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Successful Integration of Internet Technology in the
K-12 Classroom: Trends, Perceptions, and Successful Practices

A dissertation
presented to
the faculty of the Department of Educational Leadership and Policy Analysis
East Tennessee State University

In partial fulfillment
of the requirements for the degree
Doctor of Education in Educational Leadership

by
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May 2002

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Keywords: Internet Integration, Successful Practices, Vision and Planning, Technology in K-12
Education, World Wide Web, Teacher Leadership, Staff Development, Internet Use in the K-12
Classroom

ABSTRACT

Successful Integration of Internet Technology in the K-12 Classroom: Trends, Perceptions, and Successful Practices

by

Catherine A. Edwards

In 1994, the Federal Government made a commitment to link all classrooms, libraries, businesses, and industries to the information highway by the year 2000. President Clinton mandated that all classrooms in America be connected to the Internet by the year 2000. While many say this commitment and mandate have successfully occurred, there is still concern and questions about what successful integration of the Internet looks like and what specific practices can tap the bountiful resources available on the Internet. School systems have spent billions of dollars investing in hardware, software, and connection to the World Wide Web. Stakeholders demand accountability for time and money spent connecting our classrooms to the World Wide Web. Until educators fully understand what successful integration looks like in the K-12 schools, there will continue to be a digital divide for learners.

In this qualitative study, which covers K-12 school systems in a three-state area, the researcher interviewed system level supervisors of technology, building level administrators, and classroom teachers. The teachers selected for participation in this study were nominated by the administrators as teachers who demonstrate successful integration of Internet technology in the classroom. This study is an attempt to determine if there are trends, characteristics, or successful practices that other teachers could employ.

Findings of the study include the importance of re-evaluating staff development related to the Internet and other technology issues. The results indicate that teachers are most receptive to learning from their peers and other teacher leaders when learning how to integrate the Internet into their classroom curricula.

The importance of a planned vision, created by the stakeholders, concerning integration of Internet technology also emerged during the study. In addition, the study addresses the need for building level administrators to be better prepared in order to lead their schools in successful practices concerning integration of the Internet into school curricula.

DEDICATION

Everyone who arrives at this point in his or her life has a story. I am no different. The process of following through and finishing this task has been daunting. Many times, I did not think I would or could finish. I allowed myself to doubt the importance of my work. I allowed doubting Thomases to enter my life and question the depth of my commitment to this project and my career as an educator. To those people, I say thank you for showing me just how very important this project is to my life. For now I know that my personal and professional life are indelibly intertwined. To not have finished this study would have forever impacted my confidence and self worth as an educator, and as a person.

To those who believed in me...Dr. Russell Mays, Dr. Louise MacKay, Dr. Russell West, and Dr. Jack Rhoton, thank you for not allowing me to quit. All of you have become my mentor teachers and dear friends.

To those people who silently supported me with phone calls and tenderness and encouraged me because they believed in me...I say that I love you and I thank you. You know who you are.

And to those people who are considering a project such as this...as important as it is to your career...when life gets in your way, it will only make the ending sweeter.

CONTENTS

	Page
ABSTRACT	2
DEDICATION	3
Chapter	
1. INTRODUCTION	8
Statement of the Problem.....	11
Significance of the Problem.....	12
Research Questions.....	13
Limitations	13
2. REVIEW OF LITERATURE	14
Defining the Internet	14
Historical Background	15
The Internet in K-12 Classrooms.....	18
Federal and State Mandates Concerning Connectivity.....	21
Concerns About 100% Connectivity in the Classroom	22
Staff Development Issues.....	24
Summary	24
3. METHODS AND PROCEDURES	27
Research Design	28
Participants.....	29
Instrumentation	30
Data Collection and Analysis.....	32
Trustworthiness.....	33

Chapter	Page
Summary	35
4. ANALYSIS OF DATA	36
The Impact of Having a Vision Statement.....	36
The Role of the School Administrator in the Integration of the Internet in the Classroom.....	40
Staff Development Issues.....	44
Teachers as Leaders	49
Trends, Characteristics, and Practices of Successful Teachers Integrating Internet Technology	51
Summary	58
5. FINDINGS, CONCLUSIONS, AND RECOMMENDATIONS FOR FURTHER RESEARCH AND FUTURE PRACTICE	59
General Finding.....	59
The Impact of Having a Vision Statement: Does Vision Matter?	60
Professional Literature Context	60
Finding	61
Recommendation	61
The Role of the Administrator in the Integration of the Internet into Existing Classroom Curricula.....	63
Professional Literature Context	63
Finding	65
Recommendation	66
Staff Development: Implementing Effective Support for Successfully Integrating the Internet.....	67
Professional Literature Context	67

Chapter	Page
Finding	68
Recommendation 1	68
Recommendation 2	72
Characteristics, Trends, and Successful Practices	74
Professional Literature Context	74
Finding	74
Recommendation	77
Teachers as Leaders	77
Professional Literature Context	78
Finding	80
Recommendation	84
General Recommendations	84
REFERENCES	89
APPENDICES	94
Appendix A: Letter of Request to Directors of Schools	94
Appendix B: Guided Questions used in Interview: Administrator (Technology Coordinator or Equivalent Supervisor).....	97
Appendix C: Guided Questions used in Interviews: Building Level Administrator	98
Appendix D: Guided Questions used in Interviews: Classroom Teacher or Instructor.....	99
Appendix E: East Tennessee State University Informed Consent	101
Appendix F: Email sent to Winners of the <i>Family PC</i> Top 100 Wired Schools	103
Appendix G: Auditor Request and Report.....	105

Chapter

Page

VITA.....	107
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CHAPTER 1

INTRODUCTION

Until recently, the educational experience of students was limited to the resources of the school, the family, the culture of the community, and the expertise of the classroom teachers. Immediate classroom resources consisted primarily of textbooks and library books. Now, however, the availability of computers in the classroom and access to the Internet has forever changed the classroom experience for both teachers and students. According to Tapscott (1999), the Internet is attracting one million new users every month. Internet technology is now considered a standard in the classroom and is no longer considered a trend or fad. As a result of national, state, and local initiatives, there are now over 10 million computers in schools (Becker, 2000).

Technology in the classroom is thought by many to increase student and teacher productivity in addition to making vast amounts of information available by way of Internet technology to students and teachers. Many educators believe Internet technology supplements education and simulates real life experiences for students. Successful integration of the Internet may be defined as the effective and efficient use of resources located using the Internet as teaching, learning, and problem solving tools in the classroom. The Internet is successfully integrated when it becomes a resource that is used seamlessly and on a regular basis by teachers and students to implement goals and objectives of the curriculum. The Internet may be one of the most powerful resources available to the classroom, allowing teachers and students to conduct searches on any topic and interact with others through email or videoconferencing (Fetterman, 1998). For these reasons, teachers and administrators strive to successfully integrate Internet

technology into the classroom. Other compelling reasons to integrate Internet technology into the classroom include encouraging and promoting student learning while addressing different learning styles of the students. Internet technology also promotes teacher productivity, opens access to vast amounts of information, and allows students to learn about the world of work and the impact technology will have on careers of the future. Internet technology also encourages classroom teachers and students to collaborate and communicate with others, to supplement face to face education, to simulate classroom experiments, and to learn to balance both the negative and positive aspects of modern technology in everyday life (Cunningham, 1998).

Leu (2000) found the following:

Children need to be prepared for much more than book literacies. The rapid appearance in many of our classrooms of networked information and communication technology (ICT), such as the Internet, requires us to fundamentally redefine our understanding of the literacy curriculum. In only 7 years, (1994-2000), the Internet will have appeared in nearly every K-12 classroom in the U.S. (p. 424).

While printed material is still important and is a necessary tool in classroom instruction, teachers in the 21st century classroom must expand their vision in order to prepare students for the future. Leu (2000) also concluded that there is a shift in the direction teacher instruction is taking due to the impact of Internet technology.

According to an executive report by the Software Publishers Association entitled Effectiveness of Technology in Schools, 1990-97: Executive Summary in Technology Connection (1998), dramatic growth has taken place in the use of computer based technology in our schools for administrative and instructional purposes across the United States. During the 1989-90 school year, public schools for grades K-12 owned 1.8 million computers. By the 1998-99 school year, that figure had risen to 5.55 million computers in K-12 schools. This increase, in the span of nine years, represents a 208% increase. In 1997, approximately 70% of the nation's

public schools were connected to the Internet. A recent study showed that, in the year 2000, 95% of the nation's schools were connected to the Internet (US Department of Education, 2001).

Research completed in 1998 by Quality Education Data (QED) concluded that computer technology was impacting K-12 education, even in the early 1990s. Leu (2000) maintained that computer technology has indeed had a positive effect on student achievement in all major subject areas. Leu also suggested, "It is not just our classrooms that are changing. The world of work for which we prepare our children is also undergoing a fundamental transformation" (p. 425). Data currently available confirm the growth of Internet connectivity that was predicted in the earlier QED study. From all indicators, the growth of the classroom connectivity has exceeded all predictions (Leu).

Hannafin and Land (1997) stated that due to the emergence of technology in the classroom, it is easier to present innovative alternatives for learners. The integration of technology has contributed toward a more student-centered learning environment. "Emerging information systems such as the World Wide Web, support varied student-centered approaches in a variety of settings" (p. 171).

In 1991, the Tennessee State Board of Education implemented the Master Plan for Tennessee Schools: Preparing for the Twenty-first Century (Tennessee State Board of Education, 1991). This plan committed the state of Tennessee to implement computer and Internet technology in all elementary and secondary schools in the state of Tennessee (Tennessee State Board of Education, 1991). In 1995, the state of Tennessee committed more than 525 million dollars to create a statewide Internet network. All of the state's 95 counties were to be connected through a central network connection point, Telocator Alphanumeric Protocol [TAP] with a digital, high speed Integrated Services Digital Network [ISDN] telephone connection. By that

means, every public school in each county in the state of Tennessee became connected to the World Wide Web [WWW]. Special routing equipment within each school allowed multiple computer connections to the Internet at the same time, which also created a flexible statewide educational network. The network is capable of allowing each public school student in the state to connect to the Internet and has also created an efficient means to deliver future technological innovations to Tennessee classrooms (TSBE, 1991).

In addition, the federal government encouraged other states to implement Internet access for public schools by endorsing and promoting the idea that a truly literate student would effectively use technology-including Internet technology. The federal government mandated that all schools in the country be connected to the Internet by the year 2000 (Healy, 1998).

Statement of the Problem

Enormous investments have been made in order to provide classroom access to the Internet in Tennessee and throughout the nation. Therefore, in order to maximize the return from that investment, there is a need to identify and describe effective integration of Internet technology into existing K-12 curricula. The purpose of this study was to identify and describe characteristics and professional practices of teachers who are nominated by administrators as teachers who effectively integrate Internet technology into their classroom curricula. Through rich description based on data gathered during interviews, I sought to discover how those teachers integrated Internet technology in ways that resulted in their being perceived as effective.

Significance of the Problem

Roblyer and Edwards (2000) commented on the importance of knowing the history of educational technology but considered the information useless unless educators apply future information concerning educational technology to addressing the needs of the learners in the classroom. Most classrooms have access to at least one computer. Educators now must address how best to use these computers. The current status in the evolution of Internet technology in education will precipitate changes in teaching methods. Infusing Internet technology into a curriculum is a time consuming and difficult task for the classroom teacher. Rewards for the extra time spent integrating the Internet into class plans are not always immediately realized. Using Internet technology in the classroom is not necessarily better or worse than using traditional educational resources. However, teachers are now expected to integrate Internet technology into classroom instructional programs and students are expected to be proficient in computer skills when they graduate.

Internet technology offers significant educational opportunities for both the student and the teacher. However, the challenge for the K-12 classroom teacher is to appropriately integrate Internet technology into the instructional program. Technology should not drive the curriculum, but rather enhance the existing curriculum (Cunningham, 1998). According to Roblyer and Edwards (2000), many educators maintain that technology is essential to school reform. The significance of identifying trends and characteristics among teachers identified as having effectively integrated Internet technology into their instructional programs include recommendations for staff development to assist classroom teachers in using Internet technology more effectively, recommendations for pre-service teacher programs to enable prospective teachers to more effectively use Internet technology throughout their careers, and information

that will aid school administrators in recognizing those teachers who successfully use Internet technology in the classroom.

Research Questions

The following research questions were addressed in this study:

1. Are there common characteristics and professional practices shared by classroom teachers perceived as successfully using Internet integration?
2. What role does staff development play in fostering successful Internet integration?
3. Are there specific behaviors displayed by those classroom teachers who are perceived as successfully using Internet technology?

Limitations

The limitations of this investigation included the following factors:

1. Data were collected from a purposeful sample: thus, the results will not necessarily be generalizable to other K-12 settings. However, it is hoped there will be transferability to teachers with a similar desire to successfully integrate Internet technology into an existing curriculum.
2. Teacher participants were limited to those teachers who had direct access to the Internet from their classroom and/or school computer laboratory center.
3. The primary data were from self-reporting via interviews and open-ended questioning of all participants.

CHAPTER 2

REVIEW OF LITERATURE

In the name of improving the nation's schools and school reform, school systems in the past decade, as mandated by the federal government, embarked on an aggressive campaign to connect every school, every classroom, and every student to the Internet.

Within this review, a summary of current literature related to recognizing successful practices, characteristics, and trends of successful Internet integration in the K-12 classroom are included. In addition, current statistics concerning the number of classrooms and schools connected to the Internet are included.

Defining the Internet

Serim and Koch (1996) compare the Internet to the telephone. Instead of using the device we know as the phone, the Internet is the networking of millions of computers all over the world, connected in such a way that it allows one computer to contact another, and connect to (access) other computers on the Internet. Information that has been made available can be retrieved and brought back to the home computer by means of a modem, cable, or wireless satellite connection.

According to the computer dictionary found on EDWEB, a national educational research company found online, the definition of the term, "Internet", is the largest computer network made up of vast numbers of individual computers linked according to a set of international standards (EDWEB, 2001).

Educators, parents, and administrators are increasingly aware of the potential of the Internet as a significant tool to connect learners to a vast array of information resources (Carabine, 1999). In addition, the Internet is considered by many to be an equalizer; an opportunity for all students to be able to access the same library of knowledge (Cunningham, 1998).

Carabine (1999), however, expressed concern that the tasks of supporting teachers in the K-12 classroom and the challenge for teachers to integrate the Internet into their classroom curricula are often too difficult. Dedicating the time to learn complex hardware and software has been found to be a challenge even with for schools and classroom teachers willing to make large investments.

Historical Background

Educational technology is many things. While many would consider the term, "educational technology" to be a phrase that defines a new trend in the classroom; educational technology in one form or another has been around for centuries. Saettler (1990) stated that educational technology can be traced back to the tribal priest, organizing bodies of knowledge in a systematic and methodical way and creating pictures on walls to record the knowledge. Today the computer exemplifies educational technology. The capabilities and ease of use of the computer have vastly improved over the last 20 years (Roblyer & Edwards, 2000). Tapscott (1999) stated. "The new technologies have helped create a culture for learning in which the learner enjoys enhanced interactivity and connections with others" (p. 8). According to Roblyer and Edwards, most technology-oriented teachers of today have been using computer systems only since the microcomputers have become accessible. In reality, there was a thriving

educational community using computer technology and a text-based version of the Internet many years before computing, as we know computing today, evolved.

