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Attitudes And Perceptions Of Mississippi Career And Technology School Administrators Toward Technology Integration And Their Knowledge And Use Of The National Educational Technology Standards For School Administators (Nets-A)

Janice Holman Sears

ATTITUDES AND PERCEPTIONS OF MISSISSIPPI CAREER AND TECHNOLOGY SCHOOL ADMINISTRATORS TOWARD TECHNOLOGY INTEGRATION AND THEIR KNOWLEDGE AND USE OF THE NATIONAL EDUCATIONAL TECHNOLOGY STANDARDS FOR SCHOOL ADMINISTRATORS (NETS·A)

By

Janice Holman Sears

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By

Janice Holman Sears

Approved:

Linda F. Cornelious
Professor of Instructional Systems, Leadership, & Workforce Development
(Major Professor and Director of Dissertation)

James E. Davis
Assistant Professor of Instructional Systems, Leadership & Workforce Development
(Minor Professor)

Dwight Hare
Professor of Curriculum & Instruction
(Committee Member)

Jianxia Du
Assistant Professor of Instructional Systems, Leadership & Workforce Development
(Committee Member)

Anthony A. Olinzock
Department Head/Professor of Instructional Systems, Leadership & Workforce Development
(Committee Member and Graduate Coordinator)

Richard Blackbourn
Dean of College of Education

Name: Janice Holman Sears

Date of Degree: December 8, 2006

Institution: Mississippi State University

Major Field: Instructional Systems and Workforce Development

Major Professor: Dr. Linda F. Cornelious

Title of Study: ATTITUDES AND PERCEPTIONS OF MISSISSIPPI CAREER AND TECHNOLOGY SCHOOL ADMINISTRATORS TOWARD TECHNOLOGY INTEGRATION AND THEIR KNOWLEDGE AND USE OF THE NATIONAL EDUCATIONAL TECHNOLOGY STANDARDS FOR SCHOOL ADMINISTRATORS (NETS·A)

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Candidate for Degree of Doctor of Philosophy

The purpose of this study was to examine Mississippi's Career and Technology School Administrators' attitudes and perceptions toward technology integration and to determine their knowledge and use of the NETS·A. The study contributed to the literature on technology integration and the NETS·A in the secondary classroom.

The research design for this study was descriptive and correlational. A pilot study was conducted prior to the commencement of the research study in which no problems were identified. Out of a population of 144 Mississippi Career and Technology School Administrators, 102 participated in the study.

A survey instrument consisting of three parts was used in this study. Part I of the instrument was designed to collect demographic data and to determine administrators' training and experience with technology. Part II was the "Survey of Administrative

Attitudes and Perceptions toward Technology Integration," and Part III was the "Administrator Technology Self-Assessment Tool." The research questions posed in the study were developed to examine Mississippi Career and Technology School Administrators' attitudes and perceptions toward technology integration and to determine their knowledge and use of the NETS·A. The study was further designed to determine whether relationships existed between the variable attitude and perceptions and the variables knowledge and use, demographic characteristics, and experience and training with technology integration. Pearson r, Spearman r_s, and Point-biserial r_{pb} were used to analyze the data of the returned surveys.

After the data were collected and analyzed, the researcher determined that there was a statistically significant correlation between Mississippi Career and Technology School Administrators' attitudes and perceptions of technology integration and the variable knowledge and use of the NETS·A and the variable experience and training with technology integration. There was no statistically significant correlation between Mississippi's Career and Technology School Administrators' attitudes and perceptions of technology integration and the variables age, sex, and years experience as an administrator.

Conclusions and recommendations based on the findings in this study indicated that Mississippi Career and Technology School Administrators should be required to increase their experience and training with technology integration. School administrators should also broaden their knowledge and increase their use of the NETS·A.

DEDICATION

This doctoral dissertation is dedicated to my family for their support, encouragement, and tolerance throughout this journey. Thanks to my husband, Steed, for providing the necessary assistance that allowed me to accomplish this task. Thanks to my beautiful daughters, Conner and Logan, for being so understanding when Mom was at the computer. I hope that someday this is an inspiration to you.

Attainment of the Doctor of Philosophy degree is dedicated to my mother, Syble, and father, Coy, who not only knew I could do it, but knew that I would do it.

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CHAPTER I

INTRODUCTION

School administrators' attitudes and perceptions toward technology have been found to influence technology outcomes within K-12 schools (Carter, 2003; Daiber, 1990; Guevara, 2004; Haack, 2003; Havice, 1999; Miglinorino, 2002). Knowledge and use of technology by school leaders have also been determined to positively influence their schools' ability to effectively integrate technology (Anderson & Dexter, 2005; Dawson & Rakes, 2003; Golden, 2004; U.S. Department of Education [USDE], 2000). Thus, state (MSTA, 1995) and national (ISTE, 2000; ISTE 2002) technology standards have been created to establish the technology skills that school administrators and principals should acquire in order for them to effectively integrate technology into their schools' curricula.

Students in today's classrooms must have an increased knowledge of technology and its impact on their future (Blaylock & Newman, 2005; Guevara, 2004; Jones, 2004). As such, teachers must increase their use of technology in an effort to create a community of technical learners. School principals, directors, and administrators across the nation are expected to integrate technology across the K-12 school curriculum. Consequently, educational administrators must provide the means necessary for students and teachers to become technology literate (Grant, 2005).

The Collaborative for Technology Standards for School Administrators (TSSA Collaborative) was developed in 2001 as a guideline for administrators to utilize while integrating technology into their schools' curricula. The TSSA Collaborative stated, "Leadership plays a key role in successful school reform" (p. 3). The International Society for Technology in Education (ISTE) (2002) adopted TSSA in 2002 as the National Educational Technology Standards for School Administrators (NETS·A). NETS·A provided guidelines on what administrators and principals should do to ensure effective district wide technology leadership. The standards focus on six areas: (a) leadership and vision; (b) learning and teaching; (c) productivity and professional practice; (d) support, management, and operations; (e) assessment and evaluation; and (f) social, legal, and ethical issues (TSSA Collaborative, 2001).

In their study, Anderson and Dexter (2005) surveyed 800 schools in order to determine if the schools' technology leadership characteristics as identified by the NETS·A, had effects on indicators of technology outcomes (e.g., technology integration, staff development policy, student use, and school size). The researchers found that the school leader's involvement in the six technology leadership areas is important for successful technology outcomes within schools. This finding reinforces the importance and usefulness of the NETS·A standards as guidelines for successful practice. Therefore, the NETS·A are designed to challenge school administrators to improve their leadership skills in technology.

Before the creation of the NETS·A, the literature in education appeared to focus primarily on teachers' responsibilities to obtain the necessary skills to fully integrate

technology into classrooms (Starr, 2001). However, school administrators' responsibilities were often overlooked. As Johnson (2005) asserted, "We've put the cart before the horse when it comes to developing technology skills in schools. By helping school leaders become computer literate, we are again putting the horse back before the cart" (p. 4). First students were trained. Then staff was trained. Finally, the technology skills of principals, superintendents, and directors are being improved. To this end Hopkins (2001) concluded, "The cycle is finally complete—teacher standards, student standards, and administrator standards. All speak with a clear concise voice as to what is expected in regard to the use of technology in schools and school systems across our country" (p. 3). Thus, with the introduction of NETS·A, the responsibility of the school administrator in technology integration should be a topic to which researchers should begin to focus more attention (Starr, 2001).

Technology is considered a significant factor in increasing productivity in many industries (Byrom & Bingham, 2001**;** Cetron & Cetron, 2004; Clements & Samara, 2003). Therefore, it is believed that increased technology integration within schools could improve educational opportunities for students (Anderson & Dexter, 2005; Grant, 2005). Researchers (Braak, Tondeue, & Valcke, 2004; Cope & Ward, 2002; Gifford, 2004; Migliorino, 2002; Vannatta & Fordham, 2004) have concluded that knowledgeable teachers and those with positive perceptions of technology have a higher degree of technology use within the classroom. Researchers (Dawson & Rakes, 2003; Starr, 2001) have also found that support, positive perceptions, and the degree of technology training of school administrators and principals have also increased the success of certain

technological innovations that schools adopt. Teachers who receive little support from their administrators are less likely or find it impossible to introduce or use the changing technology that is needed by schools today (Grant, 2005). Although the teacher is crucial, the school administrator is considered to be a main contributor to the success of a new program's technological effectiveness within the school (Dawson & Rakes, 2003).

If technology integration is to be successful, school administrators should provide proper and adequate training of their staff, give adequate support to the implementation of technology within classrooms, and present sufficient technology modeling. Proper and adequate training often comes in the form of professional development opportunities. In order for professional development to be effective, key components must include access to technology, technological assistance, time for learning, and sustainability (Grant, 2005). It is the responsibility of the school administrator to provide access, assistance, time, and continued support before teachers will embrace technology and see the benefits that technology can bring to a classroom full of tomorrow's leaders (Anderson & Dexter, 2005; Grant, 2005; Mouza, 2003). School administrators must also offer support for technology integration to become part of the school culture.

Dawson and Rakes (2003) found that a main reason for poor technology integration within schools is a result of the lack of administrative support and patience. Administrators often rely on their teachers to be the sole implementators of technology integration (Starr, 2001), even though Daniel and Nance (2002) reported that it is essential that school administrators be involved in all levels of integrating technology into the curricula. Proctor and Livingston (2001) also suggested the importance of technology

leadership that includes an administrator who is knowledgeable of how technology works. An effective administrator should not only understand effective means of integrating technology, but also have a broad understanding of how to use technology.

Statement of the Problem

K-12 administrators are recognized as being leaders in the integration of technology within their schools' curricula. Attitudes and perceptions of school leaders have been shown to affect technology related variables such as distance education, professional development, and technology-based education within schools. However, several studies suggest that school administrators have not assumed a primary responsibility in ensuring that technology integration is occurring in their schools (Starr, 2001), nor have they been effective in motivating teachers in planning for integration of technology in the classroom.

> Teachers are being asked to learn new methods of teaching, while at the same time they are facing even greater challenges of rapidly increasing technological changes and greater diversity in the classroom…but relatively few teachers report feeling well prepared to integrate educational technology into classroom instruction. (U.S. Department of Education [USDE], 1999, iii)

Therefore, an effective way that school administrators can promote technology is to become knowledgeable and effective users of the technology themselves. Teachers are not likely to become motivated to integrate technology into their classrooms if they believe that administrators are not themselves technologically literate. According to Starr, 2001, "technology integration is highest in buildings in which the principal is

involved and excited about technology and its possibilities, and is lowest in buildings in which the principal doesn't demonstrate technology use, while encouraging others to use it too" (p. 1). If administrators are to hold teachers accountable for integrating technology into the classroom then they should not only demonstrate positive attitudes toward technology integration but they must also exhibit technology literacy. Therefore, a study was needed that examined school administrators' attitudes and perceptions toward technology integration, as well as their knowledge and use of technology, particularly since there is a lack of research regarding how these administrative characteristics actually affect technology integration within schools (Anderson & Dexter, 2005).

With the creation of the NETS·A, there emerged national guidelines on what administrators and principals should do to ensure effective district-wide technology leadership. Before the NETS·A, the school administrator's technological responsibility was often overlooked. Since the importance of the K-12 administrator's role in technology integration is widely recognized by researchers (Dawson & Rakes, 2003; Grant, 2005; Starr, 2001) and the responsibilities and requirements of K-12 administrators are similar to those of Career and Technology School Administrators, this study focused on the attitudes and perceptions of Mississippi Career and Technology School Administrators toward technology integration. A second focus was on Mississippi Career and Technology School Administrators' knowledge and use of the NETS·A.

Purpose

The purpose of this study was to examine Mississippi Career and Technology School Administrators' attitudes and perceptions toward technology integration and to determine their knowledge and use of the NETS·A.

Career and Technology School Administrators from different geographic locations in Mississippi were surveyed in order to examine their attitudes and perceptions toward technology integration and to determine their knowledge and use of the NETS·A. Variables were examined that affect how technology integration is perceived by administrators. Demographic data were obtained, as well as information relative to the administrators' experiences and training with technology integration.

Research Questions

This study focused on Mississippi Career and Technology School Administrators' attitudes and perceptions toward technology integration and their knowledge and use of the NETS·A. The study answered the following research questions:

1. What are the attitudes and perceptions of Mississippi's Career and Technology School Administrators toward technology integration?
2. What are Mississippi's Career and Technology School Administrators' knowledge and use of the NETS·A?
3. Is there a statistically significant relationship between Mississippi's Career and Technology School Administrators' attitudes and perceptions toward technology integration and their knowledge and use of the NETS·A?

4. Is there a statistically significant relationship between Mississippi's Career and Technology School Administrators' attitudes and perceptions toward technology integration and their demographic characteristics (e.g., age, sex, and years of experience as an administrator)?
5. Is there a statistically significant relationship between Mississippi's Career and Technology School Administrators' attitudes and perceptions toward technology integration and their experience/training with technology integration?

Definition of Terms

The following definitions were used in this study:

Attitudes and Perceptions toward Technology Integration – How administrators personally perceive or feel toward technology integration that is expressed as fear, anxiety, phobia, confidence, and liking (Ocak, 2005). Attitude is a mental state that influences in a direct and dynamic way an individual's response to a situation (Allport, 1955). A basic definition of perception is the way people see things. Berelson and Steiner (1964) have defined perception more formally as, "the process by which an individual selects, organizes, and interprets information inputs to create a meaningful picture of the world" (p. 88).

Career and Technology School Administrators – A reference that included (a) Vocational Directors, (b) Vocational Principals, (c) High School Principals with Career and Technical Programs, and (d) Vocational Administrators.

Experience/Training with Technology Integration – Experience/training was expressed as the number of university courses taken, face-to-face professional

development programs as a participant, online professional development programs taken, conferences participated in that utilized technology-integration, and other experience/training that utilized technology-integration. Experience/training also included the number of times the administrator has been a presenter or teacher of technology related training.

Knowledge and Use of the National Educational Technology Standards for School Administrators (NETS·A) – The extent that school administrators are aware of the NETS·A and the degree that the standards are practiced by them. The four components that were used to describe knowledge and use are (a) Assessment and Evaluation, (b) Leadership Core, (c) Professional Development, and (d) Policy and Records Management.

National Educational Technology Standards for School Administrators, (NETS·A) – Guidelines of what administrators and principals should do to ensure effective district wide technology leadership. The standards focus on six areas: (1) leadership and vision; (2) learning and teaching; (3) productivity and professional practice; (4) support, management, and operations; (5) assessment and evaluation; and (6) social, legal, and ethical issues.

Technology Integration – Effective integration of technology is achieved when students select technology tools to help them obtain information in a timely manner, analyze and synthesize the information, and present it professionally. Technology should become an integral part of how the classroom functions -- as accessible as all other

classroom tools (ISTE, 2000). The George Lucas Educational Foundation (2004) defined technology integration as:

> The use of technology resources -- computers, digital cameras, CD-ROMs, software applications, the Internet, etc. -- in daily classroom practices, and in the management of a school. Technology integration is achieved when the use of technology is routine and transparent. Technology integration is achieved when a child or a teacher doesn't stop to think that he or she is using a computer or researching via the Internet. (¶ 1)

Limitations

This study was limited to a population of 144 administrators of Career and Technology Schools and High Schools containing vocational and technical programs identified at the Department of Education in the state of Mississippi during the fall semester of 2006. Generalizations from the study should be limited to only the population described and cannot be applied to any other group.

Justification of the Study

Several researchers (Cope & Ward, 2002; Gifford, 2004; Lin- Milbrath & Kinzie, 2000; Migliorino, 2002) have sought to better understand why some teachers use technology in effective ways and others do not. Attitudes and beliefs toward computers (Cope & Ward, 2002; Gifford, 2004; Migliorino, 2002), as well as computer self-efficacy or technology proficiency (Lin- Milbrath & Kinzie, 2000), have been used as variables in predicting technology use among teachers. There is a paucity of research, however,

regarding the attitudes and perceptions of school administrators toward technology integration. With the creation of the NETS·A, which is guiding administrators in becoming leaders in technology integration, such research is warranted. Although in the past, administrators have not been required to have technology training, there are increasing beliefs and views by legislators that administrators should be held accountable for the success of technology within their schools (Daniel & Nance, 2002). Because of these views, research is needed to determine what variables affect school administrators' attitudes and perceptions regarding technology integration into their schools' curricula. The power and influence of the TSSA Collaborative has several implications for principals and their preparation programs. Therefore, a study of administrators' knowledge of the NETS·A, as well as their use of technology, was timely.

