extraordinary things done in organizations*. San Francisco: Jossey-Bass.
- Kouzes, J., & Posner, B. (1995). *The leadership challenge*. San Francisco: Jossey Bass.
- Kouzes, J., & Posner, B. (2003). *Academic administrator's guide to exemplary leadership*. San Francisco: Jossey Bass.
- Kvale, S., & Brinkman, S. (2009). *Interviews: Learning the craft of qualitative research interviewing* 2nd ed. Thousand Oaks, CA: Sage.
- Laine, E. F. H. (2000). *Systems leadership and education reform: Toward the development of a new paradigm for creating and sustaining organizational change from within*. Retrieved from ProQuest Dissertations and Theses. (ATT 9957880)

- Lindsay, L. M. & Smith, M.A., (2007). *Leading change in your world* (3rd ed.). Marion, IN: Triangle Publishing.
- MacNeil, A. J., & Delafield, D. P. (1998, March). *Principal leadership for successful school technology implementation*. Paper presented at the meeting of The Society for Information Technology and Teacher Education, Washington, DC.
- Marshall, C., & Rossman, G. B. (1989). *Designing qualitative research*. New Park, CA: Sage.
- Maxwell, J. (1993). *Developing the leader within you*. Nashville, TN: Thomas Nelson Inc.
- McC Campbell, B. (2001, May/June). Technology standards for school administrators. *Principal Leadership (High School Ed.)*, 1(9), 68-70.. Retrieved February 13, 2007, from <http://findarticles.com/p/articles/>
- McCullen, C. (2003). Celebrating differences. *Principal Leadership (Middle School Ed.)*, 3(8), 34-36.
- McEwan, E. K., & P. J. McEwan. (2003). *Making sense of research*. Thousand Oaks, CA: Corwin.
- McKenzie, J. (2002). Leading by example: The high touch high tech principal. *The Educational Technology Journal*, 11(10), Retrieved from <http://www.fno.org/sum02/principal.html>
- Merriam, S. B. (1998). *Case study research in education: A qualitative approach*. San Francisco, CA: Jossey-Bass.
- Miles, M. B., & Huberman, A. M. (1984). *Qualitative data analysis: A sourcebook of new methods*. Newbury Park, CA: Sage.

- National Association of Secondary School Principals (2001). *Standards for what principals should know and be able to do*. Alexandria, VA: NASEP.
- National Staff development council's standards for staff development, revised. (2001). Oxford, OH: National Staff Development Council.
- No Child Left Behind Act of 2001, Pub. L. No. 107-110, s2401, 115 Stat, 1425 (2001) (enacted).
- Northouse, P. G. (2004). *Leadership theory and practice* 3rd ed. London: Sage.
- Office of Technology Assessment. (1995). *Annual report to the Congress: Fiscal year 1994*. Retrieved October 23, 2008, from http://www.princeton.edu/~ota/ns20/year_f.html
- Paben, S. (2002). What's in it for the busy leader? Show administrators how technology works toward their vision. *The Journal of Staff Development*, 23 (1), 24-27.
- Patton, M. Q. (2002). *How to use qualitative methods in evaluation*. Newbury Park, CA: Sage.
- Piper, D., & Hardesty, J. (2005). The influence of school leadership and self-efficacy on teachers' attitudes towards using computer technology in the classroom. In C. Crawford et al. (Eds.), *Proceedings of Society for Information Technology and Teacher Education International Conference 2005* (pp. 1837-1844). Chesapeake, VA: AACE.
- Polonili, K. (2001). Integrating technology into the classroom. *Principal Leadership (High School Ed)*, 2(4), 34-38.

- Quinn, D. M. (2002). The impact of principal leadership behaviors on instructional practice and student engagement. *Journal of Education Administration, 40*(5), 447-467. doi:10.1108/09578230210440294
- Ramsey, R. (1999). *Lead, follow, or get out of the way*. Thousand Oaks, CA: Crown Press.
- Riedl, R., Smith, T., Ware, A., Wark, A., & Yount, P. (1998). Leadership for a technology-rich educational environment. *Proceedings of The Society for Information Technology and Teacher Education*, Washington, DC. (ED421128)
- Rodriguez, G. (2000). *Critical issue: Providing professional development for effective technology use*. Retrieved February 2, 2007, from <http://www.ncrel.org/sdrs/areas/issues/methods/technlgy/te1000.htm>
- Rogers, D. L. (2000). *A paradigm shift: Technology integration for higher education in the new millennium*. Chesapeake, VA: Association for the Advancement of Computing in Education. Retrieved from http://www.editlib.org/d/8058/article_8058.pdf
- Rubin, H.J., & Rubin, I. (2005). *Qualitative interviewing: The art of hearing data* (2nd ed.). Thousand Oaks, CA: Sage.
- Sage, S. M. (2000). A natural fit: Problem-based learning and technology standards. *Learning & Leading with Technology, 28*(1): 6-13.
- Senge, P. (2000). *A fifth discipline: Schools that learn*. New York: Doubleday.
- Sivin-Kachala, J., & Bialo, E. (1994). *Report on the effectiveness of technology in schools, 1990-1994*. Washington DC: Software Publishers Association.

- Smith, W. F., & Andrews, R. L. (1989). *Instructional leadership*. Alexandria, VA: Association for Supervision and Curriculum Development.
- Snyder, N. H., & Graves, M. (1994) Leadership and vision. *Business Horizons*, 37(1), 1-6. Retrieved from http://findarticles.com/p/articles/mi_m1038
- Strauss, A. L., & Corbin, J. M. (1998). *Basics of qualitative research: Techniques and procedures for developing grounded theory*. Thousand Oaks, CA: Sage.
- Technology Briefs for NCLB Planners. (2002). In *Northeast & the Islands regional Technology in Education Consortium*. Retrieved September 9, 2007 from <http://www.neirtec.org>
- Tesch, R. (1990). *Qualitative research: Analysis types and software tools*. New York: Falmer.
- U. S. Department of Education, Office of Educational Technology. (2006, February 23). ED Programs that help bridge the digital divide. Retrieved March 18, 2007, from <http://www.ed.gov/Technology/digdiv.html>
- Valdez, G. (2004). *Critical issue: Technology leadership: Enhancing positive educational change*. Retrieved March 13, 2006, from <http://www.ncrel.org/sdrs/areas/issues/educatrs/leadrshp/le700.htm>
- Wheatley, M. (1992). *Leadership and the new science: Learning about organization from an orderly universe*. San Francisco: Berrett-Koehler.
- White, T. J. (2006). Does principal leadership really matter? An analysis of the relationship between implementation of the Teacher Advancement Program and student achievement. Retrieved from ProQuest Dissertations & Theses. (AAT 3216247)

Williamson, R. D. (1995). Leadership: A focus on leadership for student achievement.

Schools in the Middle, 5(2), 17-22.

Yin, R. K. (1994). *Case study research: Design and methods* (2nd ed.). Thousand Oaks,

CA: Sage.

Yukl, G. A. (1994). *Leadership in organizations* (3rd ed.). Englewood Cliffs, NJ:

Prentice Hall.

Zepeda, S. J. (2007). *The principal as instructional leader* (2nd ed.). Larchmont, NY: Eye

on Education.