The first documented use of computer technology in an instructional environment was in 1950. Students at the Massachusetts Institute of Technology (MIT) used a computer-driven flight simulator, which later was developed into a training simulator for pilots. The first recorded use of computer technology by school children was in 1959, when an IBM 650 computer was used to teach binary numbers to New York City elementary school children. By the 1970s, there was intense development of mainframe computer based systems in universities and government installations. During the 1970s, computer based instruction known as computer assisted instruction (CAI) became a focus of many school leaders. Microcomputers came into the American classrooms in 1977, thus shifting interest from mainframe computers to microcomputers (Roblyer & Edwards, 2000).

The World Wide Web was originally meant to connect research sites around the world in order for scientists to be able to access data in computers. Perhaps the phenomenal growth of the Internet can be explained by the growth of web sites. Carvin (2001) stated that in 1994 there were approximately 7,000 to 10,000 web sites around the world. By 1998, there were over 10 million web sites. In February 2002, a Netcraft Web Survey indicated that 38,444,856 responses had been received from web sites on the World Wide Web (Netcraft Web Server Survey, 2002).

In 1995, the Office of Technology Assessment found that relatively few teachers were using computer-based technologies for instructional purposes. At that time, the most common reasons teachers reported for the low and inefficient use of computers in the classroom were limited access and limited training for the teachers in the areas of electronic networks, problem-solving, and presentation packages. In addition, teachers indicated that Internet technology was

not being successfully incorporated into the existing curriculum and that preservice and in-service programs did not necessarily focus on the most useful and current methods to support technology and encourage higher order thinking skills in students (Abdal-Haqq, 1998).

Tapscott (1998) concluded that technology in the classroom enables students to be treated as individuals and allows the educational experience to be customized “based on the background, individual talents, age level, cognitive style, and interpersonal preferences, and so on” (p. 146).

The United States Department of Education issued a comprehensive report in 1996 entitled, “Getting America’s Students Ready for the 21st Century” under the leadership of Richard Riley, then Secretary of Education. The essence of the report called for educational leaders to initiate change in the schools and classrooms that would prepare the students for success in the 21st century. The report was in response to and in support of the Technology Literacy Challenge prepared by then President Bill Clinton. The challenge included the following four goals to ensure future efforts:

1. All teachers in all schools would have adequate training and support in order to help students learn how to use computers and the information superhighway.
2. Modern multimedia computers would be available to all students and teachers in all classrooms.
3. All classrooms would be connected to the Internet.
4. School curricula would include software and online learning resources (Bitter & Pierson, 1999).

The Internet in K-12 Classrooms

The impact and potential of computer technology in the classroom go far beyond the use of the Internet in the classroom. However, the rapid growth of connected classrooms in the last two or three years indicates a need to address the issue of successful integration of Internet technology in existing curricula. According to information provided by the National Center for Education Statistics (Becker, 1999) over 90% of schools now have access at some level to the Internet someplace in the building.

Tapscott (1998) who is given credit for the term “net generation”, described the net generation as being made up of individuals between the ages of 2 and 22. The net generation is a growing population of over 88 million and is the largest demographic group in the United States and Canada. Tapscott also stated that, “between 1995 and the year 2000, home access to the Internet will have grown from 10 to 46 percent” (p. 3).

The net generation of students now occupies the seats of our classrooms. Tapscott (1999) implied that this generation of learners is different from any other generation due to the emergence of digital media. Students are both more knowledgeable and comfortable using technology than their parents. It is expected that this ‘net generation’ will develop and superimpose its culture on the rest of society and therefore will become “a force for social transformation” (p. 2).

Burniske and Monke (2001) stated, “For innovative teachers seeking ways to effect change, computer telecommunication is an attractive environment” (pgs. 28-29). In their studies, they suggested that enthusiasm of our culture towards the World Wide Web tends to make teachers and others who do not immediately jump on the proverbial bandwagon of acceptance of

Internet technology seem less likely to be effective teachers or unable to have progressive thoughts (Burniske & Monke).

McKenzie (1998) determined that while billions of education dollars have been diverted to the development of Internet technology in the classroom, the ability to access vast databases that include archival information, art and music collections, and the ability to instantly communicate, has both positive and negative implications for the classroom. McKenzie commented that at the time of his research, there was a lack of credible evidence that supported the notion that student performance was improved with the use of Internet technology. McKenzie concluded that Internet technology in the classroom would be successful only if professional development for classroom teachers specifically addressed the use of Internet technology. If teachers are adequately trained, the Internet will provide the classroom teacher the opportunity to follow “the classroom engaged learning model” in which the teacher becomes a facilitator and an engaged learner will demonstrate the following characteristics:

1. children are engaged in authentic and multidisciplinary tasks;
2. students participate in interactive learning;
3. students work collaboratively;
4. students learn through exploration;
5. students are responsible for their learning; and
6. students are strategic (McKenzie, p.28)

Current studies and statistics indicate that large numbers of classroom teachers have integrated Internet technology into the classroom (McKenzie 1998). Riel, Schwarz, Peterson, and Henricks (2000) stated, “Teachers who use technology in innovative ways talk about transformational changes in their teaching practices” (p. 58).

According to Tapscott (1999), Internet technology caused a shift from simply broadcast based technology to highly interactive technology. The students of today are no longer just “viewers and listeners, but users” (p. 3). Because of this shift, students of today are watching less television than five years ago and markedly less television than their parents watched at the same age (Tapscott).

The implications for students being able to actively interact with their learning media have, in many cases, shifted the classroom from the “authoritarian, top-down, teacher centered classroom” (Tapscott, 1998, p.129), that has been the typical approach to learning for centuries. Through the effective use of technology and computer based instruction (CBI), the teacher, in many cases, has become a transmitter and facilitator.

Schutte (n.d.), in an online report of a study done with students using traditional classroom methods and another group of students receiving the same information on line, stated that from all indicators and early research on the topic of learning and technology, students using technology learn to construct and understand learning in a more positive way than students using traditional methods.

Cunningham (2001), stated that billions of dollars have been allocated to wiring the nation’s schools and in theory will stimulate learning in the following three ways: computers will be used as electronic workbooks by delivering information and individualized instruction; by simulating real life experiences; and finally, as productivity tools for students to gather, organize, and learn from the information available through computer technology.

In a survey of 1000 public schools released by the United States Department of Education (MSNBC, 2000), 95% of the schools surveyed reported being connected to the Internet. This figure is misleading, however, because connected computers in the staff offices were included in

the number. The survey was based on a sample of 1000 public elementary and secondary schools across the United States. The margin of error was stated to be plus or minus 1 to 3 percentage points. The survey results indicated that 63% of the classrooms were connected to the Internet, which was a three percent increase since 1994. The results also indicated that only 39% of the classrooms in schools that had a significant number of disadvantaged students were connected to the Internet. Those schools surveyed with fewer disadvantaged students had a 74% rate of connectivity. However, the ratio for students sharing computer access was 6:1 in smaller schools and 10:1 in larger schools. In disadvantaged schools, the ratio was 16:1 in contrast to schools with a lower concentration of poverty where the ratio was 7:1. The survey suggested access speeds for schools had increased since 1994. Schools now access the Internet with faster, dedicated networks. At the time of this report, only 14% of the schools reported connecting to the Internet by dial-up connections. In addition, the survey reported that the poorest schools depend on government funding for technology support. Therefore, when government spending is decreased, technology funding, which includes funding for staff development for instructional staff, is usually among the first to feel the effects of the budget cuts (MSNBC).

Federal and State Mandates Concerning Connectivity

In 1994, the Federal government made a commitment to link all classrooms, libraries, businesses, and industries to the information superhighway by the year 2000. Vice President Gore stated the commitment on the part of the government by describing “a different kind of superhighway that can ...give every American, young and old, the chance for the best education available to anyone, anywhere” (Wilkinson & Ecternacht, 1998, p. 215).

Concerns About 100% Connectivity in the Classroom

There is criticism concerning the massive push towards 100% connectivity and availability for every student and teacher. Healy (1998) expressed several concerns regarding the use of technology in the classroom. Her concerns included the discomfort among classroom teachers that technology has been shoved upon them without adequate training and technical support within the individual schools. Teachers have not had the opportunity to learn how instructional technology can be used as part of the classroom curriculum. Healy suggested that there is no objective evidence that computers produce long-term positive results for student learning. There is debate among early childhood experts that age 11 is early enough to begin integrating technology into programs for younger students. Healy also suggested that the push for technology for young children is not grounded in formative and summative research, and that many technology-related purchases are made by educational leaders in order to indicate to parents that the school system is keeping up with other school systems (Tell, 2000).

Healy criticized the current suggestion that technology should be introduced in schools in order for students to be more prepared for entering the work force. Tell (2000) and Nelson (2000) suggested that educational leaders, policy makers, teachers, and parents are reluctant to recognize drawbacks of information technology. Simply gathering massive amounts of data and information is not the same as creating critical thinking skill opportunities nor is the act of gathering data alone encouraging critical thinking on the students' behalf (Healy, 1998).

In a 1998 national survey of teachers published in *Teaching, Learning, and Computing* (TLC), researchers suggested that “intractable workplace conditions” still limit widespread classroom use of computers. The survey included more than 4000 teachers in 1,100 schools across the nation. The extensive study included teachers' educational philosophies and teaching

practices and the use of computers in the classroom, along with an assessment of school climate. The representative sample included 2,251 fourth through twelfth grade teachers along with 1,800 teachers from targeted samples. Roughly 75% of the sampled schools completed the 20 page questionnaire. Becker summarized the findings in the following passage:

Under the right conditions- in which teachers are personally comfortable and at least moderately skilled in using computers, the school's daily class schedule permits allocating time for students to use computers as part of class assignments. In this type of classroom situation, there is enough equipment available to permit computer activities to flow seamlessly alongside other learning tasks. Teachers' personal philosophies support a student-centered, constructivist pedagogy that incorporates collaborative projects defined partly by student interest-computers are clearly becoming a valuable and well-functioning instructional tool (Becker, 2000, p.2).

Tapscott (1998) proposed that the influx of technology into the classroom is responsible for a shift from pedagogy to the creation of learning partnerships. With the addition of technology, in many instances, the classroom is now a place to learn and not necessarily just a place for teachers to teach. "This is not to say that learning environments or even curricula should not be designed. They can, however, be designed in partnership with the learners or by the learners themselves" (p. 143).

This shift from teacher-centered to learner-centered education does not diminish the importance of the teacher in the classroom, but rather emphasizes the value of the teacher in the whole learning experience. The teacher, through the effective use of technology, creates the learning experience for the learner. According to Tapscott, there is still a need for teachers to create and design the learning environments. With student centered learning, the learners themselves design the learning environment and curricula. This approach to learning is considered by many to be consistent with the constructivist view of teaching and learning (Tapscott, 1998).

Staff Development Issues

Cunningham (2001) predicted there would be over 2 million new teachers hired over the next decade. Only through effective teacher training programs will the full potential of using the Internet in the classroom be realized. Cunningham pointed to studies which indicated that teachers in the first five years of their teaching career are “no more likely to integrate technology into their teaching than are twenty year veterans” (p.3), in spite of younger teachers being more astute at using Internet technology. The skill of using Internet technology is not necessarily successfully carried over into the classroom curriculum.

Leu (2000) reported that 80 % of the K-12 teachers in the United States did not feel adequately prepared to use technology in their classrooms. The feeling of inadequacy was reported to be due to insufficient staff development offered to the teachers. Leu found that only 20% of staff development budgets in most school systems was devoted to technology training for teachers. Leu noted the National Council of Accreditation of Teacher Education (NCATE), the major accreditation body for post secondary institutions in the United States, was also concerned about the inadequate and inconsistent technology training in the nation’s colleges of education and teacher preparation programs.

Summary

Internet technology is of keen interest to educators. Many, including the federal government, view the Internet as a change agent and key component for educational reform. The Internet links and equalizes classroom opportunities for everyone who can access the World Wide Web. “The Internet will be the vehicle for improving education and lifelong learning

throughout America in ways we now know are critically important” (Wilkinson & Echternacht 1998, p.215).

The Internet is now an essential part of information based learning. Most schools in the United States have access to the Internet. Use of the Internet in existing curricula has not been carefully evaluated in order for specific characteristics of successful integration to be recognized by onlookers. Becker (2000) concluded that the evidence indicates that the use of technology has not been proven to increase learning.

Microcomputer technology has only been available as part of pre-college instruction for a little more than a decade (Lu, Voss, & Kleinsmith, 1997). Internet technology has been available for an even shorter amount of time. For that reason, more research is needed not only to define and recognize effective Internet integration in existing curricula, but to determine what characteristics may exist in common among teachers who are considered successful at integrating the Internet into their classroom curricula. With that knowledge, pre-service and in-service programs may be developed with the goal of assisting other classroom teachers to emulate those practices research indicates are successful practices for integration of Internet technologies into the instructional program.

The merit of using the Internet is accepted simply because of the implication that the effective use of computer technology in the classroom is the standard all interested parties strive to achieve. Non-researched based acceptance of what effective integration of Internet technology into existing curricula actually is could lead to ineffective classroom instruction, wasted resources in terms of and time and money, ineffective pre-service teacher training, and, most importantly, detrimental effects on student learning. This study sought to identify and describe

characteristics and professional practices of teachers who are nominated by administrators as teachers who effectively integrate Internet technology into their classroom curricula.

CHAPTER 3

METHODS AND PROCEDURES

During my 23 plus years as an educator, I have noted major reform not only in the awareness of how students learn but also the style and manner in which teachers instruct. The onset of the Internet in the K-12 classroom has impacted the classroom in many ways.

Because there is a general perception by educators, administrators, and the general population that the Internet is a positive tool in the classroom, it has been my observation that definitively defining those specific characteristics and trends which successful classroom teachers exhibit is elusive. For that reason I conducted interviews with administrators, building principals, and classroom teachers concerning the successful integration of Internet technology into existing curricula. I reviewed current literature concerning the topic of Internet integration and characteristics of successful integration. While there was an immense amount of literature concerning the Internet and implications for K-12 education, I was unable to find specific models that administrators attempting to plan and implement successful integration of the Internet through appropriate staff development, or teacher modeling, could emulate. I did, however, find abundant information regarding specific lesson plans for the classroom teacher in all subject areas and the number and types of classroom connections to the Internet. Specifically, I wondered if certain characteristics or trends of successful Internet integration would emerge from the study of those teachers deemed as successful at using the Internet in the classroom, and could be noted, and therefore modeled in teacher preparation programs or staff development programs for teachers.

The purpose of this study was to identify and describe characteristics and professional practices of teachers who were nominated by administrators as teachers who are effectively integrating Internet technology into their classroom curricula. This chapter includes information about the qualitative research process and provides specific information regarding the methodology used in this study. Specifically, the perspectives of school system supervisors or technology coordinators, building principals, and the classroom teachers were explored. Instrumentation used, data collection, analysis of the findings, logistical issues, and the trustworthiness of the findings are also included.