This study should be of value to the Mississippi State Department of Education in assessing the possible need for increased technology related professional development for school administrators. This study was designed to examine the attitudes and perceptions of Mississippi's Career and Technology School Administrators toward technology integration, as well as to determine their knowledge and use of the NETS·A. Results from this study may guide educational leaders in identifying administrator characteristics that may improve the likelihood of technology integration into the career and technology school curriculum– integration that can be a useful tool in ultimately enhancing student achievement (Blasik, Williams, Johnson, & Boegli, 2003).

CHAPTER II

REVIEW OF RELATED LITERATURE

This study examined Mississippi Career and Technology School Administrators' attitudes and perceptions toward technology integration and determined their knowledge and use of the NETS·A. This chapter begins with a review of related literature and research regarding technology in education, technology in industry's link to education, and effective technology integration within schools. The next section describes the evolution of the NETS·A, beginning with the Southern Regional Education Board's (SREB) Standards for School Administrators and the TSSA Collaborative. This chapter also describes the importance of administrative support for technology, technology related professional development, and technology integration. The chapter concludes with information relative to administrator attributes (e.g., skills, training, attitudes and perceptions, and demographic variables) and their relationship to technology integration.

Technology in Education

In 1983 the publication of *A Nation at Risk* by the National Commission on Excellence in Education (NCEE, 1983) initiated the first wave of educational reform in the United States. Findings in the report suggested that the nation's education system was "being eroded by a rising tide of mediocrity" (¶ 3). The Commission considered technology to be a vital part of educational reform (Daniel & Nance, 2002). School

officials were assigned the task of making sure that all high school graduates be trained to use technology for personal and work related purposes.

Second and third waves of educational reform came in programs such as *Goals 2000* and *No Child Left Behind*. *Goals 2000* indicated that students could meet high academic standards, particularly in the area of technology (U.S. Department of Education [USDE], 1994), whereas the federal *No Child Left Behind Act* included various resources to help schools use technology more extensively and efficiently (Delisio, 2003).

Technology in Industry and Education

Technology is more prevalent in society today than ever before. Whether video conferencing on a portable cellular telephone or keeping an appointment because of a hand-held palm pilot, the world has become filled with these silicon avatars causing couch potatoes to become "mouse potatoes", and teenagers to become "screenagers" (Jones, 2004). Since the past decade, students have progressed from handwritten essays to spell-checked and word-processed documents (Blaylock & Newman, 2005). Technology use in today's society has become both essential and common practice in everyday life (Guevara, 2004; Jones, 2004). Because technology is often credited as a significant factor in increasing productivity in many industries (Cetron & Cetron, 2004), several researchers (Blaylock & Newman, 2005; Castro, Taylor, & Walls, 2004; Guevara, 2004) believe that effective technology integration within schools could do much to improve the educational opportunities of students and ultimately school quality.

Great attention has been given to the lack of progress of technology integration and its use in K-12 public schools (Awalt & Jolly, 1999). Even though billions of dollars

have been spent on educational technologies, schools are not as advanced as they need to be in the integration of technology within their classrooms. Many classrooms are adorned with computers, projectors, and software, only to be used as play stations for teachers and students. In fact, Awalt and Jolly asserted, "Inquiries into the slowness of full-scale technology adoption and integration cite the lack of school administrators' knowledge about advanced technologies" (p. 2).

Effective Technology Integration

Zhao, Byers, Puge, and Sheldon (2002) found that technological promises do not automatically transfer into effective learning. Instead it takes a "deliberate and careful design to effectively integrate technology in education" (p. 485). Several researchers (Blasik, et al., 2003; Royer, 2002) have studied and defined what this deliberate and careful design should include. For example, Blasik, et al. (2003) identified features of technological integration that contributed to the success of schools: (a) extensive planning and implementation, (b) curriculum and support services, (c) a continuous program of academic to technical concentration, (d) ongoing professional development, and (e) an array of instructional delivery methods. Royer (2002) also suggested that in order for technology integration to be successful, adequate planning from school administrators, sufficient support from stakeholders, and effective professional development for school personnel are necessary.

According to the International Society for Technology in Education (ISTE) (2000), effective technology integration is achieved when students are able to select technology tools to help them obtain information in a timely manner, analyze and

synthesize the information, and present it professionally. Technology should become an integral part of how the classroom functions -- as accessible as all other classroom tools (ISTE, 2000, ¶ 5). The George Lucas Educational Foundation (2004) defined effective technology integration as:

> The use of technology resources -- computers, digital cameras, CD-ROMs, software applications, the Internet, etc. -- in daily classroom practices, and in the management of a school. Technology integration is achieved when the use of technology is routine and transparent. Technology integration is achieved when a child or a teacher doesn't stop to think that he or she is using a computer or researching via the Internet. (¶ 1)

Researchers (Roschelle, Penuel, & Abrahamson, 2004) have suggested that when technology fits properly and is integrated appropriately into classroom practice, teachers find it easier to "engage in best practices as addressing, motivating, and engaging all students, facilitating group discussions, questioning students, and providing frequent feedback" (p. 51). Guevara (2004) has concluded that technology, when used properly by teachers and students, can be a powerful and essential tool for students to function in society and to become productive members of the workforce. Technology must be integrated in such a way that increases a student's engagement; understanding of complex subject matter; interest and enjoyment; discussion and interactivity; and awareness of individual levels of comprehension, as well as increases teacher insight into student difficulties (Roschelle et al., 2004).

The Evolution of NETS·A

The school administrator's responsibility to lead the way in implementing technology into the school curriculum may be a fairly recent trend; however, it is not a new phenomenon. In 1983 the U.S. Department of Education appointed the National Commission on Excellence in Education (NCEE) which compiled a report entitled, *A Nation at Risk*, which provided a dismal portrayal of the American educational system. The report concluded, "Our nation is at risk. Our once unchallenged preeminence in commerce, industry, science, and technological innovation is being overtaken by competitors throughout the world" (¶ 1).

According to the recommendations of NCEE (1983), "the teaching of computer science in high school should equip graduates to (a) understand the computer as an information, computation, and communication device; (b) use the computer in the study of the other basic subjects and for personal and work-related purposes; and (c) understand the world of computers, electronics, and related technologies" (Recommendations section, ¶ 11). Thus, the NCEE considered technology to be a crucial part of what schools needed to include in their curricula as a part of the educational reform movement. *A Nation at Risk* served as a wake-up call in that American education could no longer continue business as usual. The report suggested that educational leaders had to not only be school managers, but also curriculum, instruction, and technology leaders.

Standards for School Administrators: A Proposed Model, SREB

After the alarm of *A Nation at Risk* (NCEE, 1983), schools did begin to include more technology within their curricula. However, educational technology was often

reduced to drill and practice applications (Conlon & Simpson, 2003). Many in the educational community often feared that the promise of educational technology was nothing more than a hoax or a diversion (Carey, Chisholm, & Irwin, 2003). The idea was that teachers would ultimately spend more time surfing the Internet than teaching the Internet's usefulness. Thus, in the 1990s a drive for a more effective means of integrating technology in schools became prominent within the literature (Brand, 1998; Zehr, 1999); a drive that included a greater emphasis on the role of the administrator in technology integration.

In 1997, the Southern Regional Education Board (SREB) published *Standards for School Administrators: A Proposed Model* (SREB, 1997). The SREB developed standards for administrators in the following areas: (a) long-range planning for the use of technology, (b) analyzing and reacting to technology issues, (c) possessing a vision of technology in education, (d) using technology to communicate with stakeholders, (e) using technology to collect and analyze data, (f) understanding how technology can be integrated into all instructional areas, (g) understanding the legal and ethical issues related to technology, and (h) using technology in the roles of coordinator and communicator.

The SREB (1997) standards called for administrators to become promoters, visionaries, and knowledgeable of all aspects of technology integration within the school. School administrators were expected to incorporate cutting-edge innovations into the flow of teaching, learning, and school management (Whale, 2003). Administrators were required to determine the best way to integrate technology into classrooms (Zehr, 1999).

Many administrators were left trying to understand how to make this happen. Many administrators began to find that technology integration not only involved placing equipment in labs and classrooms but also that leadership was the key (Lamb, 2001).

TSSA Collaborative

After the SREB developed the proposed technology standards for school administrators, the Collaborative for Technology Standards for School Administrators (TSSA Collaborative) was developed in 2001 as a guideline for administrators to utilize while integrating technology into their schools' curricula. The TSSA project began as a result of several groups, individuals, and educational leaders recognizing that although teacher capability to make effective use of technology was essential, the importance of the role of the school administrator was warranted (Bosco, 2001). Members of the TSSA Collaborative included leading professional, educational, and technological organizations, including the National Association of Secondary School Principals, National Association of Elementary School Principals, American Association of School Administrators, National School Board Association, North Central Regional Educational Laboratory, the ISTE, two state departments of education, two universities, and other interested parties (Whale, 2003).

As the teacher and student technology standards previously developed had been valuable in helping define what skills and knowledge students and teachers needed, the TSSA Collaborative focused on the necessity of technology standards for administrators. As a result, the Collaborative developed the TSSA in 2001. The TSSA was formed as guidelines on what K-12 administrators should know about the power of technology. The

TSSA holds school administrators accountable for creating and implementing a technology rich curriculum and ensuring that teachers and students have the opportunity to obtain skills in technology.

The underlying theme of this effort was to ensure that school administrators would be trained in instructional technology in order to aid teachers to effectively use technology. The TSSA (2001) was grouped into six sections: (a) leadership and vision; (b) leading and teaching; (c) productivity and professional practice; (d) support, management, and operations; (e) assessment and evaluation; and (f) social, legal, and ethical issues. These six sections were further divided into 16 role-specific leadership tasks (see Appendix A).

National Educational Technology Standards for School Administrators, NETS·A

The TSSA was adopted in 2002 as the National Educational Technology Standards for School Administrators (NETS·A) by the International Society for Technology in Education (ISTE, 2002), the largest teacher-based, nonprofit organization in the field of educational technology. The NETS·A provided guidelines on what administrators and principals should do to ensure district wide technology leadership. Because of the NETS·A, today's administrators are required to provide effective technology leadership, while maximizing its impact on teaching, learning, and school operations (Whale, 2003).

Many administrators find the NETS·A disturbing because they neither know how to implement technology into their schools' curricula, nor are they familiar with technology's use within their own professional or personal lives (Whale, 2003).

Although in the past, administrators have been required to have little or no technology training, there are increasing beliefs by lawmakers that administrators be held accountable for the success of technology within their schools (Daniel & Nance, 2002). The NETS·A recommended that school administrators be involved in all levels of planning and integrating technology into their schools' curricula.

Importance of Administrative Support for Technology in Education

Thomas (as cited in Dawson & Rakes, 2003) concluded that a main reason for the resistance of technology within schools stems from a lack of administrative support and patience. However, Fullan (2002) has concluded that the school administrator often lacks the time and resources to support teachers in implementing a change such as the introduction of technology. Although researchers have reported that technology training for teachers increases the use of technology in classrooms (Royer, 2002; Shephard, 2004), administrators have frequently fallen short of scheduling training for their teachers (Zehr, 1999).

The success of technology implementation in schools, to a great extent, depends on administrative support. The National Center for Education Statistics (NCES) (USDE, 2000) indicated that the leadership of the principal is one of the most important factors affecting the effective use of technology in the classroom. This leadership includes (a) providing proper professional development activities for teachers, (b) encouraging teachers to have positive attitudes toward the technology available, and (c) supplying sufficient and appropriate numbers and types of technology applications and hardware. Principals play a critical role in technology integration within schools. Therefore, the

school administrator must be the leader who ensures that technology actually impacts the teaching and learning process (Whale, 2003).

Administrative Support of Technology Related Professional Development

The teacher plays a crucial role in the implementation of technology within the classroom that is conducive to student learning. However, teachers must be allowed and encouraged to participate in professional development programs that prepare them for proper implementation (Royer, 2002). The school administrator is significant in providing these ample, technology-rich staff development opportunities for teachers in order to help assure that proper implementation will occur (Lederman & Niess, 2000; Vannatta & Fordham, 2004).

Federal, state, and local governments have spent billions of dollars to bring computer technology into the K-16 classrooms (Peslak, 2005). Tax dollars have been spent to wire schools for Internet access. Much funding has been allocated for technology related teacher training. However, professional development for use of computers within the classroom tends to be insufficient and misdirected. Teacher training often includes workshops that have failed to help teachers understand the benefits of integrating technology into classroom lessons (Royer, 2002). If authentic integration of computer technology is to occur in schools, professional development strategies must ensure that teachers have an understanding of how educational objectives can be supported by technology and how computer technology will impact their pedagogies (Browne, 2003).

When teachers believe in a teaching or learning strategy, they go to great lengths to implement the strategy and use it within the classroom. However, Lederman and Niess (2000) concluded that, "some insist on hard evidence to support the superiority of technology as an aid to teaching and learning before they are willing to advocate the use of technology in the classroom" (p. 348). Therefore, teachers who do not see technology as an aid to teaching and student learning are likely to resist the use of technology within their classrooms (Royer, 2002).

Technology related professional development should be more than teachers learning how to use computer technology; teachers need to understand the benefits of integrating technology into their curricula. Teachers need to see how they can use technology to develop students' understandings. James, Lamb, Householder, and Bailey (2000) reported that schools average one computer for every five students nationwide and that 95% of those computers are wired to the Internet. Yet, many teachers still report limited use of technology in classroom learning beyond word processing, grade books, and games (Mouza, 2003).

Vannatta and Fordham's (2004) study on teacher dispositions sought to identify which combination of factors were the best predictors of technology use by K-12 teachers. The authors found three variables that best predicted classroom technology use: (a) number of hours of technology training, (b) hours worked beyond the contractual workweek, and (c) openness to change. These findings reinforce the belief that technology training is obviously important in developing technology-using teachers.

This technology training should come in the package of an effective professional development program that is afforded to teachers.

Professional development for teachers in technology integration should be ongoing, regularly updated, tied to student learning, driven by a long-term plan, and planned collaboratively by those who participate (Royer, 2002). Shephard (2004) suggested a set of variables that should be used by teachers and provided in professional development programs in order for technology to support student learning: (a) familiarity with technology hardware and software, (b) engagement and experimentation of tasks, (c) appreciation for the scope of resources available, (d) understanding of the pedagogic model to be used, (e) development and piloting of resources, (f) ongoing requirements to update skills, and (g) reflection on how the technology provided added value to student learning.

Effective professional development efforts are influenced by the ways in which school administrators either support or inhibit teacher learning (Mouza, 2003). Grant (2005) found that the key components of the support for professional development with technology include access to technology, technological assistance, administrative backing, time for learning, and sustainability. It is the responsibility of the school administrator to provide this access, assistance, backing, time, and continued support before teachers will embrace technology and see the benefits that it can bring to a classroom full of tomorrow's leaders (Anderson & Dexter, 2005; Grant, 2005; Mouza, 2003).

Even with some training, many teachers contend that lack of support by administrators is the significant barrier against implementation of computers in classrooms (Grant, 2005). Fully implementing an effective professional development program as part of a well-designed technology plan requires support from school administrators and leaders. Administrators must have a clear vision of technology to support student learning and an understanding of the roles that all school staff must play in achieving that vision. They must be the cheerleaders and visionaries who see beyond the daily routine to a vision of what is possible through the use of technology (Killion, 1999). Fletcher (2004) also identified the school administrator in the development of a sound professional development program. He argued that administrators must realize two important factors when providing effective professional development programs. First, school administrators need to provide more than a Saturday workshop for teachers on how to use a software program; and second, using technology appropriately will help transform a school campus.

The school administrator is a key facilitator in developing a successful professional development program (Dawson & Rakes, 2003; Golden, 2004; Mouza, 2003). According to Mills and Tincher (2003), a successful program is one in which the goal is to extend technology use in the classroom beyond a mere teaching tool, and the school administrator is so often the key to reaching this goal. In order for a technology centered professional development program to become a part of a teacher's training, support is invaluable (Hughes & Ooms, 2004; Keller & Bichelmeyer, 2004). Anderson

and Dexter (2005) found that successful implementation of technology can only occur if administrators offer teachers support and leadership.

Darling-Hammond and McLaughlin (1995) also suggested that in addition to administrators developing a philosophy to guide the implementation of computer technology, they can provide professional development that (a) engages teachers in concrete tasks of teaching, assessment, observation, and reflection that illuminate the processes of learning and development; (b) is grounded in inquiry, reflection, and experimentation that are participant-driven; (c) is collaborative, involving a sharing of knowledge among educators, and a focus on teachers' communities of practice rather than on individual teachers; (d) is connected to and derived from teachers' work with their students; (e) is sustained, ongoing, intensive, and supported by modeling, coaching, and the collective solving of specific problems of practice; and (f) is connected to other aspects of school change (p. 602).