Research Design

Fraenkel and Wallen (1993) described qualitative research as an approach a researcher would use to “obtain a more holistic impression of teaching and learning” in contrast to a quantitative approach (p. 379). Qualitative research is thought to help determine, through rich description, “to what extent or how something is done” (p. 379). Gall, Borg, and Gall (1996) defined postpositivist research as:

research ... grounded in the assumption that features of the social environment are constructed as interpretations by individuals and that these interpretations tend to be transitory and situational. Post-positivist researchers develop knowledge by collecting primarily verbal data through the intensive study of cases and then subjecting these data to analytic induction (p.28).

Because there seemed to be a shortage of research specifically describing the perception of successful integration of Internet technology from the viewpoint of an observer, a qualitative approach was used in order to obtain data concerning behaviors, characteristics, and trends of the teachers who participated in this study. Through in-depth interviews, the researcher and the

participants in this study discussed attitudes and behaviors concerning integration of the Internet into existing curricula.

Gall et al. (1996) described qualitative research as involving the study of experiences, language, and communication. As I interviewed the participants, I found that each interview represented a different perspective of the phenomena studied.

This researcher attempted to provide a thorough and complete description of any trends, characteristics, or perceptions that repeatedly emerged from the study of those classroom teachers who were thought to be successfully using the Internet in K-12 classrooms. To that end, the study followed the collective case study method proposed by Stake (1995). The collective case study method enables the researcher to study multiple cases of a phenomenon in their natural contexts and to identify patterns of behavior or characteristics common to the cases.

Data were collected by means of a series of semi-structured interviews with system level administrators, building level administrators, and teachers who were nominated by administrators as teachers who effectively integrate Internet technology into their classroom curricula. Analysis of the data obtained included within-case analysis, a description of each case, and the themes identified within the case. In addition, a cross-case analysis in which themes identified among all cases was presented and analyzed (Creswell, 1998).

Participants

Using a map of the southeastern United States, a circle with a 50-mile radius was drawn with Johnson City, TN at the center. School systems within the first 50-mile radius were listed and numbered. Using a table of random numbers, five school systems were randomly selected for inclusion in the study. Additional circles increasing in 50-mile increments were drawn. If

requests to school systems within the first radius failed to result in sufficient numbers of subjects to interview in order to achieve redundancy, school systems in the next radius were randomly selected. The process continued until redundancy was reached. Due to the nature of qualitative research, it was not possible to predict the number of subjects who were needed to reach redundancy. Nine technology coordinators, seven building principals, and eight classroom teachers from eight school systems located in three states were interviewed during the study.

The technology coordinator or equivalent curriculum / technology supervisor in each selected system was contacted for the initial interview. During the initial interview, the technology coordinator was asked to identify at least two teachers within the system who had successfully integrated Internet technology into their classroom curricula. The first of those teachers was contacted for the interview. The second was contacted only if the first chose not to, or was not able to, participate in the study. The building principals of the identified teachers were also contacted for interviews.

Instrumentation

The semi-standardized interview as described by Gall et al. (1996) was used in this study. This type of interview involves the implementation of a number of predetermined questions and / or special topics. These questions are typically asked of each interviewee in a systematic or consistent order, but the interviewer is allowed freedom to digress; that is, the interviewer is permitted (in fact, expected) to probe far beyond the answers to prepared and standardized questions. “The semi-structured interview involves a series of structured questions and then probing more deeply using open-form questions to obtain additional information” (p.310).

The predetermined, or guiding, questions for this study were developed as a result of extensive reading, the experiences of the researcher in the classroom concerning Internet integration, and literature searches related to the topic of Internet integration. Denzin and Lincoln (1994) stated that researchers using a qualitative approach will “self-consciously draw upon their own experiences as a resource in their inquiries. They [researchers] always think reflectively, historically, and biographically” (p. 199).

Professional educators in Washington County, TN, reviewed the questions for the interview guide for clarity. The questions were then sent to professional educators who worked in schools selected as being among the nation’s top 100 wired schools, as determined in an on-line survey conducted by *Family PC* magazine and *Homeroom.com* (Foster, 2001). Assuming that individuals in those schools would be familiar with using the Internet as part of the instructional program, the guiding questions were sent to individuals at 75 randomly selected schools along with a brief introduction to the research. Individuals were asked to respond to the following questions:

1. Are these questions relevant to my topic?
2. Are there other questions a researcher should ask a teacher concerning characteristics, trends, and perceptions of successful integration of Internet technology in the classroom? If so, please add them to your response.
3. Are there questions you would delete?

The email sent to the reviewers may be found in Appendix F.

Responses were received from 15 educators. Their suggestions, which included minor wording changes for clarity and the inclusion of opportunities for explanation, were used to modify the guided questions in preparation for the interviews. Guided questions for the

interviews of technology coordinators, building principals, and classroom teachers may be found in Appendices B, C, and D, respectively.

Following East Tennessee State University Institutional Review Board Approval, I contacted the first round of selected K-12 Technology Coordinators and Curriculum Supervisors by phone and email. After explaining my research, interviews were scheduled. When possible, I attempted to set up all three interviews within a given school system on the same day. I assured all participants that all information would be kept confidential and that my descriptions and conclusions would include pseudonyms..

Data Collection and Analysis

Interviews were arranged at times convenient to the participants of the study. Because the participants were professional educators, I worked around planning period times, meetings, and other scheduling issues to the extent possible. Before the interview, each participants read and signed an informed consent document that included a brief description of the study and a summary of the methodology. Guided questions were used during each interview. However, as conversations unfolded, many new questions emerged. All interviewees, however, were given the opportunity to respond to each of the guided questions. Interviews were audiotape recorded and transcribed by a professional transcriber. They were then converted into text documents for use with a computer-coding program. Field notes were also written noting non-verbal data and environmental factors. The data were entered into the Non-numerical, Unstructured Data Indexing, Searching, and Theorizing (NUD*IST) software program (Qualitative Solutions and Research, 1997), which was used to identify patterns and themes, to cross themes, and provide analyses to assist in the interpretation and reporting of the data obtained. The text files were

coded into categories in which emergent themes were noted by the researcher. The interviews were continued until there was a pattern of similar themes regularly emerging in the coding process.

According to Creswell (1998), transcendental phenomenology is an approach in qualitative inquiry in which the researcher attempts to set aside all preconceived judgments and opinions regarding the phenomena being investigated. As I interviewed all 24 subjects, I attempted to understand the uniqueness of each of the participants and respect the sincerity of their approaches to the phenomena being studied without regard to previous training, budget issues, or other outside variables that would affect the approach to successful integration of the Internet in each of the different situations. Interpretational analysis was the primary data analysis procedure used in this study. Interpretational analysis, in the study of phenomenon, refers to the examination of data for the purpose of identifying themes or patterns (Gall et al., 1996).

Trustworthiness

Verification in qualitative research involves determining trustworthiness through the effort to establish credibility, transferability, dependability, and confirmability. These concepts, developed by Lincoln and Guba (1985), are the qualitative correspondents of internal and external validity, reliability, and objectivity, which are concepts used in quantitative research. Numerous professionals (technology coordinators, principals, and teachers) were interviewed during the course of the study. While persistent observation frequently involves prolonged engagement with the same individual or group, the act of interviewing numerous individuals in the same positions in this field should result in a similar familiarity with the topic and the concepts being investigated. Member checking was used to ensure that what the researcher

reported was, in fact, what the informant wished to communicate. Member checking, according to Gall et al. (1996), is the process through which those individuals who have been interviewed or observed are allowed to review the researcher's report for accuracy. After field notes and interview tapes had been transcribed, informants were sent a transcribed copy of the interview for review to ensure that the transcript accurately reflected the interview. Only one participant requested that the transcript be clarified.

Transferability, a concept similar to generalizability, was addressed through the use of thick, rich description. Gall et al. (1996) define reader/user generalizability as, "the view that the generalizability of a study's findings is not an inherent feature of the findings, but rather a judgment by individuals as to whether the findings are applicable to their particular situation" (p. 768). Analytic reporting is one method suggested as a means to enable the reader/user to determine whether the findings apply to her or his situation. Through the use of thick, rich description, the writer enables the reader/user to recognize "the participants, events, and the context" (p. 583), of the situation being researched, and to make the judgment as to its generalizability on a case-by-case basis. By using this approach, it is my hope that the readers of this study will recognize similar characteristics and trends that may emerge from those teachers using Internet technology in their classrooms.

Dependability and confirmability were addressed through peer review and the use of an external auditor. The peer reviewer is an individual who examined the transcripts, field notes, and journal I maintained and who, according to Creswell (1998), "keeps the researcher honest; asks hard questions about methods, meanings, and interpretations; and provides the researcher with the opportunity for catharsis by sympathetically listening to the researcher's feelings" (p. 202). The external auditor, who had no direct contact with the informants, examined both the

data and the subsequent reports to determine if the findings were clearly corroborated by the data. The auditor's report is included as Appendix G.

Summary

This chapter included the presentation of the research methods used in this study, including selection of participants, instrumentation, data gathering, and analysis. The approach used for this study was qualitative and the primary data collection was done through in-depth interviews. Also discussed in this chapter were the issues of credibility, transferability, dependability, and confirmability, which make up the concept of trustworthiness in qualitative research. Chapter 4 will include the presentation of the data, and chapter 5 will be made up of the findings, conclusions, and recommendations for practice as well as recommendations for further research.

CHAPTER 4

ANALYSIS OF DATA

The purpose of this qualitative study was to identify and describe characteristics and professional practices of teachers who were nominated by system administrators as teachers who effectively integrate Internet technology into their classroom curricula. Using interviews, I have attempted to determine trends, characteristics, or successful classroom practices that could be recognized as common themes among K-12 teachers who were perceived as successfully using the Internet in the classroom.

Several major themes emerged during the analysis of the data. The themes included the impact of having a vision statement, the role of the school administrator in the integration of the Internet in the classroom, staff development issues, teachers as leaders, and trends, characteristics, and practices of successful teachers integrating Internet technology.

The Impact of Having a Vision Statement

The first question discussed pertained to prepared vision for the use of the Internet in the classroom, school, or school system, according to the level of responsibility of the interviewee. Answers concerning a vision for the use of the Internet varied from formal, written plans required by school boards and administrators, to informal goals for the classroom, to no written, formal, or informal plan at all. Some participants had well-developed and detailed visions, while other participants merely envisioned teachers' being more comfortable using the Internet. All principal participants were asked if there was a vision or plan for the use of the Internet in the school. One middle school principal, one high school principal, and one elementary principal

gestured to their heads and stated that any and all vision for the use of the Internet in the classroom was in their heads. One participant stated that there was not a specific written plan or vision concerning the Internet, but integration of the Internet was part of the school improvement plan. There were also very specific visions and plans pertaining to the use of the Internet in the classroom. A rural county librarian's vision included a very specific plan leading to 100% of the students and teachers in the school using a web page created by the librarian in their classrooms. The web page included links that were directly correlated to the school curriculum, state standards, and mandatory testing of the students.

In a Southwest Virginia school system, the technology coordinator did not have an education background, but rather a degree in computer science. His version of a vision of the use of the Internet in the K-12 classroom was a written, formal, six-year plan that included a discussion of the infrastructure, acquisition of new technology, and better access to the World Wide Web.

The vision of a principal in an urban middle school included these thoughts:

I think my vision for the Internet is [for] it to be as transparent in a teacher's every day classroom work as the use of the overheads are. It is just as easily and commonly used by everyone in the classroom as a teacher using an overhead projector for classroom instruction.

When a classroom teacher was asked about her vision pertaining to the use of the Internet in the classroom, she answered:

Not much of a vision, but I want to use [it] more, integrate [it] more into the classroom. The students like it, and the students can learn an awful lot by searching for them instead of by me giving them the answers; and it's more fun to me after 17 years of teaching.

The vision of an elementary teacher in a rural school system in southwest Virginia was very simple. He stated:

I do have a plan this year, and I have in the past, to use several web sites. We've gone on virtual tours of Jamestown and things like that, and I try to pull in things from the Internet that we are studying to reinforce what we're studying in history, English, any subject that we're studying.

A computer science teacher in a large city school system in East Tennessee discussed her unwritten vision of the use of the Internet in this way:

I don't actually have a plan for integrating the Internet by itself, but I have plans that incorporate the Internet. For example ...I will give a question or a search, and I give the sites so the kids aren't allowed to wander around too much. I will normally give guided sites to look at, like a Web Quest...

When a teacher from Southwest Virginia was asked about her vision pertaining to the use and integration of the Internet in the classroom, she gave the following simple and concise response.

I would like to see the Internet be accessed in every classroom by all students, everyday in every spare moment that the teacher or the students have. That way, instead of down time where the students are not doing anything and instead of chatting with their friends or things like that, they are actually using the Internet to take them places that they normally wouldn't go, whether it's for school work or whether it's to go to a site on one of the National Parks and just take a virtual tour through the park; something that they are interested in. I'd like them to have those computers up and running every day.

A technology coordinator in a city system in East Tennessee referred to the number of Internet connections in his vision:

We have had a plan for the last few years, and had it integrated into our system now but we have Internet connection in every single classroom. We have a computer with a connection to the network with a router that goes out into the Internet in every classroom in every school. So we already have the connection there. Now in order to integrate it into education and make it work, we have to match it to the curriculum in every classroom.

When one technology coordinator was asked about his vision for the use of the Internet for his school system, he stated that the vision would change as the curriculum demands changed.

...my vision would be to have a simple and easy system whereby teachers are working on these particular skills, and here are some Internet resources that have already been

evaluated for effectiveness, categorized by content area and grade level appropriateness and easy links that are tied to those skills so that teachers can use those sites in their planning; kids can use those sites for drill and practice or for application in skills so that the Internet resources become an additional wealth of information opportunity for the teachers and the students to learn more in less time.

One technology coordinator's vision included a very definite personal philosophy. This coordinator did not have an education background but expressed his vision for use of the Internet in this way:

Well, I remember during my interview process here having not been an educator and really coming out of a completely foreign environment, which is business and industry. I remember that I was asked a question: "What do you see the role of technology in the classroom?" I remember my response, and I still firmly believe in it. I don't think that any form of technology should ever be intended to replace a person or persons. I think that it should be another tool. Hopefully, [the Internet will be] a very useful tool in a teacher's toolbox.

Another technology coordinator noted how the vision had changed in just a few short years:

The first 10 years of my career I focused on all of the infrastructure things that needed to be done. We had very few computers, so we bought computers. We had very few teachers who could use computers, so we trained teachers to use computers. We had nothing to use on the computers, so we bought some software and we developed a plan for buying more computers, training more teachers, buying more software, training more teachers kind of a recurring kind of plan where you kind of double back on what you've done to make sure that everybody has the skill: building the infrastructure for the Internet, building the skills to use the Internet and to develop things to use on the Internet or from the Internet. Then we got a new superintendent, and the kind of aptness that I had before was changed and I was focused to do instructions so - at this point my thinking about the vision for technology in County is that I want to see the wonderful resources that we spent over 10 years amassing and [actually] becoming the chalk of the classroom...