If the school administrator neglects to provide the teacher with an atmosphere that supports continuous professional growth, professional development efforts are likely to have only short-term and isolated benefits. Brand (1998) stated, "Staff training programs designed for the technological development of teachers are effective when programming offers flexibility and is not based on a 'one size fits all' philosophy" (p. 4). He also concluded that if technology is to be used successfully by students, teachers must possess the confidence, understanding, and expertise to effectively incorporate technology into their teaching practices. This can occur only when the school administrator allows the

adequate training and development for teachers (Brand, 1998; Darling-Hammond & McLaughlin, 1995).

Even though the teacher is crucial in the integration of technology within the classroom, research has shown that it is vital that the school administrator provide opportunities for adequate technology related professional development (Brand, 1998; Browne, 2003; Lederman & Niess, 2000; Vannatta & Fordham, 2004). Fletcher (2004), Killion (1999), and Mouza (2003) found that the support of the school administrator to be an important factor when teachers are learning with and about technology. In fact, several researchers (Anderson & Dexter, 2005; Dawson & Rakes, 2003; Golden, 2004; Grant, 2005; Mouza, 2003) found the administrator to be a major asset in providing technology related professional development opportunities for teachers. Lack of support from the school administrator has been found to be a barrier against the integration of technology in schools (Grant, 2005). In order for teachers to become technology-integrators, administrative support is needed (Hughes & Ooms, 2004; Keller & Bichelmeyer, 2004).

Administrators' Role in Technology Integration

Leadership from the school principal is generally acknowledged as an important influence on a school's effectiveness, including the effectiveness of its technology integration in the classroom (Fullan, 2002). In fact, Guevara (2004) argued, "The administrator's actions become paramount in charting the course of a district in its quest to fully integrate technology into the school system," (p. 3). The school administrator's use of technology, support of technology integration, and feelings toward technology-

based education are vital in the effective integration of technology within the school. He also suggested that the appropriate, effective use of technology only enhances the area of teaching and learning, the area with the potential to have the greatest impact on teaching and learning.

Administrators often rely on their teachers to be the sole instigators of technology integration (Starr, 2001), even though Daniel and Nance (2002) reported that it is essential for school administrators be involved in all levels of integrating technology into the curricula. Kincaid and Felder (2002) surveyed 204 administrators and teachers in North Dakota in an effort to discover if a relationship existed between teacher preparedness to integrate technology and administrative support of technology integration. The researchers found that there was a statistically significant relationship between teacher preparedness to integrate technology as a tool for teaching and learning into their classroom and administrative support.

Because of the awareness that the role of the school administrator must change from a building manager to an instructional leader, state and national technology standards for administrators were created. In 1995 the Mississippi Technology Standards for Administrators (MSTA) (1995) was created. MSTA states its general goal as, "every Mississippi administrator is a leader who initiates, promotes, and supports the effective integration of technology into the educational environment" (MSTA, ¶ 1). These standards call for administrators to be the leaders in integrating technology into the school curricula, as well as providing technology related professional development for teachers. Specifically MSTA indicated that an administrator should be one who "initiates

and supports professional development processes that produce effective uses of technology in teaching and learning" (¶ 3). The standards also require serious consideration by educational administrators who are working to make the use of technology in their schools more effective by stating that the administrator must ensure "the implementation of district, school, and classroom strategies that prepare students to be successful in a technological world" (¶ 6).

Seven years after the creation of the MSTA (1995), the NETS·A suggested that administrators nationwide provide the strong technology leadership necessary for successful technology integration (Bosco, 2001). Hopkins (2001) stated, "The release of technology standards and competencies for school administrators is a step toward the day that every school will be headed by a tech-savvy principal" (p. 1). School administrators must be able to lead in seamlessly integrating technology into their learning environments and curricula in order for the full influence of technology to be realized by their students.

Administrators play a critical role in determining how technology will be used in schools. As Bosco (2001) noted, "In order for teachers and students to fully use technology to achieve academic goals, they need the support, leadership, and vision of tech-savvy administrators" (¶ 8). Starr (2001) identified six behaviors in which administrators can model in order to provide this leadership: (a) supporting teachers who want to participate in conference and professional development, (b) utilizing e-mail to communicate with staff, (c) requiring that lesson plans be submitted through e-mail, (d) asking parents to add e-mail addresses on medical forms, (e) insisting that all teachers

create a class Web site, and (f) attending conferences to see what other schools, teachers, or principals are doing to integrate technology.

Granger, Morbey, Lotherington, Owston, and Wildeman (2002) conducted a study of schools that had been successful in technology integration. Among other factors, the authors found that schools with principals who encouraged teachers to engage in technology training were the most highly successful in technology inclusion. This enthusiastic support of principals "allowed technological innovations to progress in an atmosphere of shared commitment" (p. 487).

Brand (1998) identified key elements that administrators must provide teachers for preparation of the instructional use of technology. These elements include (a) providing sufficient time for teachers to learn to use the technology effectively; (b) taking into account individual differences, supplementing strengths, and being sensitive to each teacher's expertise and experience; (c) flexibility in content and opportunities; (d) support from someone, experienced both in the technology and its use in the curriculum, who can coordinate and guide others in its use; (e) an environment of collaborative learning with peer coaching and modeling; (f) support, recognition, and incentives for teachers' commitment to the use of computers; (g) ongoing and sustained training and development; (h) engaging the teachers intellectually and professionally; and (i) encouragement from administration in the technological development of teachers by scheduling time for practice, observation, and meetings.

Technology integration involves more than simply placing equipment in labs and classrooms; the administrator is critical in providing leadership to encourage teachers to

use other technology resources (Lamb, 2001). When administrative leadership is not provided, classroom technology is often used in unsuitable manners or the technology is not used at all by students and teachers. Strudler, McKinney, Jones, and Quinn (1999) included the administrator as a possible obstacle to moving forward with true technology integration. However, Bryan (1998) identified administrative leadership as the most important factor affecting successful integration of technology. It is up to the principal to have a vision of how the school should utilize technology integration and to furnish the leadership necessary to achieve this objective (Kicklighter, 2004).

Administrator Attributes and Technology Integration

The reasons some administrators willingly accept educational technology integration and others do not has been a controversial issue that has been studied for the past decade. For example, several studies have been conducted on principals' attitudes, perceptions, and self-efficacies toward technology (Daiber, 1990; Havice, 1999; Miglinorino, 2002; Tirozzi, 2001), technology related skills and training (Baylor & Ritchie, 2002; Dawson & Rakes, 2003), and demographic variables such as age, number of years as an educator, and gender (Daiber, 1990; Dawson & Rakes, 2003; Kicklighter, 2004; Lyles, 2003; Miglinorino, 2002). Many of these studies compare or use these variables as predictors of technology use, technology integration, teacher perceptions, and other technology related outcomes.

In his study, Kicklighter (2004) investigated the relationship between both the technological innovations within schools and the characteristics of the school principal. His focus was to determine if principals' innovativeness, sex, age, size of school, type of

school system, and attitudes toward technology had any effect on the technology access or use in their schools. He hypothesized that principals with a high degree of innovation and a positive computer attitude may foster an increase in computer utilization by the teachers within schools. However, he found no data to support this hypothesis, although, he did conclude that both the vision and leadership of the administrator did encourage increased computer use.

In her study on distance education, Havice (1999) examined administrators' attitudes and perceptions toward technology to determine what factors affected their support of distance education. She found a strong, positive relationship between administrators' attitudes toward technology and their willingness to support distance education.

Carter (2003) and Daiber (1990) also studied certain principals' characteristics as variables to predict technology perceptions. Daiber (1990) investigated why some principals had not encouraged their industrial arts' teachers to implement technology education. He collected data on principals' knowledge of technology, perceptions toward technology, gender, and school size. He found significant differences between school size and technology education programs as well as an association between principals' knowledge and their attitudes toward implementing the technology-based programs. Carter (2003) examined the perceptions of the administrator and attitudes toward technology-based education to see how these variables affected the administrator's support of such programs. Perceptions in her study were composed of interrelated variables such as exposure to technology-based education, peer influence and the

perceptions of peer attitude, and peer perceived support for technology-based education. Carter concluded that attitudinal differences could not be explained by a single variable. However, she did find that administrators believed that technology training for faculty is both necessary, yet insufficient. She also found that a strong, positive relationship existed between attitude toward technology and administrator's willingness to support technology.

Other researchers have found that teachers' attributes, and not principals', are the main instigators of technology integration. Baylor and Ritchie (2002) examined what a principal does for technology within the school and how the principal affects technology use in the classroom. In their study, 12 schools were investigated for the effect that an administrator's technology planning, leadership, professional development, curriculum alignment, technology use, technological skill, and openness to change had on teacher's technology skills, morale, and perceptions of technology's effect on learning. The findings of the study showed that these results were mainly predicted by the characteristics of the teacher and not the administrator. However, teacher morale was predicted by both the amount and type of professional development received in the area of technology integration, which could be predicted by the characteristics (e.g., technology use and knowledge of technology) of the school leader.

Technology Skills of the Administrator

According to Anderson and Dexter (2005), school reform often represents a series of top-down measures beginning with a school administrator's knowledge of technology and trickling down to life-long success for a student. Therefore, the principal should be

an agent that originates the spiral of change that will ultimately lead to student success (Fullan, 2002).

Moreover, Dawson and Rakes (2003) stated, "no matter how much training teachers receive to prepare them for technology integration, most will not successfully employ the training without the leadership of the principal" (p. 30). Proctor and Livingston (2001) also suggested that it is important that this leadership includes an administrator who is knowledgeable of how technology works. Daniel and Nance (2002) found that an effective administrator should be active in not only incorporating but also in understanding technology integration. To be effective, administrators need to have a firm grasp on how technology works, how it can be used, and how it increases productivity within their own lives.

Findings of school improvement studies point to the importance of principals' leadership in such efforts (Anderson & Dexter, 2005; Starr, 2001; USDE, 2000). Starr (2001) reported that the most effective way school administrators can promote technology use is to be knowledgeable and effective users of technology. The National Center for Education Statistics, NCES, (USDE, 2000) also reported that principals, who are instrumental in modeling technology, are less likely to be barriers to teachers' use of technology than principals who do not use technology or those who are technology illiterate. Principals who understand technology can better provide teachers with guidance for its use. Anderson and Dexter (2005) acknowledged that leadership from the principal is an important influence on a school's effectiveness. In their study, the researchers examined technology integration in schools and the actions that principals

took toward making the integration successful. The researchers found that technology leadership played a pivotal role in technology related outcomes, such as increased technology related professional development and increased technology integration within the classroom. Effective technology leadership included both involvement and interaction with technology. Leaders in the study who were more involved with technology - using e-mail, creating school web sites, and generally spending more time with technology – were the leaders whose technology efforts were less threatened to fail.

Kincaid and Felder (2002) also found that principals who were strong advocates and users of technology exhibited leadership that was instrumental in integrating technology. They found that administrative modeling was a factor to integrating technology. NETS·A (2001) also suggested that an administrator's technology leadership responsibilities should be supported not only in word but also in deed; administrators must value and model technology use. Administrators need to not only use technology for administrative purposes, but they also need to know how to use the hardware and software that they expect their teachers to use (Starr, 2001). Accordingly, administrators must first understand and then promote highly effective practices in technology; thus ensuring that the technology vision is integrated into an overall educational vision (Golden, 2004). Before principals can facilitate this vision for their schools, they must comprehend technology on a personal level (Tooms, Acomb, & McGlothlin, 2004).

Administrators must foster a vision of technology integration in their schools' curricula, create a curricular design in instructional technology, apply technology to professional practices, give direction in integrating technology in administrative duties,

evaluate a school's technology program, and understand the legal, social and ethical issues dealing with technology (Daniel & Nance, 2002). It is no wonder that effective school administrators are often those who welcome change in their schools' cultures in ways that include integration of technological innovations (Fullan, 2002).

Several researchers (Awalt & Jolly, 1999; Testerman, Flowers & Algozzine, 2002) believe that principals are less knowledgeable and skilled in technology then their cohorts. Testerman, et al. in their study on the basic technology competencies of educational administrators asked administrators for self-assessments of their skills in technology related domains ranging from basic computer skills to troubleshooting. Their findings indicated that school principals' mean scores were lower than graduate students, assistant principals, and central office personnel. However, the findings of the study also showed that even though school administrators lagged behind others in regards to technology skills, those same administrators scored higher in recognizing the importance of their involvement in technology use within classrooms.

Awalt and Jolly (1999) reported that many school leaders are not prepared to guide and manage technology initiatives because they lack the knowledge of technology. The researcher stated, "For an administrator who was born and completed formal training before the educational technological revolution started, few opportunities to acquire a 'knowledge base' in the leadership of technology initiatives are available" (p. 2). Awalt and Jolly referred to this knowledge base as "an inch deep and a mile wide" (p. 2), meaning administrators must know a targeted amount about a great many issues related to technology. Administrators must learn technology in a broad way. They do not have

to be masters of all types of technology use in order to be effective leaders; however, they do need a vocabulary of technology terms as well as model technology use for their teachers, parents, students, and community members (Fryer, 2002).

School principals do not need to have a deep understanding of the technology, but their knowledge base must be vast enough to make positive, insightful, and informed decisions in a school district. Schools need administrators who can serve as knowledgeable technology leaders (Daniel & Nance, 2002) in the many different areas of technology use, integration, and management so as to be able to "provide leadership and make informed decisions regarding its implementation and use in their educational situations" (Awalt & Jolly, 1999, p. 4).

Technology Training/Experience of Administrators

In order for administrators' involvement in technology integration to be effective, school administrators need the necessary training to acquire the skills necessary to understand technology's use. More important, because of the power and influence of the TSSA Collaborative and ISTE, there are career implications for principals, their leadership preparation courses, and the types of professional development they receive (Whale, 2003). There are increasing beliefs by lawmakers that administrators be held accountable for the success of technology within their schools (Daniel & Nance, 2002).

The SREB Leadership Initiate (Norton, 2002) called for universities to redesign administrative leadership programs so that they would "breed principals who know how to lead schools to the highest levels of student achievement" (p. 1). Recommendations of the Leadership Initiative called for universities to emphasize technical knowledge and

field experience as well as train future principals to use technology for management and instructional purposes. In their study on the preparedness of first-year educators, Strudler, et al. (1999) reported that universities were not adequately preparing educators to use technology. The authors recommended that educational programs should increase technology integration into pre-service courses and field experiences. Whale (2003) also found that there is an increasing awareness for the need to integrate technology into school leadership programs. He stated, "It is likely that technology requirements in leadership programs will become more robust and common as researchers continue to study the issue" (p. 5).

On-line and face-to-face professional development activities for school administrators offer ways to keep current in their field, maintain certification, and network with other administrators. However, Whale (2003) found that the technological professional development requirements for school administrators have received less attention to long-term learning than other areas of education. He concluded, "Structured professional development is not the primary method of learning new technologies for principals" (p. 4). Ritchie (1996) found that most administrators do not get their technology training and experience from professional development but through self-instruction, vendors, school personnel, consultants, or external courses. Testerman, et al. (2002) stated, "If educational leaders continue to demonstrate developmental lags in their knowledge and technology competence, the expected benefits of innovative technology practices will likely be unrealized" (p. 60).

Effective technology training for administrators is a professional development issue that K-12 schools must consider. Whale (2003) suggested that effective training opportunities for principals include (a) study groups, (b) seminars, (c) reading and discussion groups, (d) presentations by experts, (e) attendance at national or state conferences, (f) opportunities to become trainers themselves, and (g) face-to-face and online professional development programs that utilize or focus on technology integration.

A principal who is poorly trained in how to use technology will make poor decisions regarding technology integration, spend a lot of money on unnecessary technology related materials, or not provide technology supplies at all (Wisniewski, 1999). Administrators must understand technology before they can budget for, plan for, distribute appropriately, and replace the technology that is best suited for the needs of their schools. Tirozzi (2001) suggested that principals should be given the training to acquire the skills necessary to weigh in on technology purchasing decisions, as well as the vision to understand both the promise of technology and the consequences of using technology inappropriately. He stated, "Principals must ensure that students have adequate face-to-face interaction and remain vigilant about the dangers of over reliance on any medium" (p. 3). In essence, principals must attain the technological skills needed to balance technology with the many other resources that are required for student learning. If these skills are not attained, there is a danger in cutting other resources to buy computers that will not or cannot be used properly.