The technology director of a large Tennessee school system made the following statement concerning vision and the use of the Internet:

I have a huge vision, and what I would like to see is a wireless environment so that we do not have the limitations of having the Internet in the corner of a room or down a hall in the lab - but having a wireless situation perhaps with some laptops so that it would free

up the accessibility so that it becomes everywhere within our campuses and on our school site as a whole. What I really would like to see - my overall dream is that a student would log onto a network and when the student logs onto that network they would see their web site, and that web site would be personalized with their calendar and their assignments, with their grades, with their projects, with their favorite research places and tools, with their favorite sites, a desktop -- A virtual desktop, so to speak, whereas their regular classroom teacher could send communication to a student and say: "I really liked the way you did this", you know, "Could we try it this way?" I would like to see our software application to be total Internet base and we are going toward that direction....

While one principal was excited about the potential of the Internet, when asked about the vision for the school, he stated:

I don't know [of a vision]. We just started using different administration right now, and there was a plan basically out there, but I don't know whether it's been adopted and adjusted or not - but what I want to do is have the Internet in all classrooms.

*The Role of the School Administrator in the Integration
of the Internet in the Classroom*

When asked about the role of the administrator concerning the integration of the Internet in the K-12 classroom, one technology coordinator replied:

Building - level administrators who have successful teachers in their building are administrators who remove obstacles and open doors and gateways more than they create obstacles. They [building - level administrators] make decisions that are geared to helping improve the teaching-learning process ability, and you can tell it by their values and their actions.

Administrators who have applied themselves to learning with and about technology understand its value as a tool and value it as a tool for teaching and learning, so their support of it is beyond just well, we need to buy all these computers. It goes beyond it. They may go to people and say, you know, "we need money to buy these computers", but in their mind, they know this computer is just a step in a process to developing an environment that is conducive to actual learning. I think the goal of education should be teach as much as you can to the students in the least amount of time, so you can go and teach the next step. As far as the administrators, if they don't use technology themselves then I have found that they are less likely to value it as a teaching and learning tool. This is also true of the Internet in the classroom. "If it was okay for my daddy to learn without computers, so I guess I could too." I've known administrators, who have written dissertations on the value of technology and education, but they didn't use a good sentence, and it showed.

When the participants of the study were asked about administrators using the Internet, it became evident that the use and support of the Internet directly affected the budget, staff development plans, and overall support of the use of the Internet in the classroom. During one interview concerning the support and use of the Internet by the administrators, a system technology coordinator replied:

Well, we're site - based management, so our technology funds go to the schools to be spent as the principal wants to spend it anyway, and we had 3 schools in this system that had very highly literate principals when it comes to technology and they want technology in there and they purchase it and that's the in-services that they give to their teachers. Then we have 2 [schools] that had principals that really didn't want to use a computer and didn't see much use for it, so they didn't spend their money on technology. They spent it on a walking track so the community could use it, and they don't use [it] quite as much. There is a lot of technology in those schools because it was kind of forced, but we have gotten those principals in the last year, and they are very high users of the student information system. ...that was the first...one of those principals was the first one to require his teachers to use e-mail to communicate with him after we finally got him to use it. So, yes, I would say that it directly related to how the administrator thinks of technology and the Internet and that is going to determine how the teachers use or how much effort they put into [it].

A high school vocational teacher noted that support of the administration to use the Internet was imperative. He stated that administrators were not skilled at navigating the net and using technology, but support for the classroom teacher was very important.

...my supervisor is willing to let me because he knows that if he needs an answer, I can find it for him so it's kind of like, he's kind of letting me get the knowledge so if he needs it, he knows that I can get the information. I have seen some administrators that don't support it as much, and you can tell by use of technology in those buildings.

The importance of administrative support for successful integration emerged in several of the interviews. The technology coordinator for a large county system in Tennessee expressed that importance by stating:

Bless their little hearts. They're wonderful [the principals], but bless their heart. I'll tell you, we made lots of mistakes with our initial technology plan. The biggest mistake that I think we made is we did not include our principals enough in the training. We went straight to the teacher, and we bypassed them, and administrators are very busy people.

Very few of them attended the training that teachers attended. Now, I'll have to give them an A plus; they made sure their teachers were there, which is wonderful, but if that principal is not there, driving it home, it's not going to happen. It's not going to happen. That principal does not say to the staff, "you will read your e-mail everyday. You will put appointments in Outlook. You will use the Internet. Show me evidence of that." It's not going to happen, because it's very easy to just continue to do what you've always done... We don't give principals enough support.

A technology coordinator stated that their administrators were given some specialized training, but one of the main problems seemed to be some administrators who were close to retirement.

...You get a person that's had 28 years teaching experience and they have 2 years to go before they retire. Some of them are really gung-ho to learn new things, and some are just looking to retire without ever having to use the computer.

While several of the principals interviewed admitted overwhelming responsibilities and that a shortage of time during the school day was a major factor in using the Internet at work, one principal stated that the Internet was her link to current trends in middle schools across the country. This principal stated that she used the Internet for educational law issues, educational e-mail list serves, and to access professional sites and professional organizations. She also stated that she expected the teachers in the building to communicate by e-mail rather than paper memos.

It was painful when we first started and took those paper announcements away from [them]. I was met with some resistance, but I think the key to that is the training.

The technology coordinator for a large rural Tennessee county school system discussed how the administrators had impacted the schools in the county regarding the use of the Internet and technology in general.

They [administrators] are getting better. Every year we get better. You are talking about 6 years ago; we had 2 computers and each of the libraries in the schools were connected. Today we have about 3000 [computers].

When asked if the administrators were using e-mail to communicate, the technology coordinator explained that administrators were using their TenNash (state provided) or hotmail (free e-mail service) accounts.

In a large Tennessee city system, a classroom teacher stated that the use of the Internet by administrators was very important. Not only did Internet use help the administrators keep abreast of current issues, the administrator set the example for teachers in the school to take the time needed to learn how to use and integrate the internet into the daily routine.

They [the administrators] set the example. If my principal wouldn't do it, why should I? You need to start at the top, definitely.

A technology coordinator in a large Tennessee system was asked about the relationship between successful integration in the schools and the correlation between their [the principals'] use of the Internet. Did this director of technology see any visible difference in successful practices in the schools if the principal was not proficient and comfortable with the use of the Internet?

Absolutely. I'm very fortunate again there. I probably don't know how lucky I am that the principals I work with are very supportive of technology and its role in our schools. I was just extremely excited last week when I got a phone call from a principal that I have a great deal of respect for; but this principal is one of these people that she'll do anything if she know it helps children. You better convince her it helps children if you expect her to participate. I don't think we had her on board for a while, but she's on board with a vengeance now.

...I think that initiative such as this has to come from the top down. It has to trickle down. It can never trickle up. You can get some teachers in a school that are excited about technology and the Internet and they'll do great things in their classroom, but if you want to effectively touch every child in that school and do what's best for those children, then instructional technology has to come from the leader of that school.

A curriculum supervisor in a city system in Virginia expressed her frustrations with building level administrators and her ideas for making the administrators depend on the Internet more in their jobs as principals when she stated:

Many of our building administrators are not good role models for teachers, or for students, in the use technology. They have lots of other skills, which is why they are [administrators]. We took all of our administrators through training last summer. The training was not long enough, and there weren't enough follow-ups to make them comfortable with all of those skills. I've even considered - just to get all of our administrators to use their email accounts - I've even considered sending all the memos from this office electronically, not sending paper copies, just to make them turn it on and get their email...

Staff Development Issues

A large, city system in Tennessee offers staff development for staff, administrators, and teachers on a continuous basis. Most of the staff development sessions are based on specific input from the teachers and administrators. Effective use of the Internet is one of the topics offered and given priority after basic computing skills are accomplished. The school system has developed a list of skills that administrators and principals feel is essential for computer-literate teachers. The school system offers pay incentives for technology goals achieved and relies on teacher mentors more than on planned staff development. It was generally agreed this system was successful. The interviewer interviewed an older teacher, within eight years of retirement, who was generally considered as a teacher not interested in integrating technology into his special education classes. With the cash incentive as the initial reason for teaming with a mentor teacher, the older teacher soon flourished under the tutelage of his colleagues. The older teacher interviewed had not only reached the goals as listed by the school system but had exceeded expectations and was considered by many of his colleagues as a 'renewed in spirit' teacher concerning his level of excitement in the classroom. When I discussed this point with the teacher, he immediately agreed that integrating the Internet into his existing curriculum had renewed his excitement as a classroom teacher.

Several of the people interviewed for this study indicated that their interest and success in integrating the Internet came from work on advanced degrees rather than from school system sponsored staff development. All the participants who brought out this point noted that the classroom benefited from the personal and after hours commitment they had made to obtain a terminal degree. In all cases, expenses incurred for terminal degrees were the responsibility of the teachers, and there was never any release time for travel to and from class or for preparation.

For example, a middle school teacher was asked about her training in the use of the Internet that included web quest and web page design.

I've received some training [through staff development], but most of the training I got was just playing, and then I got my masters. I specialized in classroom technology, so I got a lot of help there.

During an interview with the technology coordinator for a large rural county in Tennessee, the issue of staff development for the teachers and administrators was expressed as a concern.

The problem I have with staff development is that, you know, _____ County is somewhat low paid, and it's very hard to get teachers to do any more than they absolutely, positively have to, and I can't blame them really. It's very hard to get teachers involved. What happens is you'll have a few interested teachers – a handful of teachers- about 50 teachers that will use the plan and it becomes repetitive. You'll have the same group of people over and over no matter what courses you teach or how many times you repeat them. It's the same group of people that keep coming back for more information. So I don't have the answer. I wish I did--to try to generate some kind of interest with the teachers to get them to come into training or to suggest ideas for training. I don't know. I'm still working on that.

When a technology coordinator was asked about staff development and the use of the Internet in the classroom, he gave very specific examples of training for the teachers and administrators.

We used to have a training lab and it used to have dual platform computers in it and they would run PCs and Macs on each computer and we had 10 of them here and we would bring the teachers up here and we take them out for 4 days in the classroom for training.

We would supply the substitute and we would bring them up here for 4 days and we taught them how to use the computer. We taught them how to use e-mail, we taught them how to use a word processor and PowerPoint. We taught them how to go out onto the Internet and project it in their classroom from their TV's or projectors or whatever they had....

Every single teacher in our system, with the exception of the new ones that came on this year [were trained] on how to use the Internet, and how to use their e-mail, and all principals are now requiring all teachers to communicate with them by e-mail. They don't send out announcements anymore; they send it to them in e-mail, and they require them to get their e-mail and at least use their e-mail to get their announcements.

During the interview with a middle school principal in a large city school system in Tennessee, the question of staff development was a point of pride. The principal pointed out that teachers in the system were encouraged to take advantage of the staff development opportunities that were offered monthly and posted in plenty of time for everyone to be aware of the opportunity.

A principal in a rural county school in Tennessee described staff development as one of the most important factors in having teachers successfully using the Internet.

I think the most beneficial thing would be staff development provided by someone who really knows how too...I think if you sit down with a teacher and they've got a unit of study coming up and if someone could sit down and show them, you know, where to find the information they need, the lesson plan we were talking about before and how they can use that to instruct their kids, they would use it; but a lot of us are reluctant to learn new things.

.... But, if someone could sit down with teachers, then I think it probably has to be in smaller level groups to be able to do that so it wouldn't be intimidating to anybody. I'm like that, I guess, and I'm basing my view point on a personal opinion, but if you could sit down and show me something and show me a benefit from it, then I'm more apt to use it.

The state of Virginia now requires classroom teachers to earn technology certification. One participating school system had been working through the University of Virginia to certify all the teachers along with graduate credit. For that reason, the technology coordinator explained

that there was a significant amount of money spent on staff development. He went on to explain his frustration.

I think there is a strong emphasis-- I've only been here a year and when I got here they had just suffered through a really bad year where the Internet was down a good part of the year, the computers didn't work and they [had] been misconfigured and stuff like that and teachers really didn't feel comfortable with it; they didn't feel like it was a reliable thing they could count on everyday, so this past year, my focus has been to try to prove to them that everyday when they come and log on to that computer they can get to the Internet, and they can print and they can do the things they need to do.

...I am hoping to get to the point where they are craving for information and asking for training and stuff like that. Honestly, the training that I offered last year was fairly poorly received. I didn't get too many people to sign up. We don't require them to go. They are required to get certification, but just to sign up for training; I haven't had good luck with that.

One technology coordinator shared duties with an educational administrator and it was noted that their answers differed on certain issues. This was not surprising because one interviewee's background was from the viewpoint of a computer science major, and the other participant's background was in educational leadership. The former computer science major noted that a gauge for measuring the importance of staff development was the amount of money spent on the planning and implementation of staff development.

I guess one way to kind of gauge it [staff development] is how much money is spent on it. We probably spend \$50,000 to \$60,000 a year on staff development. Most of our money in the last two years was spent on getting teachers technology certification. In Virginia there is a requirement for the next school year, every teacher must possess a certification in technology, and so we have been working with the University of Virginia to get teachers certified; and they also get some master's credits and their re-certification credits and that kind of thing.

The larger school systems in east Tennessee and southwest Virginia, from which individuals participated in this study, have monies set aside for staff development. However, it was noted that when budgets were cut and technology budgets were affected, staff development was usually the first item to receive a budget cut. For that reason, specific staff development was

turned over to the individual schools in the system, releasing the technology department from the responsibility and cost of staff development.

Another concern from a Virginia supervisor was the emphasis that staff development had been given concerning Internet use and state testing. This particular supervisor indicated that the school system was stressing the use of the Internet by teachers to teach students how to pass the mandatory state testing.

For several years, from 1995 through about 1998, I spent an awful lot of time working with the people in the schools who were designated technology leaders in the schools and others on using the Internet and providing them with resources, buying resources, doing little workshops, doing aiding and teaching web page development. You know, all those kind of things to try to get them up and running, but at this point [they] are kind of on automatic pilot about the use of the Internet. Now, that being said, let me say that some of my colleagues are interested at this point in purchasing products to do specific tasks, and these products run on the Internet One is called Edutest, it's a.... personally I consider a blight because it is all about testing, and it puts children in front of the computer to do testing and that's all they get to do. They [the students] sit there, and they have to take a preparation test for high-stakes in Virginia. I think it is [a] very, very destructive thing towards instruction and towards children's attitudes about the Internet and for teachers' attitudes about the Internet...you would say that I've got the hero's quest to try to solve the problem of misusing the Internet for the purpose of teaching kids to do a test.

When a principal of a Tennessee middle school was asked about the importance of staff development in the use of the Internet and in teaching teachers how to successfully integrate the Internet into the daily routine, the principal stated that staff development was a key factor, but even with staff development, the teachers had to be able to rely on the Internet's being available in the classrooms. He indicated that teachers did not always use what they learned at staff development concerning integration of the Internet because of the fear of failure in front of the students when the technology failed for various reasons.