School leaders face an especially daunting challenge in keeping up with computer technology; they must themselves keep pace with the fast changes in technology (Lyles,

2003). For example, Dawson and Rakes' (2003) concluded in their investigation that training received by principals significantly influenced the integration of technology into the classroom. The findings in the study indicated that principals who received training that focused on integrating technology into their curricula led schools with higher levels of proper technology integration than those who received other types of training. Furthermore, the authors found that principals who received training customized to their needs led schools with higher levels of integration than those who received the basic technology training. The study also showed that principals who participated in more than 51 hours of technology training led schools that had significantly higher levels of technology integration than those with less than 51 hours of training. From these findings, the researchers concluded that the more sustained the principal's training experiences and the more those experiences were tied to technology integration and the principal's needs, the more progress the school was likely to make toward technology integration. Consequently, the type and amount of technology training principals received did make a positive difference in schools. Without well-trained, technology capable principals, the integration of technology into schools' curricula will remain incomplete.

Administrator Attitudes and Perceptions toward Technology

Maxwell (2003) has asserted that, "Great leaders understand that the right attitude will set the right atmosphere, which enables the right responses from others" (p. 3). Tooms, et al. (2004) found that at the heart of integrated technology is the commitment and perception of the school leader. They stated, "Before principals can do their job to

facilitate a cultural embrace of technology, they need to be able to think about what technology means to them" (p. 15). Moreover, before principals can facilitate a technology vision, they must perceive the vision as positive and useful.

Several studies have been conducted regarding school administrators' attitudes and perceptions toward technology and technology related variables. For example, in her study on the perceptions and attitudes of public school administrators toward technology-based education, Carter (2003) found a strong, positive relationship between attitude of the administrator toward technology education and the administrator's willingness to support technology-based education in the future.

In her study on distance education, Havice (1999) investigated administrators' attitudes and perceptions toward technology to determine what factors affected their support of distance education. She did find a strong, positive relationship between administrators' attitudes toward technology and their willingness to support distance education. She also found that attitudes toward distance education were higher among mid-level and upper level administrators than attitudes of lower level administrators. A third finding in this study was that both peers and experiences influence administrators' attitudes toward distance education. Finally, she concluded that administrators, regardless of attitude (positive or negative), believe distance education for faculty is both necessary and insufficient.

Haack (2003) conducted a study to compare the perceptions of principals who had completed technology related training to those who had not participated. He examined variables related to principals' perceptions of their own technology skills, their ability to

satisfy administrator technology standards, and the ability of teachers under their supervision to satisfy teacher technology standards. The findings of his study provided evidence that the perceptions of technology-trained administrators were significantly more positive than the perceptions of untrained administrators toward their basic technology skills and abilities to satisfy administrative and teaching technology standards.

Miglinorino's (2002) study on educators' attitudes toward the integration of an electronic grading software into the classroom found that administrators' attitudes do impact teachers' attitudes. He found that the teachers were more likely to use the electronic grading software when they were led by administrators with positive attitudes toward the software and who provided time and training for the teachers to learn the new software.

Administrator's attitude toward technology correlates with the teacher's attitude toward technology (Guevara, 2004). A teacher whose principal is against the use of technology will less likely integrate technology into the curriculum. Starr (2001) argued,

> Principals play a big role in setting the climate of a building. Teachers who are on the fence—or think they don't have time to get involved with technology—think twice when they sense a positive attitude on the part of the administration. (p. 1)

Daiber (1990) investigated several variables (e.g., principals' knowledge of technology education, their attitudes toward implementing technology education programs, and their preferences for learning outcomes) that might influence the

principals' willingness to implement technology education. He found that the principals' willingness to implement technology education were influenced by the principals' knowledge of technology education, the principals' attitudes toward technology education, and their preference for learning outcomes.

The attitudes and perceptions of school administrators toward technology related variables have been found to influence technology integration within schools. Studies regarding the attitudes and perceptions of school administrators toward technology have been found to influence technology related outcomes such as distance education (Havice, 1999), technology-based education (Carter, 2003), teacher attitudes (Guevara, 2004; Miglinorino, 2002), and a principal's willingness to implement technology education (Daiber, 1990). In addition, Haack (2003) provided evidence that technology-training influenced the perceptions of administrators toward technology use and technology integration in schools.

Demographic Variables Related to Administrators and Technology

Studies have been conducted relating to technology factors and administrators' demographic characteristics such as years of computer experience (Miglinorino, 2002), years of teaching experience (Miglinorino, 2002), years as an administrator (Dawson & Rakes, 2003; Lyles, 2003; Miglinorino, 2002), age of the administrator (Dawson & Rakes, 2003; Lyles, 2003; Miglinorino, 2002), and sex (Daiber, 1990; Dawson & Rakes, 2003; Haack, 2003). For example, Miglinorino (2002) found that years of computer experience, age, and years of teaching experience were statistically significant predictors of educators and administrators' attitudes toward technology. Educators and

administrators with more years of computer experience displayed a more positive attitude than those with less years of computer experience. However, the age of the educator and the years of teaching experience both displayed a negative regression coefficient (e.g., as age and years of teaching experience increased, attitude toward technology became more negative).

Dawson and Rakes (2003) investigated whether the age and gender of the school principal and the number of years as an administrator influenced the integration of technology into the classroom. They found that age did statistically significantly affect computer integration, where years as an administrator or gender did not. Principals whose ages were 41 through 55 were found to lead schools that integrated technology more effectively than principals younger than 41 and older than 55.

Lyles (2003) examined principals' perceptions concerning the usefulness of computers in the classroom and need for professional development. Findings in this study indicated no significant evidence that the variables age and years of experience had any influence on perceived usefulness of computers in the classroom and integration of computer instructional technology. Age and years of experience also had no influence on the principal's perceived need for professional development to integrate computer instructional technology in the classroom and the adequacy of equipment and associated material to integrate computer instructional technology in the classroom.

Haack's (2003) study compared principals' gender and access to technology to their perceptions of their own technology skills, their ability to satisfy administrator technology standards, and the abilities of teachers under their supervision to satisfy

teacher technology standards. The findings of his study did not show that gender or access to technology significantly influenced the perceptions of principals in their basic technology skills or abilities to satisfy administrative and teaching technology standards. Haack's (2003) study compared principals' gender and access to technology to their perceptions of their own technology skills, their ability to satisfy administrator technology standards, and the abilities of teachers under their supervision to satisfy teacher technology standards. The findings of his study did not show that gender or access to technology significantly influenced the perceptions of principals in their basic technology skills or abilities to satisfy administrative and teaching technology standards. Daiber's (1990) study also found no significant difference between gender of administrators and the degree to which technology was integrated into programs at their schools.

Several researchers have found opposing results in regard to school administrators' demographic characteristics and technology related variables. Years of computer experience in Miglinorino's (2002) study was found to positively influence administrators' attitudes toward technology, whereas age and years of teaching experience negatively influenced attitudes. Dawson and Rakes (2003) also found that as the age of the administrator increased, computer integration within the school decreased. Yet, Lyles (2003) found that years of experience and age had no affect on administrators' perceptions toward technology. In addition, Diaber (1990) and Haack (2003) found that the gender of the school administrator had no influence on technology related variables.

Summary of the Review of Related Literature

Technology integration is acknowledged (Blaylock & Newman, 2005; Guevara, 2004) as being an important part of school climate. Castro, et al., (2004) have found that when technology is integrated properly into the school curriculum, student motivation and engagement are evident. In order for the appropriate integration of technology to be attained, support from the school administrator is mandatory (USDE, 2000).

Instead of relying on teachers to be the only initiators of technology within classrooms, school administrators must be involved at all levels of implementing technology within their schools' curricula (Daniel & Nance, 2002). State (MSTA, 1995) and national (ISTE, 2002; SREB, 1997; TSSA, 2001) technology standards have been created that call for administrators to become leaders in technology integration. With the influence that these technology standards bring to education, administrators and principals are faced with the challenge of becoming more knowledgeable of technology and its use within their schools' curricula.

With the introduction of National Educational Standards (ISTE, 2000; ISTE 2002), which were meaningful not only for students and teachers, but also for school administrators, principals, and directors, new expectations have been added to the school leader's daily responsibilities. Administrators are being required to not only become technology literate, but also as leaders, to effectively integrate technology into the schools' curricula in order for teachers and their students to reap the maximum benefits. Researchers (Anderson & Dexter; 2005; Fullan, 2002; Guevara, 2004; Whale, 2003) have found that technology leadership from the school principal has a significant influence on

a school's effectiveness. Other researchers (Bosco, 2001; Grant, 2005; Mouza, 2003) have found that support of technology integration by the administrator is also crucial to effective integration of technology within the school.

Providing technology related professional development for teachers is another task in which administrators should be actively involved. In order for this type of professional development to be effective, researchers (Hughes & Ooms, 2004; Keller & Bichelmeyer, 2004; Vannatta & Fordham, 2004) reported that the administrator should provide teachers with adequate support. Other researchers (Brand, 1998; Shephard, 2004) have also identified other elements of technology related professional development that administrators must provide teachers for preparation of the instructional use of technology (e.g., sufficient time, individually, flexibility, support, recognition, and reflection).

Even though researchers (Awalt & Jolly, 1999; Testerman, et al. 2002) have found that school principals are less knowledgeable and skilled in technology then their cohorts, the NETS·A (ISTE, 2002) suggested that administrators should model and use technology. Therefore, an administrator's technology leadership responsibilities should be supported not only in word but also through their deeds and actions. Many researchers (Daniel & Nance, 2002; Kincaid & Felder, 2002; Proctor & Livingston, 2001; Starr, 2001), have suggested that administrators who are skilled, knowledgeable, and effective users of technology have been found to positively effect technology integration within their schools.

Technology training and professional development provide opportunities for school administrators and principals to help keep current in their field, maintain certification, and network with other administrators. In fact, Dawson and Rakes (2003) found that the training that principals received significantly influenced the integration of technology within schools. However, researchers (Ritchie, 1996; Testerman, et al., 2002; Whale, 2003) have found that the technology related professional development for school administrators to be deficient when compared to that of other educators. Ritchie (1996), for example, found that school administrators often received their technology training and experience not from adequate professional development but through self-instruction, vendors, school personnel, consultants, or external courses. Whale (2003) suggested that effective training opportunities for principals include (a) study groups, (b) seminars, (c) reading and discussion groups, (d) presentations by experts, (e) attendance at national or state conferences, (f) opportunities to become trainers themselves, and (g) face-to-face and online professional development programs that utilize or focus on technology integration. Whale (2003), Norton (2002), and Strudler, et al. (1999) also found that administrative courses taken at universities should integrate technology and prepare school administrators for this important task.

Several researchers have concluded that the attitudes and perceptions of school administrators toward technology have been found to influence technology related outcomes. For example, Miglinorino's (2002), Guevara (2004), and Starr (2001) found that administrators' attitudes do impact teachers' attitudes. Others (Carter, 2003; Daiber, 1990; Havice, 1999) have found that the attitudes and perceptions of school

administrators influenced the likelihood that technology would be integrated into their school curricula.

Studies relating to technology factors and administrators' demographic characteristics have been conducted during the past several years (Dawson & Rakes, 2003; Daiber, 1990; Haack, 2003; Lyles, 2003; Miglinorino, 2002). However, other researchers have found opposing results in regard to school administrators' demographic characteristics and technology related variables. Years of computer experience in Miglinorino's (2002) study was found to positively influence administrators' attitudes toward technology, where age and years of teaching experience negatively influenced attitudes. Dawson and Rakes (2003) also found that as the age of administrators increased, computer integration within schools decreased. Yet, Lyles (2003) found that years of experience and age had no affect on administrators' perceptions toward technology. In Daiber (1990) and Haack's (2003) studies, both researchers found that gender did not affect technology outcomes within schools.

CHAPTER III

METHODOLOGY

The purpose of this study was to examine Mississippi Career and Technology School Administrators' attitudes and perceptions toward technology integration. A second focus was to determine Mississippi Career and Technology School Administrators' knowledge and use of the NETS·A.

This chapter describes the methodology and procedures used to conduct this study. This chapter includes the following sections: research design, variables of the study, population, instrumentation, data collection, and data analysis.

Research Design

The research design for this study was descriptive and correlational. Descriptive methods were appropriate for this study since answers were sought about administrator's attitudes and perceptions toward technology integration. According to the Center for Applied Research in Technology Education (CARTE, 2001), descriptive research uses data derived from surveys and are used to gather the information to inform the conclusions and recommendations of the study. Moreover, according to Fraenkel and Wallen (2003), correlational studies investigate the possibility of a relationship among two or more variables without an attempt to influence any variable. A correlational study compares different variables from the same group and explains how the two variables

vary together. Also, according to Gall, Gall, and Borg (2003), correlational studies describe the degree to which two or more quantitative variables are related. Since, this study examined the relationship between the variable Mississippi Career and Technology School Administrators' attitudes and perceptions toward technology integration and the variables administrators' knowledge and use of the NETS·A, administrators' demographic characteristics, and administrators' experience and training with technology integration, a correlational design was the logical and feasible design to use.

Variables of the Study

The variables described in this study are (a) Mississippi Career and Technology School Administrators' attitudes and perceptions toward technology integration, (b) administrators' knowledge and use of the NETS·A, (c) demographic characteristics, and (d) experience and training with technology integration. The variable, Mississippi Career and Technology School Administrators' attitudes and perceptions toward technology integration, was correlated with (a) administrators' knowledge and use of the NETS·A, (b) demographic characteristics, and (c) experience and training with technology integration. The variables Mississippi Career and Technology School Administrators' attitudes and perceptions toward technology integration and knowledge and use of the NETS·A are continuous or interval. The variables age, years as an administrator, and experience and training with technology integration are ordinal, while the variable sex is nominal.

Population

The population for this study consisted of the 144 Career and Technology School Administrators in Mississippi. Participants' names and addresses were obtained from the Mississippi Department of Education. According to the Mississippi Department of Education (MSDE, 2006), there are a total of 154 administrators, principals, and directors who fit the description of Career and Technology School Administrators as defined in this study. However, there was an actual population of 144 individuals who were invited to participate in this study. A random sample of 10 individuals was obtained from the total population available to participate in a pilot study (described below). According to the MSDE, the mean age of the Career and Technology School Administrators in Mississippi is 51.2 years. The majority, 56%, of administrators' ages lie in the range of 50-59 years old. Females constitute 32% of the Career and Technology School Administrators in Mississippi. The mean years employed as an administrator or principal is 17.06 years.

Instrumentation

A survey instrument consisting of three parts was used in this study (see Appendix B). Part I of the instrument was designed to collect demographic data and determine administrators' experience and training with technology. Part II is the "Survey of Administrative Attitudes and Perceptions toward Technology Integration," and Part III is the "Administrator Technology Self-Assessment Tool."

The "Survey of Administrative Attitudes and Perceptions toward Technology Integration" was developed by Havice (1999) and was designed to identify

administrators' and principals' attitudes and perceptions toward technology integration. The "Administrator Technology Self-Assessment Tool" was developed by Whale (2003) and was designed to determine administrators' and principals' use and knowledge of the NETS·A. Whale developed the tool by adapting the NETS·A's 16 principal-specific tasks. These 16 tasks are subdivisions of the six standards of the NETS·A (see Appendix A). The 16 tasks focus on ways the school administrator, principal, or director can lead instructional staff members to better integrate technology within the curriculum.

Part I of the instrument contains two sections; the first section contains questions related to demographic and background information of the administrators (e.g., age, sex, and number of years as an administrator). Part I, section I of the instrument also includes one question that was used to determine the respondents' awareness of the National Educational Technology Standards for School Administrators.

Part I, section II is entitled "Experience/Training with Technology Integration." There are 5 questions which led the respondent to identify how much experience and training they have attained, including (a) university courses, (b) face-to-face professional development programs, (c) online professional development programs, (d) conferences that utilized technology-integration, and (e) other training opportunities (e.g., study groups, discussion groups, seminars, or training with consultants) that utilized or focused on technology-integration. This section also included 1 question pertaining to how many times the administrator has been a presenter or teacher of technology related training. Survey respondents chose 0, 1, 2, 3, or 4+ for questions 1 (courses taken at a university), 4 (conferences attended), 5 (presenter at technology training), and 6 (other training

opportunities). Respondents addressed questions 2 (days in face-to-face professional development) and 3 (days of online professional development) by choosing 0, ½ - 3, 4 – 6, 7 – 9, or 10+. When scoring this instrument, points were assigned 0-4 for each question. The higher the overall score, the more an administrator has had experience and training with technology integration. An administrator's total score on this section of the instrument ranged from 0 – 24.