In a large county school system in Tennessee, the technology coordinator had this to say about the importance of staff development:

Staff development is a huge undertaking...What I have found over the years is I will visit with a teacher, and he or she will say to me, “ _____, I want to be able to use the Internet, with...whatever, and I want to be able to download and I want to be able to do this and I want to be able to do that...” The things they are describing to me are very sophisticated tasks that require some specific training to be able to perform that, so what we’ve tried to do is we developed an educators’ IEP. It’s on the web site; you can find it under staff development and listed there, this is what you need to know how to do and brought it to 8 buildings because with technology is so new and is so specific they don’t know what to do.... My philosophy is that teaching someone to use a computer and to access the Internet, you have to bring it down as if you were in kindergarten, which is what I used to teach, because face it, we are all in kindergarten when we’re learning something new, and so you bring it down to that level.

In a large city system in Tennessee, I was able to interview a person who was devoting 100% of the year to staff development through a grant that had been obtained. Her title for the 2001-2002 school year was “technology mentor.” Her perspective on staff development and the use of the Internet was clearly defined. While staff development was available and important to the classroom teachers, she indicated that there was another piece to the successful integration of Internet technology in the classroom.

I think that the teacher to teacher relationship will help that teacher really take a lesson and try it that first time...There is really nothing more boring than sitting and watching someone else play their computer. It will put you to sleep in a heartbeat so you know, you can’t get it if you don’t sit down and do it, and you don’t have any...teacher leadership.

A high school teacher from the same Tennessee school system explained his program in this way:

The biggest staff development plan this year are the hours that we are getting for the Tennessee Literacy Challenge Fund 2001 (TCFL) grant because, as a mentor teacher, I have to spend 10 hours a month training my group, and every one of the 16 people [mentors] have at least 3 faculty members that they train so that’s the biggest part of the training this year.

Teachers as Leaders

During the process of interviewing educational supervisors, administrators, and classroom teachers, a concept emerged several times that the researcher had failed to approach in

the guided questions and in the study as a whole. This concept was the emergence of teacher leaders and the role they play in the successful integration of Internet technology in the classroom.

Each time the phrase or concept of teacher leadership emerged in the interviews, it was in the realm of staff development. Below are excerpts from some of the conversations in which teacher leadership and the successful use of the Internet in the classroom was discussed.

In a city school system in Southwest Virginia, the technology coordinator (with a computer programming background) answered the question about teacher leadership in this way. It was interesting to note that even without a background in educational pedagogy and leadership, this coordinator was aware of the roles of teacher-to-teacher relationships in teaching successful integration to other teachers.

I think what makes it (using the Internet) successful, is having a good leader. I mean, ideally it would be the principal, I guess, but it's just having a person who lives for it and loves it, whose enthusiasm is contagious and can easily, in a very simple matter, teach other teachers how to use something or how to do something easier and quicker by using the computer or how to help the kids learn fast and whatever but the biggest factor is having a good leader.

Following this train of thought concerning teacher leadership and the use of the Internet, she explained:

I just think that with anything and I don't think it's just the Internet, I think with anything one of your fellow staff members can give you ideas and make you excited more so than someone...because a lot of times when people have to go to staff development, they say, "Oh no, another inservice, and they don't always buy into the concepts. If another teacher is using something and they tell me about it and I know that their students have enjoyed that and if they've enjoyed teaching and it's been successful, I will really jump on the bandwagon and I think other teachers do that, too. Staff development is good, but I don't think that a lot of teachers, from what I hear and how I feel, sometimes we're getting in our hours. This is not really useful to us and we are just here.

I asked:

“So, teacher leaders seem to be more....”

She replied:

“Teacher leaders, I think, are more effective.”

The concept of teacher leadership in staff development was expressed by another teacher when asked about staff development and the integration of Internet technology in the classroom.

When asked if staff development helped in the use of the Internet in the classroom, he replied:

I get a lot [staff development], and I have a chance to go out more; and the reason I get to go out more than other teachers is because I used to train other teachers. I am one of the teachers that actually assist the technology department in staff development.... like a core team.... I started testing the e-mail server with the technicians. I started sending them mail, and they started sending me mail, so I was thinking that’s my relationship with this department is I stay ahead of other people and whenever I help them find problems or if I see a problem, I know enough to say ‘oh yes, so when I back down, I can check filters and see if they are not working. I know what to do when it doesn’t work; or if this one comes up, I immediately pick up the phone and call students and check. They [the technology department] allow me to go to training to come back and help with teachers.

A middle school principal in a city system in Tennessee further explained the concept of teacher leadership and the use of the Internet by describing the phenomena of building leadership.

Once they [the other teachers in the building] see what she’s (the teacher using the Internet in his or her classroom), hear about it, hear the students talking about it, they want to know what it is, and they want to learn more about it. (Describing what successful integration of the Internet in the classroom looks like).

*Trends, Characteristics, and Practices of Successful
Teachers Integrating Internet Technology*

Interviewees were asked to describe characteristics, trends, or professional practices of classroom teachers considered successful at integrating the Internet into an existing curriculum.

The answers varied from very specific characteristics to more abstract perceptions of successful integration. The following are examples from the interviews.

The teachers that successfully use the Internet are learners as well as the students. Be a life long learner, and to me the only way you can stay on top of the Internet and technology is to say to yourself, 'I'm never going to be an expert in this subject. I'm going to try real hard, and I'm going to read and try to stay current.'

When a principal was asked to describe in as much detail as possible, the characteristics, trends, and professional practices that she looked for in a classroom teacher who was successfully using the Internet in classroom instruction, she explained,

It's a standard question in our interview process now-of their level of familiarity and the comfort level of using technology and the programs they can use; whether they can use the Internet, how they use Internet in the classroom with the students. Do they also use it [the Internet] as far as their classroom planning? Do they find resources on the Internet that they use to bring into their classroom? You can tell pretty quickly when you talk to someone in an Interview if they are comfortable with it or even if they are willing to learn more about it because we have lots of staff development opportunities in our school system for teachers who want to learn more. They can do that all year long and in the summers.

The same principal, when asked to be more specific, explained by describing the teacher I was to later interview.

(name), when she is observed in her classroom, she is like the orchestra master of the system. It moves seamlessly and smoothly from one activity to another using a myriad of resources and the Internet is included...(name) is one of the first ones to begin using Web Quest with her students in our school and has taught lots of other teachers. She's also finished her Master's Degree in using technology in the classroom. She's a leader in our school as far as using the technology.

When asked about what he observed in those teachers deemed as successful at using the Internet in the classroom, a principal from rural east Tennessee noted that the successful teachers used the Internet for many different purposes. The principal even noted successful teachers used the Internet in their spare time for shopping and other leisure activities. In other words, the Internet was integrated not only in their professional lives but in their personal lives as well.

She used the Internet for everything that she does. You know, she does her shopping on the Internet; she researches. She's our speech and language therapist. She's constantly searching for fact or information so she uses it, like I said, in her personal life as well as in her professional life just for all kinds of things.

She's actually designed some web pages. She worked and designed some pages I think, for a site for one of the professors at East Tennessee State University [ETSU] at the Speech and Language department and conducted some workshops at the university level, and of course, she does ours (the school's web page). The neatest thing about this is she uses children. That's what I like. She knows how to do it. That's just one person here. But permit me to brag, just a minute on her.

When asked what characteristics this teacher displayed that he, the principal, would like to see modeled in the other classroom teachers to successfully integrate the Internet, the principal quickly added, "Her enthusiasm for it (the Internet). She has just embraced this technology more so than everybody...Most of the teachers, including myself, are still tied to the written page more than electronics."

In a city system in Southwest Virginia, the curriculum supervisor was asked to describe the characteristics she viewed in teachers successfully using the Internet in the classroom.

We have many wonderful people in this school division who do it very well and I'm thinking about one lady in particular who teaches Earth Science. She is interested in everything and anything, and every time a training opportunity comes along she tries to get to that training opportunity. She is one of those people who is continually learning both the content and delivery methods and that kind of thing. (She) is just absolutely fascinated by a new way to reach kids. She finds Internet sites, for example, that would let her simulate earthquakes with her Earth Science class. She had her kids in the library on a computer lab. She has 5 computers in her classroom, but she wanted everybody doing this lab at the same time; she took them to a lab to do that. She had them measuring seismic waves, pin-pointing the earthquake based on velocity and distance and duration and all those kinds of things. She's doing a very nice job of integration.

In a large east Tennessee School system, the technology coordinator answered the question concerning trends, characteristics, or successful practice of teachers successfully using the Internet in this way:

The teachers that are using the Internet most effectively are the ones who use other resources more. They are the teachers who have a better grasp on what teaching and

learning is all about, what the process entails, they are the relationship people; they build relationships with the students, the other teachers, the administrators and the parents so that there is a teamwork approach and the Internet is just one more tool that they use. They don't focus so much on the Internet as the latest and greatest and most wonderful, but they do see it as a valuable tool in their toolbox, and they use it effectively, or not at all. It's not just something they use just to be using it. We never pushed it as something to use; the temptation is, "gosh, we spent all this money getting all this Internet stuff, now you all better be using it." We've hopefully never taken that approach. The approach has been: here is a student we are trying to teach marketable skills that we want that student to graduate with when they leave our school systems, and here are the tools to help us get that student as far along as we can, and the Internet is just one more of those skills. The short answer is: the teacher who uses the Internet effectively is effective at other things. Using the Internet doesn't make that teacher effective, they're using it effectively because it's just one of their practices.

This particular technology coordinator seemed to be more aware than other interviewees of what was taking place in the use of the Internet in the classroom. He continued his discussion of what successful integration looks like by adding:

First of all, the person uses the Internet for themselves for personal and professional reasons. They use the Internet as an information resource, and they understand what that information means: What to believe; what not to believe. How to take everything with a grain of salt. The importance of security. The importance of some environments and anonymity, and they understand it and they use it themselves so they are practitioners of using the Internet. The Internet is integrated into their lives. They are email users. They are online people. They are wired. From that stand point that doesn't necessarily mean they carry a Palm Pilot around and a cell phone and all that, but they understand the value of it. They understand that personally so they can professionally apply that and show other people how [it] can be used by them to improve it. These teachers also understand the importance of information management and information management being a skill.

In a large, rural county in Southwest Virginia, the answer to the question concerning successful practice, characteristics, and trends was answered much the same way.

When I walk into a classroom and I see that the Internet or other technology is being used in the way that I want to see them being used, I find that first of all the teacher is perfectly comfortable with the technology, and he or she does not get up in the front of the room and announce in a kind of nervous voice, (in a shaky voice), "today we're going to use the Internet." If I hear that I know that I'm dead in the water in terms of what I have been doing all these years. But instead, if I see that there is a focus on a learning objective and lots of things are going on to meet that learning objective. I really don't expect every teacher to use cooperative learning but if there is just one computer in the classroom perhaps there is a little group that is managing the computer usage either for

themselves or for the whole class because the teacher sure can't stand by the computer and be tethered to it, so that's the other thing that I want to see. I don't want the teacher to feel tethered to the computer. I want to see that the teacher has help for students to develop the skills that they need to do what it is that she wants done with that computer or those computers. I want to see children purposefully searching. I want to look over their shoulders and see that they know to go to a certain site or they know the difference between a search engine, a focus search engine or a precise search engine. I want to see that they have searched for something and looked at it and have been able to quickly discern that this is a site that's reputable or this is a site that is not going to do them any good. I want them to have some sophistication about what it is they are looking for, so the teacher somehow has had to set them up to that that kind of sophistication. She has had to model that, or she's had to give them some kind of a model to go by, some standards to follow. I want to see that when they get the information there is not wild printing of everything that they find. It really irks me to see children killing trees because they generate pages. I get this myself when I first started using the Internet. I created reams and reams and reams of printout that I didn't have a way to search back through. There wasn't a way to index them; I just simply had pages and pages of stuff that I couldn't search through, so you lose the functionality of searching when you print everything out, so I want then to instead use bookmarking or notes that they keep to allow them to retrace their steps and document what it is that they've done. Those are a few things I'm looking for.

When a principal in a rural Virginia school system was asked to describe characteristics of teachers successfully using the Internet he discussed certain characteristics he had noted. These included the fact that successful Internet users were generally younger teachers. He also noted that language arts and science teachers were more likely to integrate the Internet into their daily lessons. The principal was discouraged about the math and history teachers' being more rigid and less enthusiastic about implementing the Internet into the curriculum. This supervisor also noted that the classroom teachers were still using the Internet mainly as an enrichment tool and a reward for students when work was finished.

In a large school system in East Tennessee, the technology coordinator summarized teachers successfully using the Internet in the classroom with the word, willingness.... "First and foremost is-take the journey and try."

I noted in gathering data that principals interviewed often described successful integration of the Internet in terms of specific activities. In an interview with a principal in a rural east Tennessee system, he described successful integration of the Internet in terms of observing the teacher use the Internet in the classroom.

I see the results integrated in their curriculum. If they are teaching a course and they say, "Okay, this group here, you may want to go out on the Internet and do a little research on that to get on a little farther on and then the information that we have here in the classroom." They are using the Internet and that's what they need it for. They [the teachers] might want to communicate with people overseas to get different perspectives on stuff, like current events, history. ...You can go on the Internet and find their writing and see what they have to say or even communicate with them.

In a rural southwest Virginia school system with very little technology in the building, I interviewed the principal of an elementary school. When he was asked to describe successful integration of the Internet by classroom teachers, he noted:

The number one thing that I see most of the teachers that are using it [the Internet], are single because you've got to have a lot of extra time away from school to do it. Just like Mr. (name). We did have one exception to that and she's not with us. A teacher last year transferred to another school, which had a family and was excellent with that [using the Internet] but pretty much it is the teachers who have a chance to do the planning away from school.

In a city system in east Tennessee, the principal of a large middle school described the teacher he perceived as successfully using the Internet because of her willingness to learn how to use the Internet and her enthusiasm for adapting her teaching style in order to integrate the Internet into her classroom curriculum. When I asked the principal about some specific activities he noted in the classroom, he described how the teacher bookmarked sites for the students in her class.

In another large, city system in east Tennessee, I was able to interview the teacher who had been chosen to be the trainer to other teachers for the 2001-2002 school year. When (name) was asked about teachers successfully using the Internet, she gave a long and detailed answer.

Her main marker for success was teaching students and teachers to manage the overwhelming amount of information students are exposed to. Below are excerpts from that interview.

...It's very difficult to verbalize it. As a matter of fact, I was late because I was talking to a new staff member that we have and she says, "(Name), I'm wanting to use the computer a lot more. That's my school goal this year, to integrate my English classes and I want to get some software to get some drill and practice." I said, "You know, drill and practice is okay, but not the best use." When I see teachers using the Internet best, you've got to realize that we've got to get students to be able to manage information.

...But the Internet is just another source and it is the language of students so that is the one that we are going to be drawn to, so the teachers who are using them right understand that the kids will go there and they will search a topic and they will assimilate information, synthesize it, put it together to draw some conclusions and be able to present it to somebody else, communicate it to somebody else and a multitude of presentation models, I mean it could be a research paper; it could be a stand up oral presentation or it can be a turn to your neighbor kind of level of interaction, but they have to come away from that with sharing the things that they got from [it].

I kind of think that teachers who are successful have a concept of a project in mind, which is what the world of work, is, everyday of the week.... you know, they are sitting in the world of work and their manager or their boss comes in and gives them this task to do, so students should be familiar with those words. You've got this task to do today, guys, then let's strategize how you are going to do this task and then what's the end product look like so they are able to take them through those steps. I really like WebQuests.

...WebQuests have broken down those steps, and those are the easiest steps for a new teacher using technology or using the Internet to get Internet activities going in their class.

A librarian interviewed in Southwest Virginia also discussed this idea of teachers' helping students learn how to manage all the information gathered on the Internet. She also stated that teaching the students how to keep their research topics narrowly focused and transferring the information into student-driven projects was the key to successful integration of Internet technology into existing curricula.

When I asked a technology coordinator in east Tennessee to describe what he noted in successful teachers integrating the Internet in the classroom, he described a specific teacher whom he thought made the integration of the Internet ‘seamless.’

...She teaches Language Arts and she uses this [the Internet] the same as if she were using a blackboard or something that she was holding up showing to those kids before the Internet came about. She always has this [her plan] laid up in her plans where she wants to go, and how she wants to do it.

Summary

During the collection and analysis of the data, five major themes emerged. The themes included the impact of having a vision statement, the role of the school administrator in the integration of the Internet in the classroom, staff development issues, teachers as leaders, and trends, characteristics, and practices of successful teachers integrating Internet technology into their classroom curricula. Thick description was used to present the themes that emerged from the perspective of the school supervisors, administrators, and classroom teachers who were interviewed. Information from the analysis of the data was then used to develop the findings and recommendations, which are presented in Chapter 5.

CHAPTER 5

FINDINGS, CONCLUSIONS, AND RECOMMENDATIONS FOR FURTHER RESEARCH AND FUTURE PRACTICE

The trends, characteristics, and professional practice of teachers successfully integrating the Internet into existing curricula were investigated in this qualitative study. The purpose of the study was to determine if there were common trends, characteristics, or professional practices among classroom teachers considered successful by their building principals and supervisors at integrating Internet technology into existing curricula.

The findings of this study were organized around five themes that emerged from the analysis of the data. The themes included the impact of having a vision statement, the role of the school administrator in the integration of the Internet in the classroom, staff development issues, teachers as leaders, and trends, characteristics, and practices of successful teachers integrating Internet technology into their classroom curricula.

The professional literature context and findings related to each of the major themes are presented below. Recommendations specific to the major themes are also included. General recommendations for practice and for further research are presented at the end of the chapter.

General Finding

Goodlad (1984), while discussing recurring themes in a school study, explained that it was "virtually impossible" to compare schools with one another due to the number of variables present (p. 28). The researcher found this to be true of the schools used in this study. While all the representatives of the different schools interviewed for this study seemed to genuinely care

about the students successfully learning and the importance of the Internet to the curriculum, none of the participants could be compared to any other school or situation in the study.

The Impact of Having a Vision Statement: Does Vision Matter?

Professional Literature Context

“Educational leaders inspire a shared vision for comprehensive integration of technology and foster an environment and culture conducive to the realization of that vision” (NCREL, 2000).

Vision exists when people in an organization share an explicit agreement on the values, beliefs, purposes, and goals that should guide their behavior. Conley, Dunlap, and Goldman (1992) suggested that vision is built in an organization when all the participants have access to the same information, share ideas, discuss both the positive and the negative aspects of the organization, and agree to define the purpose of the organization. Sergiovanni (1994) compared vision to a platform that holds the beliefs of a school, which, in turn, creates a community. Whitaker and Moses’ study, as cited in Lashway, (1997), described vision as “an inspiring declaration of a compelling dream, accompanied by a clear scenario of how it will be accomplished. A good vision not only has worthy goals, but also challenges and stretches everyone in the school” (p. 1). A review of the literature indicated that organizations with clearly defined visions, created by the stakeholders of the organization, were much more likely to advance with clear and understood goals in contrast to those organizations without clear and defined visions.

Conley, Dunlap, and Goldman (1992) argued that schools that have developed clear and definitive visions create a standard through which teachers are able to gauge their efforts and accomplishments. This encourages the organization to speak the same language and creates an informal marker for everyone in the organization.

Finding

Each participant was asked about his or her vision concerning the successful practice of Internet integration in the classroom. In addition, the interviewees were asked to describe, in detail, any written version of a vision. Responses ranged from formal, well-developed plans created with stakeholders, to informal goals, written or not written. While none of the participants in the three states in which the study was conducted knew of any state requirement for a formal vision for successful practice, certain differences were noted by the researcher among the schools and individuals with prepared vision statements and those schools and individuals without a prepared vision statement concerning the integration of Internet technology into the existing curriculum.

It is a finding of this study that schools in which a definitive vision had been formally written down, with input from the stakeholders, were those same schools in which successful practices of Internet integration were most evident to the observer. In contrast, those schools in which the administrators or building level principals stated that the vision was not written down were more likely to have mere pockets of success with Internet integration rather than school-wide efforts.

Recommendation

To build a vision for successful practice of Internet integration, an effective leader needs to create an environment in which all the participants, particularly the classroom teachers, have

access to the most up to date information about current practices concerning Internet integration. Through professional literature, staff development, and administrative leadership courses, individuals should be encouraged to create a school-wide vision concerning the successful practice of Internet integration in the K-12 classroom. According to a technology coordinator interviewed for this study, the state of Virginia is requiring that all classroom teachers, by the end of the 2002 school year, 'must possess certification in technology'. This particular school system was working with the University of Virginia to achieve this goal. In addition to mandatory certification that proves certain competencies in technology, the teachers receive re-certification credits and master credits.

Classroom teachers should be encouraged to develop a personal plan of growth concerning the integration of the Internet into their classroom routines. According to the Milken Exchange on Education and Technology (1999), 45 states either had or were in the process of creating state standards for basic teacher competency in the area of technology. Many states now require technology-related exit exams for graduation from teacher preparation programs. Slowinski (2001) stated that in light of the issues of accountability and standard based learning, other states will follow suit and insist that classroom teachers have a certain level of competency using the Internet in everyday classroom instruction. For this reason, in addition to formal visions prepared in a collaborative effort by a school system, I recommend encouraging the formation of personal visions for the integration and successful practice of Internet technology into the classroom curriculum.

Current literature indicates the involvement of teachers from the onset of creating vision statements is more effective for the organization (Conley, Dunlap, & Goldman, 1992). A systemic approach to creating a vision statement for successful Internet integration is more

effective because it is the classroom teachers who must adopt abstract ideas and turn them into practical classroom practices. Involving teachers in the creation of a vision statement will ultimately encourage the stakeholders to adopt the vision into their everyday classroom activities and practices.

During the collection of data for this study, a technology coordinator for a large east Tennessee school system was one of the participants interviewed. In discussing the vision for the successful practice of Internet integration, the supervisor explained how the school system's vision had become so easy to implement. After successfully writing a grant, all members of the local school board were given state of the art laptop computers and received individual training on how to use the hardware and software given to them. Within weeks, this group of community leaders became a "paperless" school board. The coordinator interviewed indicated that it was this specific move that helped the school system to become successful in implementing the vision that was created by the teachers, students, and all stakeholders in encouraging successful practices in the integration of the Internet technology in the classroom. The community bought into the vision and the technology coordinator stated, "We have never looked back at even the possibility of a classroom not being connected to the Internet".

*The Role of the Administrator in the Integration of the Internet
into Existing Classroom Curricula*

Professional Literature Context

Slowinski (2001) stated that at the turn of the century, over 90% of America's schools had some level of access to the Internet and more than 90% of the classroom teachers had email accounts in their classrooms. While this is an impressive statistic, there is no such data

concerning the connectivity of the school administrators. In my initial literature review for this research project, it became evident there was a significant lack of discussion or research on the role of the building level school administrator and the use of computer technology. Building level administrators who were interviewed were enthusiastic about successful practices of the Internet being used by the classroom teachers, but for various reasons such as time constraints, lack of proficiency using technology, and in some cases, a general lack of interest, building level administrators were far behind the classroom teachers in understanding successful integration of Internet technology.

McIntire and Fessenden (1994) suggested that administrators encourage active participation by the stakeholders when implementing new ideas and concepts to a faculty. In addition, administrators can encourage the stakeholders (classroom teachers) to be risk takers. An administrator, at any level the classroom teacher attempts to master, should value encouraging teachers to integrate the Internet into an existing curriculum. An administrator should encourage risk taking in successful practices by a classroom teacher and should continually reinforce the idea that risks are viewed as learning experiences, and not necessarily as failures.

With this idea of risk taking, a building level administrator should encourage classroom teachers to continually evaluate classroom performance, successful practices, and integration of the Internet into existing classroom curriculum.

North Central Regional Technology in Education Consortium [NCREL] (2000) and the Technology Standards for School Administrators Collaborative [TSSA] in a joint project, listed the following tasks that an effective principal would be performing in his or her everyday schedule. The tasks included:

1. Participate in an inclusive district process through which stakeholders formulate a shared vision that clearly defines expectations for technology use, and
2. Develop a collaborative, technology-rich school improvement plan, grounded in research and aligned with the district strategic plan, and
3. Promote highly effective practices in technology integration among faculty and other staff (NCREL, 2000).

The Bill and Melinda Gates Foundation donated 1.3 million dollars to a grant for Nebraska principals and superintendents. Over the next three years, 900 principals and superintendents will each receive a laptop and a handheld computer such as a Palm Pilot and be trained by expert students. These expert students will show the administrators first hand how easily the students of today have adapted to the new technologies (Bill and Melinda Gates Foundation, 2002).

Finding

In discussing the role of the administrator in the integration of the Internet in the classroom, respondents noted that administrators, in particular building principals, have the opportunity to "remove obstacles and open doors" for teachers who wish to pursue the use of the Internet. They further noted that budget decisions, which often impact staff development choices as well as technology support and purchasing practices, are in large part influenced by the building principal. Finally, respondents noted that "Administrators who have applied themselves to learning with and about technology understand its value" and therefore frequently influence decisions in favor of issues related to the use of technology.

With the exception of one female principal in a large east Tennessee school system, the majority of the building principals interviewed viewed their ability to successfully

navigate the Internet as poor. When specifically asked about certain skills such as using search engines to find professional material and up to date trends, the principals were found to be seriously delinquent in basic computing skills. However, all the principals interviewed were enthusiastic about the potential of the Internet and were eager to share success stories of teachers they [the principals] described as successfully using the Internet.

It is interesting to note that only one technology coordinator indicated knowledge of the ISTE standards (International Standards for Technology Education, 2002) for technology during the interviews. Only one principal referred to the Internet as a major source for obtaining current professional news and literature. An interesting note concerning this principal is that she is currently enrolled in a local university as a doctoral student in the educational leadership program and is very knowledgeable about current research trends concerning the constructivist view of learning and the impact the Internet and other technologies have on constructivist learning and teaching.

It is a finding of this study that schools in which administrators have a working knowledge of the use of technology, and who are effective and efficient technology users themselves are more likely to have a work environment in which technology and the integration of the Internet is valued and supported. It is evident that building level administrators must be willing not only to commit to a significant investment of the school budget, but must also commit to an investment of time to lead technology and Internet integration from merely a choice to a fully integrated expectation of the classroom teacher.

Recommendation

Donovan (1999) stated that in order for school leaders to move toward total integration of professional practices and technology, five things must happen: (1) the stakeholders, particularly

teachers, must be aware of the current methods; (2) the successful integration must be compatible with the needs and expectations of the stakeholders; (3) the connection and hardware must be in working order and easy to use; (4) success stories must emerge and teachers must be able to try the process without making an initial commitment to massive change; and (5) successful integration and practices of the Internet should be easily recognized and modeled by other teachers. All of these recommendations for successful practice of Internet integration must be understood and supported by the building level administrator.

In addition, leaders must have a working knowledge of and implement state, national, and international standards for technology and must know and model the use of Internet terminology.

*Staff Development: Implementing Effective Support for
Successfully Integrating the Internet*

Professional Literature Context

Donavan (1999) used the term, ‘trialability’, to explain the concept of trying "without a total commitment to overhaul’s one’s way of doing things" (p. 3). Through the sharing of the success stories of those teachers who are excited and motivated about successful practices using the Internet in the classroom, those teachers less motivated may model the successful behavior of their colleagues due to an intrinsic desire to be an effective classroom teacher.

Crystal (2001) suggested that too many administrators are still looking at staff development as one-day workshops that accompanied the packaged textbooks given to teachers by administrators. These textbooks were considered “teacher-proof” and offered reproducibles, manipulatives, and fail-proof daily lesson plans. In contrast, staff development for integration of Internet technology and successful practices using the Internet for classroom teachers is much

different and cannot be treated in the same manner as previous staff development. Instead, teachers and administrators need on-going inservice and staff development with opportunities to learn with hands-on experiences as well as contact with teachers and administrators who can relay real life success stories to their peers and colleagues.

Crystal (2001) suggested that teachers be given a laptop computer, which gives teachers the flexibility to train during preparation time, and then the teachers can practice what they have learned at home and on their own time.

Finding

Study participants indicated that a great deal of the training and experience they received that enabled them to integrate the Internet in the classroom was obtained during their work on advanced degrees rather than their school system sponsored staff development. They also reported that one reason staff development offerings were less effective was the lack of follow-up and support once they had been introduced to a new skill or methodology. Administrators expressed frustration that the same few teachers were attending multiple staff development programs and that it was difficult to get others to attend.

It is a finding of this study that school systems as well as local schools need to revisit staff development programs and find ways to implement programs that will better meet the needs of their teachers regarding the integration of the Internet into their classroom curricula.

Recommendation 1

It is suggested building level administrators and system supervisors rethink traditional approaches to staff development and support in the area of Internet integration. A technology coordinator interviewed in Virginia noted that current in-service for teachers was inadequate and opportunities were not being taken advantage of by the teachers in the school system. When I

asked him to explain his comment, he stated that the same teachers who were excited about the possibilities of using the Internet in the classroom years ago and eagerly took advantage of training opportunities were generally the same people who repeatedly signed up for classes. The technology coordinator expressed concern about not seeing new faces take advantage of training and in-service programs and other learning opportunities.

For that reason, staff development, as we know it, should evolve into staff development in which measurable growth can occur among the participants. Through the growth process, classroom teachers will be more able to successfully integrate the Internet into the existing curriculums. An excellent example of this evolution of staff development occurs in an east Tennessee city system. Teachers are tested and evaluated in a friendly atmosphere to establish a level of technology competency. Certain teachers are given the title of 'laptops' and become responsible for three teachers showing measurable growth under each 'laptops' tutoring. The teachers are all expected to create lesson plans that are posted on the school web site. Those teachers who are designated 'mentors' are awarded laptops to use. The teachers under their tutelage are given monetary stipends at certain benchmarks that indicate improvement and growth in the area of technology and integration of the Internet into existing curricula. The plan is supported by a successful grant that was created by the teachers under the supervision and direction of the technology coordinator and administrators.