Part II, "Survey of Administrative Attitudes and Perceptions toward Technology Integration," was adapted from the "Survey of Administrative Attitudes and Perceptions toward Technology-Based Education" (Havice, 1999). The "Survey of Administrative Attitudes and Perceptions toward Technology Integration" consisted of 20 postulates, each reflecting a negative or positive attitude regarding technology integration (e.g., Technology has the potential to affect society in a positive manner). Survey respondents addressed each statement using a 5-point Likert-type scale: strongly disagree; disagree; uncertain; agree; strongly agree. When scoring Part II of the instrument, the researcher assigned points 1-5 with the higher the score being the more favorable the attitude and perception toward technology integration. An administrator's total score on the instrument ranged from 20 – 100. Ten questions in the survey are reversed; however, when scoring the instrument, all questions were positively stated.

Part III of the survey instrument, the "Administrator Technology Self-Assessment Tool" (Whale, 2003), consisted of 16 statements related to administrators' use and knowledge of the NETS·A (e.g., I secure and allocate technology resources to enable teachers to better meet the needs of all learners on campus). Survey respondents

addressed each statement using a 5-point Likert-type scale: strongly disagree; disagree; uncertain; agree; strongly agree. When scoring this instrument, the researcher assigned points 1-5 with the higher the score being the more knowledge and use of the NETS·A. An administrator's total score on the instrument ranged from 16 – 80.

Likert (1932) developed the Likert Scale as a direct measure of attitudes. Since both Part II and Part III of the instrument used in this study measured attitudes and perceptions, a Likert Scale was the appropriate scale to use.

Validity and Reliability of the "Survey of Administrative Attitudes and Perceptions toward Technology Integration"

Two institutions were used in a pilot study to determine the reliability and validity of Havice's (1999) survey instrument. Based on data from her pilot study, item and total score correlation coefficients were calculated for each of the 20 postulates. According to Havice, all items were significantly correlated with total test score (p value = .0001; r value ranging between .48 and .81), with exception of postulate number 20. Item 20 was not significantly correlated with the total score as indicated by a p value of .19 and r-value of .09. Havice reported a calculated Cronbach alpha of .91. (See Appendix C for a summary of survey variables, the question numbers that were used to collect the data needed to analyze the variables and the Cronbach alpha for each part of the instrument).

As reported by Havice (1999), the "Survey of Administrative Attitudes and Perceptions toward Technology-Based Education's" design utilized a modified, three-stage Q-sort process, using 15 experts as judges. Following the initial development stage

and the Q-sort process, interviews were conducted with six individuals, three familiar with technology-based education (n=3) and three unfamiliar with technology-based education (n=3). These individuals had not been participants in the Q-sort process. The purpose of these interviews was to see if the interpretations of the 20 postulates were consistent with the meaning intended by the researcher. According to Havice, the six interview participants reported the postulates consistent. Each postulate measured what the researcher intended it to measure.

The only adaptations made from Havice's (1999) instrument "Survey of Administrative Attitudes and Perceptions toward Technology-Based Education's" and the instrument, "Survey of Administrative Attitudes and Perceptions toward Technology Integration" that was used in this study was the title of the instrument and the wording "technology-based education" to "technology integration". Therefore, the reliability and validity of the instrument were not significantly altered.

Validity and Reliability of the "Administrator Technology Self-Assessment Tool"

As reported by Whale (2003), the survey tool was pre-tested and reviewed by 21 current school administrators. The administrators included principals, assistant principals, and athletic directors who had characteristics similar to the target population. Two statisticians, the Institutional Review Board of the university, the executive directors from the TSSA Collaborative, and two professors of educational administrators formed a second review group. Construct validity was assessed with a factor analysis. The factor analysis validated the six constructs – leadership and vision; learning and teaching; productivity and professional practice; support, management, and operations; and

assessment and evaluation- as they were organized in the NETS·A. Four groups emerged from the analysis with an eigen value over 1 and which together explained 68% of the variance. Tasks 30, 37, 38, and 39 fit together and validate the construct assessment and evaluation standards. Tasks 27, 28, 29, and 40 form a leadership core. Tasks 31, 33, 34, and 35 create a group related to professional development of staff members and personal productivity. The remaining tasks, 32, 36, 41, and 42 relate to policy and records. Cronbach alphas were calculated for the four constructs as .76, .78, .74, and .63, respectively. A calculated Cronbach alpha of .89 was found for the entire 16 questions of the instrument. (See Appendix C for a summary of survey variables, the question numbers that were used to collect the data to analyze the variables, and the Cronbach alpha for each part of the instrument).

Permission to use the "Survey of Administrative Attitudes and Perceptions toward Technology Integration" and the "Administrator Technology Self-Assessment Tool" was obtained from Dr. Pamela Havice and Dr. David Whale, respectively (see Appendix D).

Pilot Study

A pilot study was conducted to help detect any problems that should be remedied before conducting the actual study. Gay and Airasian (2000) have described a pilot study as a "dress rehearsal" (p. 111) of the actual study. The authors noted that all or part of the research study may be tried out. The purpose of the pilot study was to identify areas of the study that might need to be revised or changed before conducting the actual research. The goal of a pilot study is to "identify unanticipated problems or issues"

(p.111). In essence, changes to the proposed plan can be made to accommodate any problems discovered prior to conducting the actual research study.

After obtaining approval from the Institutional Review Board (IRB) at Mississippi State University (see Appendix E), 10 Mississippi Career and Technology School Administrators were randomly selected from the 154 in the total population. These 10 administrators, who were not included in the actual study, were contacted via US ground mail and asked to participate in the pilot study (see Appendix F). The administrators were asked to respond to the instrument in the same manner that the actual participants were asked to do. A three-part survey instrument, the "Survey of Administrative Characteristics and Experience/Training with Technology Integration," the "Survey of Administrative Attitudes and Perceptions toward Technology Integration" and the "Administrator Technology Self-Assessment Tool," was sent to the administrators. The participants needed approximately 10-15 minutes to complete the instrument. The participants were asked to complete and return the survey in a self-addressed stamped envelope. After the participants returned the instrument, data were analyzed in order to answer all of the research questions and to test the statistical procedures. Appendix F contains a copy of the letter that was sent to the participants in the pilot study.

An assessment form was provided to the participants in the pilot study with instructions to review each statement in the survey instrument for clarity, preciseness of instructions, and appropriateness of content. Participants in the pilot study were asked to list unclear statements on the assessment form. A space was provided in each section of the assessment form for participants in the pilot study to make comments, suggestions,

and recommendations as they deemed appropriate. The participants needed approximately 5-10 minutes to complete the survey instrument. Based on information gathered in the pilot study, the researcher found that it was not necessary to make revisions to the instrument. Appendix F contains a copy of the assessment form that participants used in the pilot study.

Data Collection

The names and addresses of the Mississippi Career and Technology School Administrators were obtained from the 2006 Mississippi Department of Education Directory. Prior to mailing, the proposal was submitted to the Institutional Review Board (IRB) at Mississippi State University for approval (see Appendix E). One hundred forty-four Career and Technology School Administrators in Mississippi were mailed, via US ground mail, a letter describing the purpose of the research study with an invitation to voluntarily participate. Also included in the mailing was a memorandum of support for this study from the Associate State Superintendent at the Mississippi Department of Education (see Appendix G). A copy of the three-part survey of "Administrative Characteristics and Experience/Training with Technology Integration," "Administrative Attitudes and Perceptions toward Technology Integration" and "Administrator Technology Self-Assessment Tool" was enclosed. The participants needed approximately 10-15 minutes to complete the instrument. Respondents were asked to complete and return the survey in the self-addressed stamped envelope.

A follow-up sequence was used to collect data for this study. A coded numbering system was used for record-keeping purposes, thereby eliminating duplication of

reminders for respondents. A reminder notice was mailed to respondents two weeks after the initial mailing in an effort to obtain a majority of respondents. According to Ary, Jacobs, and Razavieh (1996), when using a questionnaire, the goal is to have a 100% return rate, "although a more reasonable expectation may be 75-90% returns" (p. 436). A 71% response rate was obtained in this study.

Data Analysis

The data from this study were analyzed using SPSS 12.0. A descriptive statistical analysis using frequencies, percentages, means, and standard deviations was used to describe the demographic variables and to answer research questions 1 and 2.

Correlation coefficients were obtained by using a Pearson product-moment correlation coefficient (*r*) for research question 3 since both variables (Mississippi Career and Technology School Administrators' attitudes and perceptions toward technology integration, and knowledge and use of the NETS·A) are interval level data. According to Fraenkal and Wallen (2003), a Pearson product-moment correlation coefficient is used when "both data are expressed in terms of quantitative scores … and is designed for use with interval or ratio data" (p. 215). Moreover, in his study, Paris (2004) used the Pearson's product-moment correlation coefficient to determine if a relationship existed between Internet access (an interval variable) and attitudes toward the Internet (measured by a Likert Scale).

Scores for both interval variables, Mississippi Career and Technology School Administrators' attitudes and perceptions toward technology integration and knowledge and use of the NETS·A, were collected using Likert Scales in this study. Questionnaires

using Likert Scales are especially difficult to analyze. Statisticians agree that when a single Likert Scale question is used as a variable, the data collected are ordinal; however, if all questions on the Likert Scale are combined into an average or a sum, the data can be treated as interval. Since the responses collected from the Likert Scales used in this study was combined, the variables for research question 3 were both treated as interval.

Correlation coefficients were obtained by using a Spearman correlation coefficient (r_s) and a Point-biserial correlation coefficient (r_{pb}) for research question 4. A Spearman correlation coefficient (r_s) was used when analyzing relationships between the interval variable, Mississippi Career and Technology School Administrators' attitudes and perceptions toward technology integration, and the ordinal variables, age and years of experience. This is consistent with Howell (2002) who noted that "whether data naturally occurs in the form of ranks … an appropriate correlation is Spearman's correlation coefficient for ranked data" (p. 307). In their study, Harrison, Redmann, and Kotrlik (2000) used the Spearman's correlation coefficient to determine if a relationship existed between degree earned (an ordinal variable) and perceived value of information technology (measured by a Likert Scale). A Spearman correlation coefficient was also used for research question 5 since the variable, Mississippi Career and Technology School Administrators' attitudes and perceptions toward technology integration, is interval, and the variable, experience and training with technology integration is ordinal.

A Point-biserial correlation coefficient was used when analyzing relationships between the interval variable, Mississippi Career and Technology School Administrators' attitudes and perceptions toward technology integration, and the nominal variable, sex.

According to Howell (2002), a Point-biserial correlation coefficient is used when "one variable is dichotomous and the other is continuous" (p. 297). Moreover, in his study, Wingenbach (2000) employed Point-biserial correlations to examine interval data (academic achievement) and nominal data (exam delivery method). Table 1 shows each research questions' variable(s), the variable level, and the statistical procedure that was used to answer each question in this study.

Table 1

Summary of Statistical Treatment of Data

Question	Variables	Level	Procedure
1	Attitudes and Perceptions	Interval	Descriptive
2	Knowledge and Use of the NETS·A	Interval	Descriptive
3	Attitudes and Perceptions	Interval	Pearson/Descriptive
	Knowledge and Use of the NETS·A	Interval	
4	Attitudes and Perceptions	Interval	
	Age and Years of Experience	Ordinal	Spearman/Descriptive
	Sex	Nominal	Point-biserial/Descriptive
5	Attitudes and Perceptions	Interval	Spearman/Descriptive
	Experience and Training	Ordinal	

Fraenkal and Wallen (2002) suggested that correlation coefficients below .35 show only a slight relationship between variables and have almost no value in any predictive sense. Correlations between .40 and .60 may have a theoretical or practical

value depending on the content. A correlation of at least .50 must be obtained before any basic predictions can be made. When a correlation of .65 or higher is obtained, predictions may be made that are reasonably accurate. Correlations over .85 indicate a close relationship between variables correlated and are useful in predicting individual performance. The research questions correlate with the following survey instrument items:

Research question one: What are the attitudes and perceptions of Mississippi's Career and Technology School Administrators toward technology integration?

To answer research question 1, the researcher used descriptive statistical analysis using frequencies, percentages, means, and standard deviations to analyze survey items 7-26 on the "Survey of Administrative Attitudes and Perceptions toward Technology Integration."

Research question two: What are Mississippi's Career and Technology School Administrators' knowledge and use of the NETS·A?

To answer research question 2, the researcher used descriptive statistical analysis using frequencies, percentages, means, and standard deviations to analyze survey items 27-42 on the "Administrator Technology Self-Assessment Tool" and to answer the question "Are you aware of the National Educational Technology Standards for School Administrators?" on the demographic and background section of Part I, section I of the survey.

Research question three: Is there a statistically significant relationship between Mississippi's Career and Technology School Administrators' attitudes and perceptions toward technology integration and their knowledge and use of the NETS·A?

To answer research question 3, the researcher used a Pearson product-moment coefficient of correlation to determine if a relationship existed between the interval variable, administrator attitudes and perceptions toward technology integration, and the interval variable, their knowledge and use of the NETS·A. A Pearson product-moment coefficient of correlation is appropriate because both variables yield continuous scores (Corbett, 1999).

Research question four: Is there a statistically significant relationship between Mississippi's Career and Technology School Administrators' attitudes and perceptions toward technology integration and their demographic characteristics (e.g., age, sex, and years of experience as an administrator)?

To answer research question 4, the researcher used a Spearman correlation coefficient to determine if a relationship existed between the interval variable, administrator attitudes and perceptions toward technology integration, and the ordinal variables, age and years of experience as an administrator. A Spearman correlation coefficient is appropriate because one variable, administrator attitudes and perceptions toward technology integration, yields continuous scores and the other variable yields ordinal scores. The researcher used a Point-biserial correlation coefficient to determine if a relationship existed between the interval variable, administrator attitudes and perceptions toward technology integration, and the nominal variable, sex. A Point-

biserial correlation coefficient is appropriate because one variable yields continuous scores and the other yields a dichotomous score (Corbett, 1999).

Research question five: Is there a statistically significant relationship between Mississippi's Career and Technology School Administrators' attitudes and perceptions toward technology integration and their experience and training with technology integration?

To answer research question 5, the researcher used a Spearman correlation coefficient to determine if a relationship existed between the interval variable, administrator attitudes and perceptions toward technology integration, and the ordinal variable, their experience and training with technology integration. A Spearman correlation coefficient is appropriate because one variable yields continuous scores and the other variable yields ordinal scores (Corbett, 1999).

CHAPTER IV

RESULTS

The attitudes and perceptions of school administrators toward technology have been found to influence technology integration within K-12 schools (Carter, 2003; Daiber, 1990; Guevara, 2004; Haack, 2003; Havice, 1999; Miglinorino, 2002). Knowledge and use of technology by school leaders have also been determined to positively influence their ability to effectively integrate technology in their schools' curricula (Anderson & Dexter, 2005; Dawson & Rakes, 2003; Golden, 2004; U.S. Department of Education [USDE], 2000). Thus, state (MSTA, 1995) and national (ISTE, 2000; ISTE 2002) technology standards have been created to establish the technology skills that school administrators and principals should acquire in order for them to effectively integrate technology into their schools' curricula.

Therefore, the purpose of this study was to examine Mississippi Career and Technology School Administrators' attitudes and perceptions toward technology integration and to determine their knowledge and use of the National Educational Technology Standards for School Administrators (NETS·A). The following research questions guided this investigation:

1. What are the attitudes and perceptions of Mississippi's Career and Technology School Administrators toward technology integration?

2. What are Mississippi's Career and Technology School Administrators' knowledge and use of the NETS·A?
3. Is there a statistically significant relationship between Mississippi's Career and Technology School Administrators' attitudes and perceptions toward technology integration and their knowledge and use of the NETS·A?
4. Is there a statistically significant relationship between Mississippi's Career and Technology School Administrators' attitudes and perceptions toward technology integration and their demographic characteristics (e.g., age, sex, and years of experience as an administrator)?
5. Is there a statistically significant relationship between Mississippi's Career and Technology School Administrators' attitudes and perceptions toward technology integration and their experience/training with technology integration?

The research design for this study was descriptive and correlational. The results of the three-part survey instrument, "Survey of Administrative Characteristic and Experience/Training with Technology Integration," the "Survey of Administrative Attitudes and Perceptions toward Technology Integration" and the "Administrator Technology Self-Assessment Tool" were utilized to answer the research questions posed in this study. A pilot study was conducted prior to conducting the actual research study.

Data were collected from 102 (71%) participants from the actual population (N=144). This return rate was achieved through two survey rounds. Seventy-eight (54.1%) respondents returned the survey in the initial mailing, and twenty-four (36.4%)

respondents returned the survey in the follow-up mailing (see Table 2). Eight of the administrators who participated in the study requested a copy of the summary from the study.

This chapter includes a description of the survey results and the analysis of data in this study.

Table 2

Survey Response Rates

Survey Round	Date	Answered Returns	Number Mailed	Response Rate (Percentage)
1	July 24 – August 7	78	144	54.1
2	August 7 – August 19	24	66	36.4
Total	August 19	102	144	70.8

Pilot Study

A pilot study was completed prior to conducting the actual research study. Ten Mississippi Career and Technology School Administrators were randomly selected from the 154 in the total population to complete the instrument used in the study. The participants were asked to review each statement in the survey instrument for clarity, preciseness of instructions, and appropriateness of content. After the participants returned the instruments and evaluation forms, data were analyzed in order to answer the research questions and to test the statistical procedures. Calculated Cronbach alphas of .89, .91, and .82 were found for the scales (a) experience and training with technology,

(b) attitudes and perception toward technology, and (c) knowledge and use of the NETS·A respectively. No problems were noted on the evaluation forms by participants in the pilot study. Therefore, the researcher made no changes on the survey instrument prior to conducting the actual study.

Demographic Data

A description of the demographic characteristics of Mississippi Career and Technology School Administrators relating to age, sex, and years of experience as an administrator is presented in this section. The population in this study consisted of 144 Mississippi Career and Technology School Administrators. Out of 144 surveys that were distributed, 102 were returned for a response rate of 71%. Demographic data were obtained from Part I, Section I of the survey instrument. The results from this section of the survey instrument provided the data necessary to summarize the demographic characteristics of Mississippi's Career and Technology School Administrators. Tables 3 through 6 show the summarized results of the demographic data.

Age of the Respondents

Table 3 shows the classification of Mississippi Career and Technology School Administrators according to age. The age distributions (N=102) revealed that 64 (62.7%) of the respondents were over the age of 50.

Table 3

Frequency and Percent of Administrators by Age

Age	Frequency	Percent
20-29	1	1.0
30-39	13	12.7
40-49	24	23.5
50-59	58	56.9
60-69	6	5.9
Total	102	100.00

Sex of the Respondents

The majority (70.6%) of the respondents are male. The data exhibited in Table 4 is the summarized results of sex of the respondents.

Table 4

Frequency and Percent of Administrators by Sex

Gender	Frequency	Percent
Male	72	70.6
Female	28	27.5
Not reported	2	1.9
Total	102	100

Number of Years as an Administrator

Table 5 shows the distribution for the number of years of experience the respondents have as administrators. The majority of the respondents (54.8%) had ten years or more of experience as an administrator.

Table 5

Frequency and Percent of Administrators by Number of Years as an Administrator

Years	Frequency	Percent
4 years of less	15	14.7
5-9	31	30.4
10-14	24	23.5
15-19	9	8.9
20 or more	23	22.5
Total	102	100.0

Awareness of NETS·A

Survey respondents were asked whether or not they were aware of the National Educational Technology Standards for School Administrators (NETS·A). The data exhibited in Table 6 is the summarized results of awareness of NETS·A as reported by the participants. Almost the same percent of the respondents had heard of the NETS·A (45.1%) as had not (43.1%).

Table 6

Frequency and Percent of Awareness of the NETS·A

Awareness	Frequency	Percent
Yes	46	45.1
No	44	43.1
Not reported	12	11.8
Total	102	100.0

Analysis of Research Questions

The results from the data analysis provided information regarding the selected variables (a) attitudes and perceptions toward technology integration, (b) knowledge and use of the NETS·A, (c) age, (d) sex, (e) years of experience as an administrator, and (f) experience and training with technology integration. Data were analyzed to answer the following five research questions.

Research question one: What are the attitudes and perceptions of Mississippi's Career and Technology School Administrators toward technology integration?

Data reflecting attitudes and perceptions were collected from Part II of the survey, Administrative Attitudes and Perceptions toward Technology Integration (items 7 through 26). Means for these items are listed in Table 7. These items reflect reverse scoring procedures employed through data analysis.

An administrator's total score on this part of the instrument had a possible range of 20 – 100. The overall mean attitude and perception score to the survey was 76.47 (standard deviation 8.07). Therefore, this score represents a favorable attitude and perception toward technology integration of the administrators surveyed.

The range of scores for all 102 respondents was 53 to 94. The strongest level of agreement, with a mean score of 4.67 on the five-point Likert scale, was on item 7, "Technology has the potential to effect society in a positive manner." The item that had the lowest level of support was item 8, "Technology methods should be used only in situations where traditional education is impossible," with an average response of .76. The greatest variance of responses among the responses was for item 10, "Face to face student instructor interaction is imperative for effective education," with a standard deviation of 1.191. The tightest cluster of responses was to item 7, with a standard deviation of .494, "Technology has the potential to effect society in a positive manner." The frequency of responses for the 20 attitudes and perceptions scales is presented in Table 7.

Table 7

Means, Standard Deviations, and Frequencies of Survey Items 7-26 Attitudes/Perceptions

Personal Opinions about Technology Attitudes and Perceptions	Mean	Std Dev	Percentages				
			SD	D	U	A	SA
7. Technology has the potential to affect society in a positive manner.	4.67	.494	0	0	1	31.4	67.6
8. Technology methods should be used only in situations where traditional education is impossible.	.76	.903	47.1	37.3	7.8	7.8	0
9. The quality of most programs integrating technology is questionable at best.	1.43	1.048	18.6	40.2	23.5	14.7	2.9
10. Face to face student instructor interaction is imperative for effective education.	2.44	1.191	2	29.4	13.7	32.4	22.5
11. The technology used in course at my school is inhibiting for the instructor.	1.03	.884	26.5	53.9	10.8	7.8	1
12. Educational methods that are technology-based can be as effective as traditional methods.	4.05	.813	2.9	2	6.9	63.7	24.5
13. Prior to participation, students in technology-integrated programs are not as well prepared as students who engage in traditional methods.	1.45	.951	14.7	41.2	30.4	11.8	2
14. There is little reliable information concerning the effectiveness of technology integration.	1.18	.872	20.6	50	21.6	6.9	1
15. Technology has the capability to serve effectively, otherwise unreachable students.	4.16	.741	0	3.9	8.8	54.9	32.4
16. Technology integration poses a threat to more traditional methods of teaching.	1.20	.965	17.6	59.8	12.7	5.9	3.9

Table 7 (continued)

17. Technology integration is an interesting concept, and justifies further research.	4.20	.758	1	3.9	2.9	58.8	33.3
18. Opportunity for instructor training in technology integration is extremely important.	4.55	.639	0	2	2	35.3	60.8
19. Any course that has a significant history of being taught and revised can be a candidate for technology integration.	4.06	.755	0	3.9	13.7	54.9	27.5
20. End-of-course tests should be conducted in all technology-integrated courses in order to ensure their effectiveness.	2.75	.864	1	8.8	20.6	53.9	15.7
21. Technology integration limits the capability of the instructor to express such teacher characteristics as humor and enthusiasm.	1.38	1.099	17.6	52	9.8	15.7	4.9
22. Highly technical material is well suited to programs integrated with technology	3.64	.931	1	13.7	20.6	50	14.7
23. Regardless of technological improvements, programs integrated with technology will never be as effective as traditional instruction.	1.20	.879	21.6	46.1	23.5	8.8	0
24. Technology integration offers opportunities and experiences for learning that traditional education cannot.	3.78	.897	2.9	6.9	14.7	59.8	15.7
25. The concept of combining technology with traditional instruction is worthwhile.	4.41	.680	1	1	2	48	48
26. Technology integration can be a more stimulating method of learning than traditional instruction.	3.77	.974	1	11.8	19.6	44.1	23.5

Note. Percentages do not always add up to 100 because of rounding. Reversed questions: 8, 9, 10, 11, 13, 14, 16, 20, 21, 23

Research question two: What are Mississippi's Career and Technology School Administrators' knowledge and use of the NETS·A?

Items 27 through 42 of the Administrator Technology Self-Assessment Tool were used to gather the data to answer research question 2, regarding administrators' knowledge and use of the NETS·A. The means for Part III of the survey, Administrator Technology Self-Assessment Tool (items 27 through 42), are listed in Table 8.

An administrator's total score on this part of the instrument had a possible range of 16 - 80. The overall mean knowledge and use score to the survey was 63.71 (standard deviation 7.80). Therefore, this score represented a high knowledge and use of the NETS·A by the administrators surveyed.

The range of scores for all 102 respondents was 35 to 80. The strongest level of agreement, with a mean score of 4.44 on the five-point Likert scale, was on item 41, "I adhere to and enforce among staff and students the districts acceptable use policy and other policies and procedures related to security, copyright, and technology use." The item that had the lowest level of support was item 27, "I participate in an inclusive district process through which stakeholders formulate a shared vision that clearly defines expectations for technology use," with an average response of 3.36. The greatest variance of responses among the standards was for item 27, "I participate in an inclusive district process through which stakeholders formulate a shared vision that clearly defines expectations for technology use," with a standard deviation of 1.040. The tightest cluster of responses was to item 41, with a standard deviation of .518, "I adhere to and enforce among staff and students the districts acceptable use policy and other policies and

procedures related to security, copyright, and technology use." The frequency of responses for the 16 NETS·A standards is presented in Table 8.

Table 8

Means, Standard Deviations, and Frequencies of Survey Items 27-42 Knowledge/Use

Knowledge and Use of Technology Standards	Mean	Std Dev	Percentages				
			SD	D	U	A	SA
27. I participate in an inclusive district process through which stakeholders formulate a shared vision that clearly defines expectations for technology use.	3.46	1.040	2	24.5	9.8	52.9	10.8
28. I develop a collaborative, technology-rich school improvement plan, grounded in research and aligned with the district strategic plan.	3.58	.989	2	18.6	10.8	56.9	11.8
29. I promote highly effective practices in technology integration among faculty and other staff.	4.17	.631	0	2.9	3.9	66.7	26.5
30. I assist teachers in using technology to access, analyze, and interpret student performance data, and in using results to appropriately design, assess, and modify student instruction.	3.95	.837	1.0	8.8	4.9	64.7	20.5
31. I collaboratively design, implement, support, and participate in professional development for all instructional staff that institutionalizes effective integration of technology for improved student learning.	3.75	.959	1	16.7	4.9	60.8	16.7
32. I use current technology-based management systems to access and maintain personnel and student records.	4.36	.657	1	1	1	54.9	42.2
33. I use a variety of media and formats, including telecommunications and the school website, to communicate, interact, and collaborate with peers, experts, and other education stakeholders.	4.05	.750	1	5.9	2	69.6	21.6

Table 8 (continued)

34. I provide campus-wide staff development for sharing work and resources across commonly used formats and platforms.	3.83	.822	2	7.8	7.8	69.6	12.7
35. I allocate campus discretionary funds and other resources to advance implementation of the technology plan.	3.95	.825	0	9.8	6.9	61.8	21.6
36. I advocate for adequate, timely, and high-quality technology support services.	4.29	.479	0	0	1	68.6	30.4
37. I promote and model the use of technology to access, analyze, and interpret campus data to focus efforts for improving student learning and productivity.	4.18	.651	0	2.9	4.9	63.7	28.4
38. I implement evaluation procedures for teachers that assess individual growth toward established technology standards and guide professional development planning.	3.66	.873	1	14.7	10.8	64.7	8.8
39. I include effectiveness of technology use in the learning and teaching process as one criterion in assessing performance of instructional staff.	3.80	.833	1	11.8	4.9	70.6	11.8
40. I secure and allocate technology resources to enable teachers to better meet the needs of all learners on campus.	4.17	.615	0	2.9	2.9	68.6	25.5
41. I adhere to and enforce among staff and students the districts acceptable use policy and other policies and procedures related to security, copyright, and technology use.	4.44	.518	0	0	1	53.9	45.1
42. I participate in the development of facility plans that support and focus on health and environmentally safe practices related to the use of technology.	4.07	.824	1	4.9	9.8	54.9	29.4

Note. Percentages do not always add up to 100 because of rounding.

Research question three: Is there a statistically significant relationship between Mississippi's Career and Technology School Administrators' attitudes and perceptions toward technology integration and their knowledge and use of the NETS·A?

The relationship which exists among the two variables, Mississippi's Career and Technology School Administrators' attitudes and perceptions toward technology integration and their knowledge and use of the NETS·A, was determined by the Pearson *r* statistic. This result was derived by correlating the total scores (attitude/perception level scale) from Part II (attitudes and perceptions toward technology integration) and the total scores (knowledge/use level scale) from Part III (knowledge and use) of the survey instrument. When analyzing the relationship between the administrators' attitudes and perceptions toward technology integration and their knowledge and use of the NETS·A, a Pearson *r* of .437 was obtained. Therefore, a statistically significant relationship exists between Mississippi's Career and Technology School Administrators' attitudes and perceptions toward technology integration and their knowledge and use of the NETS·A. Table 9 provides the Pearson *r* values for the relationship.

Table 9

Correlation among Administrators' Attitudes/Perceptions and Knowledge/Use

		Attitude/Perceptions
Knowledge/Use	Pearson *r* Values	.437**
	Sig. (2-tailed)	<.001
	N	102

**. Correlation is significant at the 0.01 level

Research question four: Is there a statistically significant relationship between Mississippi's Career and Technology School Administrators' attitudes and perceptions toward technology integration and their demographic characteristics (e.g., age, sex, and years of experience as an administrator)?

The relationship which exists among the variables, Mississippi's Career and Technology School Administrators' attitudes and perceptions toward technology integration and the demographic characteristics, age and years of experience as an administrator, was determined by the Spearman correlation coefficient. The relationship which exists among the variable, Mississippi's Career and Technology School Administrators' attitudes and perceptions toward technology integration and the demographic characteristic, sex, was determined by the Point-biserial correlation coefficient. The result from the relationships was derived by correlating the total scores from Part II (attitudes and perceptions toward technology integration) and Part I, Section I (demographic and background information) of the survey instrument. Table 10 provides the Spearman r_s and the Point-biserial r_{pb} values for the relationships.

Table 10

Correlation among Administrators' Attitudes/Perceptions and Demographic Characteristics

		Attitude/Perceptions
Age	Spearman r_s Values	-.015
	Sig. (2-tailed)	.880
	N	102
Years of Experience as an Administrator	Spearman r_s Values	-.007
	Sig. (2-tailed)	.946
	N	102
Sex	Point-biserial r_{pb} Values	.136
	Sig. (2-tailed)	.176
	N	100

When analyzing the relationship between the administrators' attitudes and perceptions toward technology integration and their age, a Spearman r_s of -.015 was obtained. Therefore, no statistically significant relationship exists between Mississippi's Career and Technology School Administrators' attitudes and perceptions toward technology integration and their age. When analyzing the relationship between the administrators' attitudes and perceptions toward technology integration and their years of experience as an administrator, a Spearman r_s of -.007 was obtained. Therefore, no statistically significant relationship exists between Mississippi's Career and Technology School Administrators' attitudes and perceptions toward technology integration and the number of years as a school administrator.

When analyzing the relationship between the administrators' attitudes and perceptions toward technology integration and their sex, a Point-biserial r_{pb} of .136 was

obtained. Therefore, no statistically significant relationship exists between Mississippi's Career and Technology School Administrators' attitudes and perceptions toward technology integration and their sex.

Research question five: Is there a statistically significant relationship between Mississippi's Career and Technology School Administrators' attitudes and perceptions toward technology integration and their experience and training with technology integration?

The level of experience and training with technology integration was assessed by the sum of six factors, items 1 through 6, from Part I, Section II of the "Survey of Administrative Characteristics and Experience/Training with Technology Integration." These six items included the technology related factors (a) university courses taken, (b) face-to-face professional development, (c) online professional development, (d) conferences attended, (e) presenter, and (f) other technology related training. The means for experience/training with technology integration (items 1 through 6) are listed in Table 11. The overall mean experience/training score to the survey was 11.18 (standard deviation 5.79). The range of scores for all 102 respondents was 0 to 24. The strongest level of experience/training, with a mean score of 2.42 was on item 6, "During the past 5 years, how many times have you participated in or experienced other training opportunities (e.g., study groups, discussion groups, seminars, or training with consultants) that utilized or focused on technology-integration?" The item that had the lowest level of experience/training was item 5, "During the past 5 years, how many times have you been a presenter in a training opportunity that utilized or focused on

technology-integration?" with an average response of .99. The frequency of responses for the six experience/training standards is presented in Table 11.