On the day of my interviews in the above-mentioned school, I was fortunate enough to see the 'laptops' and the 'mentorees' enjoying refreshments and sharing success stories with the rest of the group of teachers. There was not an administrator or technology coordinator in the whole session. I noted the collegiality and comfortable atmosphere of professionals sharing success stories and helping each other develop more practices that were successful. When I

asked the participants if, in their opinions, was there a better method of staff development for encouraging teachers to integrate the Internet into their classroom activities, the agreement was unanimous. One older teacher stated he was tired of sitting in a room with many people and simply watching someone use the technology, but rather preferred having a colleague share ideas. He also stated that having a peer sit with him at the computer and literally walk him through procedures was the only way he would succeed at using the Internet in the classroom. As we discussed this point, the older teacher stated he was intimidated by his lack of knowledge concerning integration of the Internet and felt uncomfortable sharing his lack of knowledge with the system technology coordinator. However, this same teacher was very comfortable sharing his questions and concerns with his colleague whom he knew respected him on different levels other than technology.

With this type of information in mind, administrators should approach staff development concerning the integration of the Internet into the classroom not as a new technology, but rather, focus on successful practice through the following recommendations:

1. Focus on those teachers who show some hesitance towards the use of the Internet in the classroom by teaming them with teachers who show successful practices using the Internet in the classroom. Share success stories with the rest of the faculty and recognize those teachers who are successful as well as those who are becoming successful..
2. Approach successful practice and integration of the Internet by focusing on the prospect of innovation and more opportunities for learners through successful classroom use of the Internet instead of approaching the Internet merely as technology.

3. Allow the teachers to see the administrator using web-based services and other technology resources.
4. Provide support and staff development that will lead to successful practices in Internet integration. Develop strategies that will work towards 100% effective integration, not just isolated courses.
5. Create a friendly environment and attempt to go 'paperless' as soon as all hardware is in place and working. Post all announcements and communications to the classroom teachers through email or websites.
6. Encourage classroom teachers to create websites and recognize those teachers and students who have excelled at some particular project in which Internet technology was used.
7. The administrator should make it a priority to ensure that hardware in the classrooms and computer labs is working at all times. In the case of hardware failure, the administrator should make it a priority that equipment be maintained and in working order at all times with as little down time as possible. This step will help eliminate the frustrations that many teachers feel after creating thoughtful and creative lesson plans in which the Internet is an intricate piece, only to find that the technology does not work. By making the hardware a priority, the classroom teachers will perceive the importance the administrator places on integration of the Internet and successful practices using the Internet technology.
8. Avoid the use of the term "technology" but rather speak in positive terms through which classroom teachers can view the successful integration of the Internet as dynamic and transformative teaching strategies. A participant who was interviewed

for this study stated, “The Internet does not make a bad teacher into a good teacher, but rather, good teachers use the Internet as another tool because they understand effective teaching and learning”.

In conclusion, school administrators are encouraged to re-think the traditional approaches used in staff development. Instead of leaving the school system and hiring experts from other places, place staff development in the hands of those teachers who are motivated and excited about successful integration of the Internet. Those teachers who are considered successful at integration will enthusiastically describe and demonstrate the advantages of integrating the Internet into the existing curriculum. These same teachers will show how the Internet is compatible with the goals and expectations of the school curriculum.

Recommendation 2

Barth (1990) suggested that principals must adjust to the isolation issues shared by teachers by taking charge of their own staff development and learning. “Learning must be something principals do, not something others do to or for them. Principals will be seriously involved in designing and conducting their professional development. ...a critical element in principal’ learning – indeed in anyone’s learning- is ownership”(p.76).

I suggest that building level administrators create a team of teachers and devise a plan of action that would include all teachers in the school. This team would collaboratively work towards creating a plan of action through which all teachers in the school could become comfortable with Internet integration in the classroom. The building level administrator would work with this team and also participate in the collaborative learning activities. His or her involvement would be an indication to the teachers in the school of the importance of everyone,

all the stakeholders, being knowledgeable and comfortable with the goals created by the school for successful integration of the Internet.

In the past, professional development for educators was treated as an independent opportunity in which specific elements were stressed to the teachers. It is my recommendation, based on my findings, that administrators and educators reform staff development to support the standards-based curriculum, instruction, and assessment that is currently being stressed in our classrooms and schools. In order for successful Internet integration practices to become standard practice in the classroom, and not the exception practiced by a few teachers, staff development must change to meet the needs of the classroom teacher. The implications for this to happen as suggested by the data gathered for this study, include the following recommendations for more effective staff development:

1. Allow teachers who demonstrate successful practices using the Internet in the classroom to create a plan for helping their colleagues to become more successful at Internet integration.
2. Administrators should recognize those teachers who demonstrate successful practices using Internet technology to support the curriculum.
3. Staff development should reflect the needs of the classroom teachers. Administrators should create opportunities for classroom teachers to plan and implement their own staff development.
4. Allow teachers the opportunity to attend professional development conferences and technology conferences. These allow teachers to be exposed to the latest trends and practices from other practitioners.

Characteristics, Trends, and Successful Practices

Professional Literature Context

According to a Quality Education Data report (Quality Education Data,2001) Internet access has become the norm in K-12 education. Statistics from this report indicated that 9 of 10 public school teachers use the Internet as an additional classroom resource. This figure rose from 2000, when 86% of the K-12 classroom teachers were accessing the World Wide Web for additional resources. The same report stated that 74% of the students in America spend at least one hour a week on the Internet and 96% of the students use the Internet on a weekly basis to find additional research.

Valdez et al. (1999) found the successful integration of technology into the curriculum, along with successful practices has been demonstrated to impact student learning in a positive manner. Teachers using the World Wide Web successfully demonstrate how valuable the resources found on the web can be, not only for additional curriculum materials, but also for professional development.

Finding

Data gathered included a variety of responses to questions about characteristics, trends, and successful practices of teachers who were identified as having successfully integrated the Internet into their classroom curricula. Responses ranged from vague to very specific both within and between the three groups of interviewees, technology coordinators, principals, and teachers. Generally, participants who were closer to events that took place in the classroom provided more specifics. Teachers, for example, provided specific examples of tasks and projects. Principals gave fewer specific examples but generally reported one or two specific tasks or projects they

considered exemplary. Responses by technology coordinators were often the least specific, reflecting the fact that they had very little time to spend in the classroom and even less, in some cases, with curriculum issues. Their focus, by necessity, was frequently on keeping things running and putting out the proverbial fires that accompany the deployment of hardware systems.

It is a finding of this study that there are as many ideas of what successful practices using Internet technology looks like concerning Internet integration as there were participants in the study. Many of the answers were very specific in which the interviewee would offer specific examples of successful practice using the Internet in the K-12 classroom. In contrast, answers by other study participants were much more vague and the answers were often subjective. In many cases, administrators recognized certain teachers as being successful at using Internet technology because the classroom teachers exhibited enthusiasm for the technology. Some administrators thought successful integration occurred because the classroom teacher was not afraid to be a risk taker and used the resources available to connect to the World Wide Web. Other teachers were deemed successful by administrators simply because they downloaded images and presented PowerPoint presentations or bookmarked sites from the Internet for their students. Still other administrators thought success at Internet technology integration occurred when the classroom teacher allowed students to surf the net for information relevant to the subject being taught.

One administrator interviewed for this study thought the teacher was successful at integration and displayed successful practices using the Internet by allowing the students to communicate with other students through email applications.

Only one administrator mentioned the importance of classroom teachers approaching the use of the Internet from the perspective of the Internet being an additional source of information, and not the focus of the lesson. The administrator stated that if more teachers would take this

view, then the fear and trepidation that teachers felt using the Internet would be minimized. Teachers who were perceived as successful at Internet integration not only used the Internet with their classes but also used all possible resources with their students.

The one characteristic most noted by administrators when discussing those teachers, who were perceived to be successful at Internet integration was the willingness to try to learn new and better ways or methods to teach children. Administrators and teachers interviewed did not necessarily view successful integration of the Internet simply by technical know-how but the outcome of the use.

During the interview process every participant was asked to specifically describe what characteristics or successful practices were exhibited in order for a classroom teacher to be thought of as successful at integrating the Internet into the everyday classroom routine. While the researcher, during the preliminary planning of this study, thought this question would result in very specific and detailed answers, this was not necessarily the outcome. In the interviews with the administrators, successful integration of the Internet was closely aligned to the teacher's enthusiasm for using the Internet and the classroom teacher's interest in effective delivery and content of his or her subject matter.

Both teachers and administrators interviewed for this study indicated that successful integration of the Internet reflected a commitment on the part of the classroom teacher to lifelong learning and searching for more effective ways to deliver classroom content to students.

An important point that emerged from the interviews with the classroom teachers was the idea of not specifically teaching towards any kind of mandated testing the students had to take but rather the importance of course content and learning outcomes. In most instances, the classroom teachers did not use the term "constructivist", but the manner in which teachers

described successful integration, more times than not, included many of the characteristics of constructivist teaching and learning.

The classroom teachers interviewed for this study also tended to be more apt to use web based instruction in contrast to using specific software. Teachers indicated that much of the educational software available was too much “drill” for the students, and the students were more likely to not take the opportunity to learn through repetition, but rather sought out ways to simply “beat” the game. Using the Internet in instruction usually assured the classroom teacher that the student would be exposed to a variety of challenges, which in turn, would keep the student’s attention.

Teachers interviewed for this study often mentioned the importance of students becoming independent learners.

Recommendation

I recommend that additional research be conducted if an effort to discover and define effective integration of the Internet into classroom curricula. The research must go beyond self-reported data and perceptions and may require the development and use of an observation protocol or standardized rating scale.

Teachers as Leaders

Perhaps the most surprising finding of this study was the importance of the role of the teacher leader and his or her impact on the other teachers in the school concerning successful practice and the integration of the Internet into the daily classroom routine and curriculum. This piece emerged as I reviewed the literature for staff development concerning successful integration of the Internet and then emerged again in the interviews conducted for this study. In

the initial planning of this study I viewed staff development and teacher leadership as not being closely aligned. At the conclusion of this study, however, I view staff development and teacher leadership as two very different pieces, yet related in that both elements impact each other in very dramatic ways.

Today, successful classroom teachers implement learning activities in which learner outcomes and assessment strategies require students to apply new knowledge and create a product that will demonstrate the newly acquired knowledge. Classroom teachers who strive for constructivist learning help their students move beyond facts and basic skills and expect the students to create products in which the information applied is purposeful and meaningful. While teachers cannot deny the power they have over creating the condition and atmosphere of the classroom, most teachers do not consider themselves a ‘decisive element’ in the school.

While many argued that the onset of technology, in particular the World Wide Web, would revolutionize learning and transform classrooms, some futurist envisioned a virtual classroom in which the teacher would be replaced by technology. Recent research indicates that classroom teachers are more important than ever and the role of the teacher has expanded to that of facilitator. Instead of teachers being replaced by Internet and other technologies, the role of the classroom teacher is evolving. In the future, the need for the instructional leaders in the classroom will be more important than ever if successful learning is to occur (Collinson 2001).

Professional Literature Context

According to the Department of Education, schools in the United States met the challenge to have all schools wired by the year 2000 (Collinson 2001). However, computer-assisted instruction [CAI] varies from school to school. Some schools are connected and wired to the

Internet but not set up in such a way that is convenient for teachers and students. Because of the lack of standard connectivity from state to state, a digital divide still exist in our schools.

By the end of 1999, 84% of teachers reported having at least on computer available in their classroom and 99% had computers available somewhere in the school. Early studies indicate that teachers are having a variety of difficulties finding time to learn the new technologies and incorporating [them] into the curriculum. Only a third of the nation's teachers report feeling prepared to use computers and the Web in their teaching” (Collinson p.37).

According to Barth (2001) there are 10 areas in the school environment in which teacher leaders are imperative to the school climate. These include:

1. Choosing textbooks and instructional materials
2. Input on curriculum development
3. Student behavior issues
4. Tracking issues for students
5. Designing staff development and in-service programs
6. Promotion and retention issues for students
7. School budgets
8. Teacher evaluation and performance
9. Search committees for new teachers
10. Search committees for new administrators

Successful integration of the Internet has offered unique opportunities for teachers to become teacher leaders. According to Wasley (1991), traditional leadership opportunities for teachers are usually limited to efficiency opportunities such as department heads. The teacher leaders become responsible for communicating curricular concerns to the administration.

The classic definition of a teacher leader suggests teacher leaders “enable their colleagues to do things they wouldn’t ordinarily do on their own to improve professional practice” (Wasley 1991, p.4). Descriptions of teacher leaders from the same source conclude that teachers assume leadership roles in school reform, mentor their colleagues, provide professional growth opportunities, and become problem solvers. In addition, effective teacher leaders are risk takers.

In a study by McLaughlin and Yee (1988), 85 teachers were studied to determine the characteristics of a ‘satisfying teaching career’ (p 19). A major finding was the importance teachers put on the benefits of collegiality. In vocations other than teaching, the definition of a successful career was based on vertical movement – advancement, monetary reward, success, and recognition in the field. The study concluded that teachers deemed their careers as successful and measured this success in individual terms. Teachers continually look for ways to grow professionally and become more effective in the teaching and learning process. Success to the teachers in the study was increasing effectiveness with the learners, not necessarily a promotion. In the schools studied where teachers indicated that they had a positive teaching career collegiality was fostered. In addition, integration and knowledge of subject matter and problem solving were considered positive characteristics in successful classroom teachers.

Finding

During the process of gathering data for this study, it became evident that a concept was emerging that I had not anticipated and, therefore, did not include in the literature review. The emerging phenomena was the importance of the teacher leadership within each school building and the impact these teacher leaders had on the success of successful Internet integration and the development of successful practices using Internet technology. Their colleagues and administrators even referred to the teachers I interviewed for this study as, ‘teacher leaders’. In

every school system that I visited the teachers whom the technology coordinators, system administrators, and building level administrators recognized as the teacher leaders in the building or school system were the teachers who embraced Internet technology. The people recognized in a school or school system as successfully integrating Internet technology and who recognized the enormous possibilities for learning were almost always the same teachers depended upon by the rest of the school, both the administration and teaching staff, for assistance with successful practice and integration of Internet technology.

It is a finding of this study that teacher leaders have a significant impact on their fellow teachers. In many cases and in many areas that impact may be greater than the impact or influence of the building administrator or other designated leaders. It quickly became evident that the teachers who participated in this study were, in fact, recognized as teacher leaders in their schools and school systems

These teacher leaders were all considered teachers first and exemplified an attitude of enthusiasm for the craft of teaching. They consistently attempted to lift students to new heights. The teacher leaders recognized by their colleagues and administrators understood the implications of successfully integrating the Internet into the curriculum as a powerful tool for learning. The enthusiasm expressed for the learning potential of the Internet was not limited to successful integration of the Internet into class activities. These teacher leaders were also recognized for sharing both successes and failures with their colleagues. The emergence of the teacher leader in this study was perhaps one of the most important pieces to emerge. The implications of the role of teacher leaders in successful practice integrating the Internet into classroom curricula has implications for the evolution of effective staff development programs, teacher training programs, the role of the administrator and curriculum development, and of

course, the development of a shared vision for a school culture concerning successful practice and Internet integration.