Table 11

Means, Standard Deviations, and Frequencies of Survey Items 1 - 6 Experience/Training

Experience /Training with Technology Integration	Mean	Std Dev	Percentages				
			0	1	2	3	4+
How many university courses have you taken that utilized technology-integration?	1.85	1.73	37.3	13.7	6.9	10.8	31.4
During the past 5 years, how many conferences (national or state) have you participated in that utilized or focused on technology-integration?	2.33	1.42	13.7	15.7	25.5	13.7	31.4
During the past 5 years, how many times have you been a presenter in a training opportunity that utilized or focused on technology-integration?	.99	1.46	61.8	8.8	10.8	5.9	12.7
During the past 5 years, how many times have you participated in or experienced other training opportunities (e.g., study groups, discussion groups, seminars, or training with consultants) that utilized or focused on technology-integration?	2.42	1.48	15.7	12.7	21.6	13.7	36.3
Experience /Training with Technology Integration	Mean	Std Dev	Percentages				
			0	½-3	4-6	7-9	10+
During the past 5 years, how many days (to the nearest day) of face-to-face professional development programs or offerings have you participated in that utilized or focused on technology-integration?	2.38	1.33	7.8	20.6	28.4	11.8	31.4
During the past 5 years, how many days (to the nearest day) of online professional development programs or offerings have you participated in that utilized or focused on technology-integration?	1.20	1.34	38.2	34.3	9.8	4.9	12.7

Note. Percentage do not always add up to 100 because of rounding

The relationship which exists among the variables, Mississippi's Career and Technology School Administrators' attitudes and perceptions toward technology integration and their experience and training with technology integration, was determined by the Spearman correlation coefficient. The relationship which exists among the variable, Mississippi's Career and Technology School Administrators' attitudes and perceptions toward technology integration and their experience and training with technology integration, was determined by the Spearman correlation coefficient. The result from the relationships was derived by correlating the total scores (attitude/ perception level scale) from Part II (attitudes and perceptions toward technology integration) and the total scores (experience level scale) from Part I, Section II (experience/training) of the survey instrument.

When analyzing the relationship between the administrators' attitudes and perceptions toward technology integration and their experience/training with technology integration, a Spearman r_s of .327 was obtained (see Table 12). Therefore, a statistically significant relationship exists between Mississippi's Career and Technology School Administrators' attitudes and perceptions toward technology integration and their experience and training with technology integration.

Table 12

Correlation among Administrators' Attitudes/Perceptions and Experience/Training

		Attitude/Perceptions
Experience/Training	Spearman r_s Values	.327**
	Sig. (2-tailed)	<.001
	N	102

**. Correlation is significant at the 0.01 level

Summary of Results

This chapter has presented the statistical results obtained from this study. Descriptive statistics and correlational coefficients were the statistical test utilized to analyze the data and answer the research questions posed in the study.

The results from this study indicate that there is a relationship between Mississippi Career and Technology School Administrators' attitudes and perceptions of technology integration and their knowledge and use of the NETS·A. The results also suggest that a relationship does exist between the variable attitudes and perceptions and the variable experience and training with technology integration. However, results of the study indicate that there is no statistically significant relationship among the variable, Mississippi's Career and Technology School Administrators' attitudes and perceptions toward technology integration and the variables age, sex, and years of experience as an administrator.

Data which were collected in this study regarding the selected variables has helped the researcher to draw conclusions and formulate recommendations for conducting future research studies relating to the attitudes and perceptions of administrators toward technology integration and their knowledge and use of the NETS·A. These conclusions and recommendations are described in Chapter 5.

CHAPTER V

SUMMARY, DISCUSSION, CONCLUSIONS, AND RECOMMENDATIONS

Summary

Since the creation of the National Educational Technology Standards for School Administrators (NETS·A), there has been an increasing belief that the school administrator is a key facilitator in influencing technology outcomes within K-12 schools and should therefore be held accountable for ensuring the integration of technology within the schools' curricula. Several studies suggest that school administrators have not assumed a primary responsibility in ensuring this technology integration (Starr, 2001). However, the attitudes and perceptions of school administrators toward technology related variables have been found to influence technology integration within schools (Carter, 2003; Havice, 1999). School administrators with favorable attitudes and perceptions toward technology related variables are more likely to lead schools in which technology integration is implemented throughout their schools' curricula.

Therefore, this study surveyed Mississippi's Career and Technology School Administrators to examine their attitudes and perceptions toward technology integration and to determine their knowledge and use of the NETS·A. Information and data were collected regarding selected variables (e.g., knowledge and use, age, sex, and years of experience as an administrator, awareness of the NETS·A, and experience and training

with technology integration) believed to correlate with an administrator's attitude and perception of technology integration.

The research design for this study was descriptive and correlational. This study used descriptive statistics to answer the five research questions posed in the study. Correlation coefficients were obtained from the data collected in order to answer research questions 3, 4, and 5, which were asked in order to examine the relationship among the variable Mississippi Career and Technology School Administrators' attitudes and perceptions toward technology integration and the variables administrators' knowledge and use of the NETS·A, administrators' demographic characteristics, and administrators' experience and training with technology integration. Participants in the study completed a three-part survey instrument. Part I of the instrument was designed to collect demographic data and determine administrators' experience and training with technology. Part II, "Survey of Administrative Attitudes and Perceptions toward Technology Integration" was designed to collect data that examined administrators' attitudes and perceptions toward technology integration. Part III of the instrument, "Administrator Technology Self-Assessment Tool," was created to collect data that determined administrators' knowledge and use of the NETS·A. One hundred-two Career and Technology School Administrators from Mississippi completed and returned the survey instrument used in this study.

Discussion

The results of this study indicated that there is a significant relationship between Mississippi's Career and Technology School Administrators' attitudes and perceptions toward technology integration and their knowledge and use of the NETS·A. This relationship was determined by the Pearson *r* statistic of .437. Although this value represented only a moderate relationship (Kubiszyn & Borich, 1987), a statistically significant relationship still existed.

This relationship agrees with previous findings of other researchers (Carter, 2003; Havice, 1999), who found that the attitudes and perceptions of school administrators influenced the likelihood that technology would be integrated into their school curricula. Such findings suggest that administrators, who have more positive attitudes and perceptions of technology integration, are more knowledgeable of and are more likely to follow the NETS·A, guidelines which assist administrators in ensuring that technology integration is effective within their schools' curricula.

A statistically significant relationship was also found to exist between Mississippi Career and Technology School Administrators' attitudes and perceptions toward technology integration and their experience and training with technology integration. This relationship was determined by a Spearman r_s statistic of .327, which indicated a slight relationship (Fraenkal & Wallen, 2002). Such findings are also supported by previous researchers (Anderson & Dexter, 2005; Starr, 2001; USDE, 2000; Whale, 2003), who suggested that an effective way that school administrators can promote technology use is to be knowledgeable and effective users of technology themselves. In fact,

Dawson and Rakes (2003) found that administrators with higher levels of experience and training with technology integration had favorable opinions toward technology, which significantly influences the integration of technology within schools.

The results of this study supports Whale's (2003) argument that if the NETS·A are to be promoted as national guidelines for administrators to utilize in order to successfully integrate technology within schools, it would seem that more administrators should be made aware of the standards. However, it should be noted that of the administrators (N = 90 of 102) who participated in this study and who chose to answer the question regarding their awareness of the NETS·A, 49% were not aware of the NETS·A.

Even with the guidelines recommended in the NETS·A, school administrators are not receiving the training and experience necessary to integrate technology within their schools' curricula. Of the 102 administrators who participated in this study, some had obtained little or no experience and training with technology integration within the past five years. For example, 37.3% had not taken a university course that utilized technology-integration, 7.8% had not participated in face-to-face professional development programs or offerings that utilized or focused on technology-integration, 38.2% had not participated in online professional development programs or offerings that utilized or focused on technology-integration, 13.7% had not attended conferences (national or state) that utilized or focused on technology-integration, 61.8% had not been presenters in training opportunities that utilized or focused on technology-integration, and 15.7% had not participated in or experienced other training opportunities (e.g., study

groups, discussion groups, seminars, or training with consultants) that utilized or focused on technology-integration. If administrators are expected to integrate technology within their schools, experience and training must be afforded to them. Therefore, this study supports the conclusions of Whale (2003) who suggested that effective training opportunities for principals should include (a) study groups, (b) seminars, (c) reading and discussion groups, (d) presentations by experts, (e) attendance at national or state conferences, (f) opportunities to become trainers themselves, and (g) face-to-face and online professional development programs that utilize or focus on technology integration.

Other findings from this study included information regarding demographic variables. There was no statistically significant relationship found between the selected variables, age, sex, and years of experience as an administrator, and the variable attitudes and perceptions. The lack of relationship between these variables also closely matches the findings of other studies. For example, Lyles (2003) found that age and years of experience as an administrator had no affect on administrators' perceptions toward technology. In Daiber (1990) and Haack's (2003) studies, both researchers found that gender did not affect technology outcomes within schools.

Although respondents in this study were not asked to provide any written comments, several did. Three comments that were mentioned frequently by administrators as factors that impeded technology integration were budget issues, time constraints, and reliance on others to integrate technology. Two principals, who had positive attitudes and perceptions toward technology integration, but had low scores in knowledge and use, stated that the school budget constrained them from fully integrating

technology as they would like. Other administrators in the study stated that because of time constraints and increased testing requirements, there wasn't time for them to fully integrate technology into all courses at their schools. One administrator commented of his reliance on the school's technology director to perform many of the guidelines that are identified in the NETS·A.

Conclusions of the Study

Technology integration has been a part of the learning environment for the past decade. Today, with the magnitude of emerging technologies available for education, administrators are faced with not only ensuring that technology integration is occurring within their schools, but also in motivating teachers to plan for and use technology in their classrooms. However, several studies have suggested that school administrators have not assumed a primary responsibility in making certain that technology integration is materializing within their schools (Starr, 2001), nor have they been effective in motivating teachers in planning for the integration of technology in the classroom. Researchers (Carter, 2003; Havice, 1999) have found that a school administrator's attitude and perception toward technology does influence technology integration within a school. A principal's willingness to implement technology has been found to be influenced by the principal's attitude and perception toward technology (Daiber, 1990). Because K-12 administrators are recognized as being leaders in the integration of technology within their schools' curricula, this study reinforces the need to continue to explore factors that may influence administrators' attitudes and perceptions toward technology.

According to the findings in this study, a factor that tends to relate to the attitudes and perceptions of technology integration is the experience and training that administrators receive. If administrators are expected to integrate technology within schools, experience and training must be provided in professional development opportunities and should be required of all school leaders. Over one-third (37.3%) of the respondents in this study had not taken a university course that utilized technology-integration. This finding reinforces that of Strudler, et al. (1999), who found that there is an increasing need to integrate technology into school leadership programs. The authors also recommended that educational programs should increase technology integration into pre-service courses and field experiences. Few educational administration programs include a separate course for educational technology integration for school leaders (Whale, 2003). As the importance of technology integration skills continues to increase, universities should be at the forefront in preparing leaders for new school realities, including technology integration, as well as their knowledge and use of the NETS·A. NETS·A guidelines should be incorporated into the repertoire of future school administrators at the graduate level.

According to the findings in this study, Mississippi Career and Technology School Administrators who have more positive attitudes and perceptions toward technology integration tend to have a greater knowledge and use of the NETS·A. If knowledge and use of the NETS·A are to be promoted, it is important to address the possible factors affecting the attitudes and perceptions of administrators toward technology integration. These factors could include colleges and universities providing

educational opportunities for education administration students to engage in positive experiences that promote the use of technology. It is also important that educational leaders at the state level provide opportunities for career and technology school administrators to participate in professional development opportunities that promote technology integration. These opportunities could be available in several formats (e.g., participation in technology related face-to-face and on-line professional development and conferences, participation in meetings and courses that utilize technology integration, and through the encouragement of the teaching of technology integration).

Only about one-half of the respondents in this study were aware of the NETS·A. Therefore, further dissemination of the standards through a variety of outlets (e.g., journals, accrediting agencies, graduate educational leadership programs, and professional development activities) is needed. Findings in this study may be used to encourage certification agencies, accrediting bodies, and state departments of education to incorporate the NETS·A into their policies and procedures. If the NETS·A are promoted as national guidelines for administrators to follow, then administrators in career and technology schools should be made aware of the standards. If school administrators are to become more knowledgeable and effective users of technology themselves, and if they are expected to effectively integrate technology into their schools' curricula, then not only should they be required to increase their experience and training with technology integration, but they must also increase their use of the NETS·A in order to ensure that their schools are effectively integrating technology according to the guidelines.

Recommendations for Further Research

Based on the results from this study, several areas are suggested for future research. These recommendations are listed below:

1. The results of this study revealed that almost half of the Career and Technology School Administrators in Mississippi had not even heard of the NETS·A. Therefore, it is recommended that this study be replicated using a population from a different region of the country to see if this trend is exclusive to Mississippi or if it is also a national trend.
2. The overall mean of Part II of the survey revealed positive attitudes and perceptions toward technology integration; although, many of the respondents surveyed had not even heard of the NETS·A. Based on these results, the survey should be administered to middle school and elementary school principals to gauge their attitudes and perceptions toward technology integration and their knowledge and use of the NETS·A.
3. Based on written comments from respondents in this study regarding their constraints to fully integrate technology, a qualitative study should be conducted that would gather more in-depth information on the factors that impact administrators' attitudes and perceptions toward technology integration and their knowledge and use of the NETS·A. During the interview process, the researcher could seek detailed information on how budget issues, time constraints, and reliance on others to integrate technology has impacted administrators' attitudes and perceptions, as well as their knowledge and use of technology integration.

4. Administrators in this study scored high on Part II and Part III of the survey which measured attitudes/perceptions and knowledge/use. However, faculty members in a career and technology schools were not surveyed in order to determine their beliefs regarding the administrators' attitudes/perceptions and knowledge/use of technology integration. Therefore, a study to analyze and compare responses with how the school faculty assesses the administrators' attitudes and perceptions and knowledge and use of technology is recommended.
5. The findings in this study revealed a difference among the Mississippi Career and Technology School Administrators' attitudes and perceptions toward technology integration. Therefore, a comparative study should be conducted with administrators at Career and Technology Schools to determine the variables that may account for the differences in the administrators' support for technology integration.
6. Since the NETS·A provide guidelines on what administrators and principals should do to ensure effective district wide technology leadership, it is recommended that a study exploring issues involved with technology integration and its impact on the traditional classroom be conducted.
7. This study defined experience/training with technology integration as the number of university courses taken, face-to-face professional development programs as a participant, online professional development programs taken, conferences participated in that utilized technology-integration, and other experience/training that utilized technology-integration. Experience/training also included the

number of times the administrator had been a presenter or teacher of technology related training. Further research should be conducted on the type, number, and nature of additional experience and training opportunities for career and technology administrators which could help them to develop more positive attitudes and perceptions toward technology integration and increase their knowledge and use of the NETS·A.

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APPENDIX A

TSSA AND CORRESPONDING LEADERSHIP TASK

Standard	Role-Specific Leadership Task
I. Leadership and Vision	Participate in an inclusive district process through which stakeholders formulate a shared vision that clearly defines expectations for technology use.
	Develop a collaborative, technology-rich school improvement plan, grounded in research and aligned with the district strategic plan.
	Promote highly effective practices in technology integration among faculty and other staff.
II. Learning and Teaching	Assist teachers in using technology to access, analyze, and interpret student performance data, and in using results to appropriately design, assess, and modify student instruction.
	Collaboratively design, implement, support, and participate in professional development for all instructional staff that institutionalizes effective integration of technology for improved student learning.
III. Productivity and Professional Practice	Use current technology-based management systems to access and maintain personnel and student records.
	Use a variety of media and formats, including telecommunications and the school website, to communicate, interact, and collaborate with peers, experts, and other education stakeholders.

IV. Support, Management, and Operations	Provide campus-wide staff development for sharing work and resources across commonly used formats and platforms.
	Allocate campus discretionary funds and other resources to advance implementation of the technology plan.
	Advocate for adequate, timely, and high-quality technology support services.
V. Assessment and Evaluation	Promote and model the use of technology to access, analyze, and interpret campus data to focus efforts for improving student learning and productivity.
	Implement evaluation procedures for teachers that assess individual growth toward established technology standards and guide professional development planning.
	Include effectiveness of technology use in the learning and teaching process as one criterion in assessing performance of instructional staff.
VI. Social, Legal, and Ethical Issues	Secure and allocate technology resources to enable teachers to better meet the needs of all learners on campus.
	Adhere to and enforce among staff and students the districts acceptable use policy and other policies and procedures related to security, copyright, and technology use.
	Participate in the development of facility plans that support and focus on health and environmentally safe practices related to the use of technology.

APPENDIX B

THE SURVEY INSTRUMENT

Janice H. Sears
86 Haddox Road
Columbia, MS 39429
July 24, 2006

Name of Administrator
Title
School
School Address
City, State Zip

Dear Participant:

I am a doctoral candidate in the department of Instructional Systems, Leadership, and Workforce Development at Mississippi State University. I am conducting a research study that is designed to examine Mississippi Career and Technology School Administrators' attitudes and perceptions toward technology integration and determine their knowledge and use of the NETS·A. The results of this study will benefit administrators, principals, directors and teachers of career and technology programs by making them aware of the NETS·A and the possible need for increased technology related professional development. The study will also contribute to the field by identifying administrator dispositions that may improve technology integration into the career and technology school curriculum–integration that may ultimately be a useful tool in enhancing the academic achievement of students. The Institutional Review Board (IRB) at Mississippi State University has approved this study. If you have any questions about your rights as a research subject in this study, you may contact the Office for Regulatory Compliance at Mississippi State University at 662-325-5220. Moreover, the Mississippi State Department of Education has been informed and supports this study.

The population for this study will be 144 school administrators. Therefore, you were selected to participate in this study. I realize that your professional duties and responsibilities demand a great deal of your time and that your participation in this study will require additional time. However, your responses to the survey, which will take approximately 15 minutes of your time, will be very important to this research study, although your participation is strictly voluntary and you may withdraw at any time. Please know that your responses will be kept confidential and will be summarized along with others who respond. Code numbers will be written on the first page of the survey and will be used only for monitoring returns.

I respectfully request that you complete the enclosed survey and return it by August 7, 2006 in the self-addressed, stamped enveloped enclosed. Before mailing, please check to see that you have responded to all items on the survey. I know that your time is valuable, but without your assistance, this research study cannot be completed. If you have questions about this study, please contact me at (601) 731-2519.

Thanking you in advance for your cooperation. Your assistance is greatly appreciated.

Sincerely,

Janice H. Sears
Doctoral Candidate

Survey of Administrative Characteristics and Experience/Training with Technology Integration

Part I

Directions: Please check (✓) those categories which best apply to you and supply the information requested in the blank(s) provided.

Please complete this survey even if you are not acquainted with technology integration.

Section I

Demographic and Background Information

Age: ❑20-29 ❑30-39 ❑40-49 ❑50-59 ❑60-69 ❑Over 69

Sex: ❑Male ❑Female

Number of years (to the nearest year) as an administrator:
❑4 years or less ❑5-9 ❑10-14 ❑15-19 ❑20 or more

Are you aware of the National Educational Technology Standards for School Administrators? ❑Yes ❑No

Section II

Experience/Training with Technology Integration

1. How many university courses have you taken that utilized technology-integration?
   ❑0 ❑1 ❑2 ❑3 ❑4+
2. During the past 5 years, how many days (to the nearest day) of face-to-face professional development programs or offerings have you participated in that utilized or focused on technology-integration?
   ❑0 ❑½ - 3 ❑4 - 6 ❑7 – 9 ❑10+
3. During the past 5 years, how many days (to the nearest day) of online professional development programs or offerings have you participated in that utilized or focused on technology-integration?
   ❑0 ❑½ - 3 ❑4 - 6 ❑7 – 9 ❑10+
4. During the past 5 years, how many conferences (national or state) have you participated in that utilized or focused on technology-integration?
   ❑0 ❑1 ❑2 ❑3 ❑4+
5. During the past 5 years, how many times have you been a presenter in a training opportunity that utilized or focused on technology-integration?
   ❑0 ❑1 ❑2 ❑3 ❑4+
6. During the past 5 years, how many times have you participated in or experienced other training opportunities (e.g., study groups, discussion groups, seminars, or training with consultants) that utilized or focused on technology-integration?
   ❑0 ❑1 ❑2 ❑3 ❑4+

Survey of Administrative Attitudes and Perceptions toward Technology Integration

Part II

Directions: Please use the descriptions below (SD, D, U, A SA) to rate your attitudes and perceptions of technology integration. Check (✓) the category that best applies to you.

- **SD** strongly disagree
- **D** disagree
- **U** uncertain
- **A** agree
- **SA** strongly agree

	Personal Opinions about Technology	SD	D	U	A	SA
7.	Technology has the potential to affect society in a positive manner.	❑	❑	❑	❑	❑
8.	Technology methods should be used only in situations where traditional education is impossible.	❑	❑	❑	❑	❑
9.	The quality of most programs integrating technology is questionable at best.	❑	❑	❑	❑	❑
10.	Face to face student instructor interaction is imperative for effective education.	❑	❑	❑	❑	❑
11.	The technology used in course at my school is inhibiting for the instructor.	❑	❑	❑	❑	❑
12.	Educational methods that are technology-based can be as effective as traditional methods.	❑	❑	❑	❑	❑
13.	Prior to participation, students in technology-integrated programs are not as well prepared as students who engage in traditional methods.	❑	❑	❑	❑	❑
14.	There is little reliable information concerning the effectiveness of technology integration.	❑	❑	❑	❑	❑
15.	Technology has the capability to serve effectively, otherwise unreachable students.	❑	❑	❑	❑	❑
16.	Technology integration poses a threat to more traditional methods of teaching.	❑	❑	❑	❑	❑
17.	Technology integration is an interesting concept, and justifies further research.	❑	❑	❑	❑	❑
18.	Opportunity for instructor training in technology integration is extremely important.	❑	❑	❑	❑	❑
19.	Any course that has a significant history of being taught and revised can be a candidate for technology integration.	❑	❑	❑	❑	❑
20.	End-of-course tests should be conducted in all technology-integrated courses in order to ensure their effectiveness.	❑	❑	❑	❑	❑
21.	Technology integration limits the capability of the instructor to express such teacher characteristics as humor and enthusiasm.	❑	❑	❑	❑	❑
22.	Highly technical material is well suited to programs integrated with technology.	❑	❑	❑	❑	❑
23.	Regardless of technological improvements, programs integrated with technology will never be as effective as traditional instruction.	❑	❑	❑	❑	❑
24.	Technology integration offers opportunities and experiences for learning that traditional education cannot.	❑	❑	❑	❑	❑
25.	The concept of combining technology with traditional instruction is worthwhile.	❑	❑	❑	❑	❑
26.	Technology integration can be a more stimulating method of learning than traditional instruction.	❑	❑	❑	❑	❑

Administrator Technology Self-Assessment Tool

Part III

Use the following descriptions to rate your use and knowledge of the technology standards for school administrators:

- **SD** strongly disagree
- **D** disagree
- **U** uncertain
- **A** agree
- **SA** strongly agree

	Use and Knowledge of Technology Standards	SD	D	U	A	SA
27.	I participate in an inclusive district process through which stakeholders formulate a shared vision that clearly defines expectations for technology use.	❑	❑	❑	❑	❑
28.	I develop a collaborative, technology-rich school improvement plan, grounded in research and aligned with the district strategic plan.	❑	❑	❑	❑	❑
29.	I promote highly effective practices in technology integration among faculty and other staff.	❑	❑	❑	❑	❑
30.	I assist teachers in using technology to access, analyze, and interpret student performance data, and in using results to appropriately design, assess, and modify student instruction.	❑	❑	❑	❑	❑
31.	I collaboratively design, implement, support, and participate in professional development for all instructional staff that institutionalizes effective integration of technology for improved student learning.	❑	❑	❑	❑	❑
32.	I use current technology-based management systems to access and maintain personnel and student records.	❑	❑	❑	❑	❑
33.	I use a variety of media and formats, including telecommunications and the school website, to communicate, interact, and collaborate with peers, experts, and other education stakeholders.	❑	❑	❑	❑	❑
34.	I provide campus-wide staff development for sharing work and resources across commonly used formats and platforms.	❑	❑	❑	❑	❑
35.	I allocate campus discretionary funds and other resources to advance implementation of the technology plan.	❑	❑	❑	❑	❑
36.	I advocate for adequate, timely, and high-quality technology support services.	❑	❑	❑	❑	❑
37.	I promote and model the use of technology to access, analyze, and interpret campus data to focus efforts for improving student learning and productivity.	❑	❑	❑	❑	❑
38.	I implement evaluation procedures for teachers that assess individual growth toward established technology standards and guide professional development planning.	❑	❑	❑	❑	❑
39.	I include effectiveness of technology use in the learning and teaching process as one criterion in assessing performance of instructional staff.	❑	❑	❑	❑	❑
40.	I secure and allocate technology resources to enable teachers to better meet the needs of all learners on campus.	❑	❑	❑	❑	❑
41.	I adhere to and enforce among staff and students the districts acceptable use policy and other policies and procedures related to security, copyright, and technology use.	❑	❑	❑	❑	❑
42.	I participate in the development of facility plans that support and focus on health and environmentally safe practices related to the use of technology.	❑	❑	❑	❑	❑

APPENDIX C

INSTRUMENT VARIABLES, CORRESPONDING QUESTIONS,

AND CRONBACH ALPHAS

Variable	Questions	Cronbach Alpha
Attitudes and Perceptions	7-26 Reversed 8, 9, 10, 11, 13, 14, 16, 20, 21, and 23	.91
Knowledge and Use Sub-variable Assessment and Evaluation	30, 37, 38, 39	.76
Knowledge and Use Sub-variable Leadership Core	27, 28, 29, 40	.78
Knowledge and Use Sub-variable Professional Development of Staff Members and Personal Productivity	31, 33, 34, 35	.74
Knowledge and Use Sub-variable Policy and Records	32, 36, 41, 42	.63
Experience/Training	1, 2, 3, 4, 5, 6	N/A

APPENDIX D

PERMISSION TO USE SURVEY INSTRUMENTS

From : Whale, David E. <whale1de@cmich.edu>
Sent : Tuesday, November 15, 2005 5:06 PM
To : "Jan Sears" <jan_sears@hotmail.com>
Subject : Administrator Technology Self-Assessment Tool

Monday, November 14, 2005

Hi Jan,

I received your phone call & e-mail. You certainly have my permission to use any part of my study that is of help to you. I document construct validity on page 15. Good luck with your dissertation, and if there is anything else I can do to help you, please feel free to call upon me.

David Whale,
Central Michigan University

From : Pam Havice <havice@CLEMSON.EDU>
Sent : Sunday, March 5, 2006 2:01 PM
To : "Jan Sears" <jan_sears@hotmail.com>
Subject : Re: permission to use dissertation instrument

Hello Janice,

Please let this email message serve as permission for you to use the instrument, "Survey of Administrator Attitudes and Perceptions toward Technology Based Education" that I used for my dissertation. I am pleased I can be of assistance with your research.

With regards,

Pamela Havice, Ph.D.

APPENDIX E

INSTITUTIONAL REVIEW BOARD (IRB) APPROVAL

Mississippi State University

August 8, 2006

Janice H. Sears
86 Haddox Road
Columbia, MS 39429

RE: IRB Study #06-174: Mississippi Career and Technology School Administrators' Attitudes and Perceptions toward Technology Integration and Their Knowledge and Use of the National Educational Technology Standards for School Administrators (NETS-A)

Dear Ms. Sears:

The above referenced project was reviewed and approved via expedited review for a period of 7/18/2006 through 7/15/2007 in accordance with 45 CFR 46.110 #7. Please note the expiration date for approval of this project is 7/15/2007. If additional time is needed to complete the project, you will need to submit a Continuing Review Request form 30 days prior to the date of expiration. Any modifications made to this project must be submitted for approval prior to implementation. Forms for both Continuing Review and Modifications are located on our website at http://www.msstate.edu/dept/compliance.

Any failure to adhere to the approved protocol could result in suspension or termination of your project. Please note that the IRB reserves the right, at anytime, to observe you and any associated researchers as they conduct the project and audit research records associated with this project.

Please refer to your docket number (#06-174) when contacting our office regarding this project

We wish you the very best of luck in your research and look forward to working with you again. If you have questions or concerns, please contact me at jmiller@research.msstate.edu or by phone at 662-325-5220.

Sincerely,

Jonathan E. Miller
IRB Administrator

cc: Linda Cornelious

Office of Regulatory Compliance
P. O. Box 6223 • 88 Morgan Street • Mailstop 9563 • Mississippi State, MS 39762 • (662) 325-3294 • FAX (662) 325-8776

APPENDIX F

PILOT STUDY: SURVEY ASSESSMENT

FORM FOR PANEL OF EXPERTS

Janice H. Sears
86 Haddox Road
Columbia, MS 39429
July 18, 2006

Name of Panel Member
Title
School
School Address
City, State Zip

Dear Participant:

I am a doctoral candidate in the department of Instructional Systems, Leadership, and Workforce Development at Mississippi State University. I am conducting a research study that is designed to examine Mississippi Career and Technology School Administrators' attitudes and perceptions toward technology integration and determine their knowledge and use of the NETS·A. The results of this study will benefit administrators, principals, directors and teachers of career and technology programs by making them aware of the NETS·A and the possible need for increased technology related professional development. The study will also contribute to the field by identifying administrator dispositions that may improve technology integration into the career and technology school curriculum–integration that may ultimately be a useful tool in enhancing the academic achievement of students. The Institutional Review Board (IRB) at Mississippi State University has approved this study. If you have any questions about your rights as a research subject in this study, you may contact the Office for Regulatory Compliance at Mississippi State University at 662-325-5220. Moreover, the Mississippi State Department of Education has been informed and supports this study.

The population for this study will be 144 school administrators. However, you are being invited to participate in this pilot study. I realize that your professional duties and responsibilities demand a great deal of your time and that your participation in this study will require additional time. However, your responses to the survey assessment form, which will take approximately 20 minutes of your time, will be very important to this research study, although your participation is strictly voluntary and you may withdraw at any time.

I respectfully request that you complete the enclosed survey assessment form and return it by July 24, 2006 in the self-addressed, stamped enveloped enclosed. I know that your time is valuable, but without your assistance, this research study cannot be completed. If you have questions about this study, please contact me at (601) 731-2519.

Thanking you in advance for your cooperation. Your assistance is greatly appreciated.

Sincerely,

Janice H. Sears
Doctoral Candidate

Attitudes and Perceptions of Mississippi Career and Technology School Administrators toward Technology Integration and their Knowledge and Use of the National Educational Technology Standards for School Administrators (NETS·A)

Survey Instrument Assessment Form
for Pilot Study

Directions: Please read the directions for each part of the survey instrument attached. If an error appears in the directions, please mark that error on the form. As you review the instrument, please read each statement for clarity, preciseness of instructions, and appropriateness of content. Statements that are unclear, vague, or ambiguous should be listed in the space provided. Please make suggestions and recommendations that would improve the survey instrument in the space entitled "Other Comments".

Part I -- Demographic and Background Information and Experience/ Training with Technology Integration

Unclear Statements: _____
_____

Comments: _____
_____
_____

Part II -- Survey of Administrative Attitudes and Perceptions toward Technology Integration

Unclear Statements: _____
_____

Comments: _____
_____
_____

Part III -- Administrator Technology Self-Assessment Tool

Unclear Statements: _____
_____

Comments: _____
_____
_____

APPENDIX G

LETTER OF SUPPORT FROM MS DEPARTMENT OF EDUCATION

Mississippi Department of Education
Hank M. Bounds, State Superintendent of Education

J. Martez Hill, Deputy State Superintendent
Office of Vocational Education and Workforce Development
James E. Sardin • Associate State Superintendent • 601-359-3088 • Fax: 601-359-3989

MEMORANDUM #06.088

TO: Secondary Vocational and Technical Directors

FROM: James E. Sardin, Associate State Superintendent
Office of Vocational Education and Workforce Development

DATE: July 7, 2006

RE: Support of Janice H. Sears' Dissertation Study

This memo serves as support by this office of the doctorial study entitled "Attitudes and Perceptions of Mississippi Career and Technology School Administrators toward Technology Integration and their Knowledge and Use of the National Educational Technology Standards for School Administrators (NETS·A)" that is being conducted by Janice H. Sears, a PhD Student at Mississippi State University.

I know that your time is valuable; however, the attached survey will only take approximately 10 minutes to complete. I feel that the results from this study will not only assist Ms. Sears but will benefit the Department of Education in assessing your needs.

Thanks for your cooperation. Should you need more information, please contact Ms. Sears at 601-441-9894.