The integration of the Internet technology offers teacher leaders in schools a unique opportunity to practice collegiality and support successful practices when effectively using the Internet in the classroom. We now understand teachers need support in thinking about curriculum integration using the Internet. Teachers often become overwhelmed with their initial introduction to the Internet. Attempting effective integration can be intimidating to the classroom teacher. Most teachers need time to practice using technology in order to effectively access the massive amount of material available on the Internet. Teachers must become comfortable with releasing students, who are frequently much more comfortable and adept at using Internet technology, to become responsible for some part of their own learning.

A related issue that emerged from my research was the importance of the building principal or other designated leaders recognizing and supporting teacher leaders in the school. One teacher interviewed stated that teacher leaders have mentors or educators they model and in her case, it was her administrator. The support from her 'leader' often spurred her on to be a better classroom teacher and taking risks to be a better facilitator was not a big concern. This teacher knew her administrator expected her to try new things, and using the Internet with her class was on top of the list. The fact the administrator recognized this for being a teacher leader using technology and integrating the Internet made this teacher feel more comfortable about risk taking and trying new classroom strategies. The teacher who I interviewed positively commented about the verbal and non-verbal support she received from her administrator. In contrast, there were incidences in which the teachers I interviewed in other systems did not necessarily feel the administration was particularly supportive. This feeling of lack of technology support on the part

of the administration more often than not seemed to show up in school systems where the technology available was older and successfully connecting to the Internet from the classroom was not always possible. The feeling of not knowing if the technology was going to work if used in the classroom often inhibited teachers from enthusiastically attempting to integrate the Internet into their lesson plans. “Extensive use [of the Internet]...is dependent upon access. With ready network access for large numbers of students, utilization expands rapidly” (Black, Klingenstein, & Songer, 1995 p. 57).

With the assistance of effective teacher leaders in a school, colleagues can more easily understand and more effectively apply the concepts of successful Internet integration in their classrooms. Teachers using the Internet have many options. These include communicating with other people, information collection and organization, and collaborative problem solving. Hopefully, students will then successfully create products through the effective use of technology, demonstrating their newly acquired knowledge and skills.

Effective teacher leaders can help other teachers feel more comfortable with their new roles as facilitators of learning. To many teachers this concept has the same feeling as giving up power or control of the learning environment. Teacher leaders can help peer teachers be more comfortable and more effective in this new role.

Another element of teacher leadership that emerged in this study was the role the school media specialist plays in the overall curriculum of a school. In more than half the interviews completed for this study, school librarians were considered teacher leaders in the use of the Internet. Several teachers remarked about the support the school media specialist had given through sharing knowledge about successfully using the Internet. According to the interviews, in

many cases the school library media specialist was one of the first to become comfortable using the Internet with students and teachers.

Recommendation

It is recommended that system level and building level administrators become familiar with the concept of teacher leaders and be made aware of the tremendous resource they offer in terms of supporting and developing the skills of their fellow teachers. The concept of informal leadership is not new. What is new, however, is the discovery of the impact that teacher leaders may have on new teachers and on experienced teachers who are learning new skills. Their role in modeling and supporting teachers may be particularly significant in the area of Internet integration and other technology related issues.

General Recommendations

While there are new books and articles literally appearing daily about the “nuts and bolts” of the Internet, lesson plans and ideas, and technical help, it is hoped this study will go one step further. Teachers ask, “How can the Internet help my students learn better?” or “How can the Internet help me teach my students better?” “How can I use the Internet to address the issues important to our world and help my students understand diversity?” “Where do I get the time to learn how to effectively use the Internet and the technology?”

Educators today are fortunate to live in an exciting time. In many ways, our educational system has undergone reform. However, I have seen first hand through this study, that applying Internet tools to an existing curriculum is harder and more challenging than mastering the tools to use the Internet. As I traveled through the three states I used for this study, I was continually

surprised at the inequities from state to state; school system to school system; school to school and even classroom to classroom. I also understand that until all educators, administrators, teachers, and staff, are comfortable with technology and Internet technology, our students are going to be subjected to digital divides.

As a lifelong learner and an educator very much interested in educational research, I ask myself why are we [educators] still not sure how to use this powerful tool, called the Internet, in such a way to assist all learners? Using the Internet in the classroom lends itself to a step-by-step approach. Through effective use of technology, the process can be repeated as many times as needed. The Internet is in place and the students are there eager, for the most part, to learn. So why is this so difficult?

In closing this study, perhaps the most profound finding came from a friend and colleague, Jerry Poteat. We were discussing this project and reflecting on how, through our 20 plus years in public education, we had been participants of one of the most significant movements in education since compulsory education. The movement I am referring to has not only changed education, but also our world, and our job descriptions and expectations as educators. As we discussed the onset of technology and the impact of the Internet on K-12 education, Mr. Poteat made an extremely insightful statement that I feel summarizes this study. “The Internet does not make a bad teacher into a good teacher, but rather a good teacher, who understands teaching and learning, effectively uses the Internet....” (J. Poteat, personal communication, October, 2001).

With these conclusions in mind, implications for future practice and further research were made.

The following are recommendations for successful practice:

1. Staff development for building level administrators should be a priority. Principals need to understand the implications of constructivist learning and Internet integration into the classroom curriculum. Administrators should have clear understanding of the tie-into state and national standards. Through training, administrators will have a better understanding of successful practices of classroom teachers using the Internet in the classroom and integration of subject matter.
2. The building level administrator should be able to demonstrate an above average understanding of the Internet technology and be a building leader in effective and successful use of the Internet. Through successful practices, the administrator will be able to demonstrate to the stakeholders of his or her school, ability to access important information concerning trends and issues in education. In addition, the administrator who has a basic understanding of the Internet will be able to make educated decisions concerning a vision and plan for integration of different technologies that will emerge in the future.
3. Administrators should publicly recognize, encourage, and reward those teachers who have become teacher leaders in the use of successful integration of Internet technology in the school. These teachers should be encouraged by monetary means or be provided additional time to be spent with colleagues in order to encourage those teachers who are less comfortable with Internet technology.
4. For those schools, classrooms, and individuals who strive to be successful at integration of the Internet, demonstrate successful practice in the classroom, and understand the importance of creating goals, a clear and concise vision statement concerning the successful integration of Internet technology should be created.

Communication to all the stakeholders is imperative in order for everyone to have a voice and understand the goals. The vision statement should be tied into the curriculum goals because the Internet is an effective tool for learning.

The following are recommendations for further research:

1. There is a need for further study to determine if there is a correlation between the use of the Internet by classroom teachers and effective staff development.
2. There is a need for a model to be created that could be used, not only to effectively teach teachers to integrate the Internet into existing curricula, but also to build the confidence of classroom teachers using the Internet. This would encourage successful practices among teachers, and diminish the digital divide concerning the successful integration and practice of Internet integration in the K-12 classrooms.
3. There is a need for further study to see if there is a correlation between use of the Internet by classroom teachers and effective staff development.
4. Further research is needed to indicate any significant or measurable difference in integration of Internet technology when the teachers or pre-service teachers undergo the same staff development opportunities by mentor teachers or recognized teacher leaders in the field of Internet integration.
5. Administrators, through inductive, qualitative research, even conducted on an informal scale, could provide information for a collaborative group to develop a comprehensive plan to help classroom teachers to successfully integrate Internet technology into the existing curriculum. This same procedure could be used for developing training and instructional opportunities for teachers, and

6. Further research is needed comparing the inequities from school system to school system in order to compare the impact of inequitable funding concerning Internet technology and connectivity. Staff development and the infusion and integration of Internet technology from school district to school district when there is such a significant discrepancy in funding for Internet opportunities for students and teachers should also be addressed.

REFERENCES

- Abdal-Haqq, I.(1998). *Professional development schools: Weighing the evidence*. Thousand Oaks, CA: Sage.
- Barth, R. S. (1990). *Improving schools from within*. San Francisco: Jossey-Bass.
- Barth, R. S. (2001). Teacher Leader. *Phi Delta Kappan*. February 2001. 443 - 449.
- Becker, H. J. (2000). *Finding from the Teaching, Learning, and Computing Survey: Is Larry Cuban Right?* Paper presented at the 2000 School Technology Leadership Conference of the Council of Chief State School Officers, Washington, D.C.
- Becker, H. J. (1999). Internet use by teachers: Conditions of professional use and teacher-directed student use. [Electronic version]. *Report #1: Center for Research on Information Technology and Organizations*. The University of California, Irvine and the University of Minnesota. Retrieved July, 2001, from <http://www.gse.uci.edu/doehome/deptinfo/faculty/becker>.
- Bitter, G. G., & Pierson, M. E. (1999). *Using technology in the classroom*. Boston: Allyn and Bacon.
- Black, L. Klingenstein, K. & Songer, N. B. (1995). Observations from the Boulder Valley Internet project. *T.H.E. Journal. [Technological Horizons in Education]*. 22 (11), 54-57.
- Burniske, R. W. & Monke, L. (2001). *Breaking down the digital walls: Learning to teach in a post-modem world*. Albany, NY: State University of New York Press.
- Carabine, B. (1999, May). Creating a collaborative learning environment in K-6 classrooms. *T.H.E Journal [Technological Horizons in Education]* 26 (10), 76.
- Carvin, A. (2001). EdWeb: Exploring technology and school reform. Retrieved June 18, 2001, <http://www.ibiblio.org/edweb/dic.html#internet>.
- Center for Applied Special Technology*. (2000). The role of online communications in schools: A national study. [Executive summary]. Retrieved May 11, 2000, <http://www.cast.org/publications/stsstudy>.
- Collinson, V. (2001). Intellectual, social, and moral development: Why technology cannot replace teachers. *High School Journal*, Oct-Nov 2001, 85 (1), 35-44.
- Conley, D.T. (1996). *Are you ready to restructure? A guidebook for educators, parents, and community members*. Thousand Oaks, CA: Corwin Press.

- Conley, D.T. Dunlap, D. M., Goldman, P. (Winter 1992). *The “vision thing” and school restructuring*. OSSC Report 32,2. 1-8 Eugene:Oregon School Study Council. ED 343. Retrieved November 20, 2001, http://www.ed.gov/databases/ERIC_Digests/ed402643.html.
- Creswell, J.W. (1998). *Qualitative inquiry and research design: Choosing among five traditions*. Thousand Oaks, CA: Sage.
- Crystal, J. (2001, March). Overcoming the textbook mentality. *Technology and Learning*, 21 (8), 58.
- Cunningham, C.A. (2001). Improving our nation’s schools through computers and connectivity. *Brookings Review*. Winter 2001.v 19.
- Cunningham, C.E. (Ed) (1998). *Perspectives: Instructional technology for teachers* (2nd ed.). Chicago: Coursewise.
- Damarin,S.K. (2000) The ‘digital divide’ versus digital differences: Principles for equitable use of technology in education. *Educational Technology*, XL (4) July/August. 17-22.
- Denzin, N., & Lincoln, Y. (1994). *Handbook of qualitative research*. Thousand Oaks, CA: Sage.
- Donovan, M. (1999). Rethinking faculty support. *Technology Source* (November/December) Retrieved July 3, 2001, from <http://horizon.unc.edu/TS/development/1999-09.asp>.
- EDWEB (n.d.). Retrieved June 18,2001, from <http://www.ibiblio.org/edweb/dic.html#internet>.
- Fettermen, D. M. (1998). Webs of meaning: Computer and Internet resources for educational research and instruction. *Educational Researcher*, 27 (3). 22-28.
- Fraenkel, J. & Wallen, N. (1993). *How to design and evaluate research in education*. New York: McGraw-Hill
- Foster, D. (2001) The top 100 wired schools. *Family PC*. Retrieved June 4, 2001, from <http://www.familypc.com>.
- Bill and Melinda Gates Foundation (2002). Foundation Home Page. Retrieved on February 14, 2002, from <http://gatesfoundation.org/learning/ed>.
- Gall, M. D., Borg, W. R., & Gall, J. P. (1996). *Education research: An introduction* (6th ed.). White Plains, NY: Longman .
- Goodlad, J. I. (1984). *A place called school: Prospects for the future*. New York: McGraw Hill.

- Hannafin, M. J., Land, S. M.. (1997). *The foundations and assumptions of technology-enhanced student-centered learning environments*. Instructional Science, (25). 167-203.
- Healy, J. M., (1998). *Failure to connect: How computers affect our children's minds, for better and worse*. New York: Simon and Schuster.
- International Standards for Technology Education. (2002), retrieved March 26, 2002 from <http://www.iste.org>.
- Kahn, R., & Cannell, C. (1957). *The dynamics of interviewing*. New York: John Wiley.
- Lashway, L. (1997). *Visionary leadership*. (ERIC document Reproduction Service No. ED402643) Retrieved January 20, 2002, http://www.ed.gov/databases/ERIC_Digests/ed402643.html.
- Leu, D. J. (2000) *Exploring literacy on the Internet*. *The Reading Teacher*, 53. 424-429.
- Lincoln, Y. S. & Guba, E. (1985). *Naturalistic inquiry*. Newbury Park, CA: Sage.
- Lu, C. L., Voss, B., & Kleinsmith, L. J. (1997). The effect of microcomputer-based biology study center on learning in high school biology students. *The American Biology Teacher*. 270 - 278.
- Marshall, C., & Rossman, G. (1999). *Designing qualitative research* (3rd ed). Thousand Oaks, CA: Sage.
- McIntire, R. G., Fessenden, J. T. (1994). *The self-directed school: Empowering the stakeholders*. New York: Scholastic.
- McKenzie, J., (1998). Grazing the net: Raising a generation of free-range students. Phi Delta Kappan. 80. 26-31.
- McLaughlin, M. W., & Yee, S. M. (1988). School as a place to have a career. In A. Lieberman (ED.), *Building a professional culture in schools* (pp.23-44). New York: Teachers College Press.
- Milken Exchange on Educational Technology. Educational technology policies of the 50 states: Facts and figures. Santa Monica, CA: Milken Family Foundation. Retrieved September 30, 2000, http://www.edweek.org/search_results.cfm.
- MSNBC News Online (2000 February). Learning online. Retrieved May 1, 2000, <http://www.msnbc.com/news/371243>.
- Nelson, S. A. (2000). Technology in schools: Whose best interest? *The Education Digest*. 65 (9) 45 - 47.

- Netcraft web server survey. (n.d.). Retrieved March 24,2002, from <http://www.netcraft.com/survey/>.
- North Central Regional Educational Laboratory (NCREL) (2000). Technology standards for school administrators. ISTE. Retrieved February 13, 2002, <http://www.ncrtec.org/pd/tssa/>.
- Novak, C. (1999). Technos interview II: On today. *Technos quarterly*, 8. Retrieved March 23, 2001, from <http://www.technos.net/journal/volume8/4healy>.
- O'Donovan, E. (2000) A school connectivity primer. *Technology and Learning*, 20 (9), 20-28.
- Patton, M. Q. (1990). *Qualitative evaluation and research methods* (2nd ed.). Newbury Park, CA: Sage.
- Pinc, K. O. (2001). *Free on-line dictionary of computing_(FOLDOC)*. Retrieved July 1999, <http://foldoc.doc.ic.ac.uk/foldoc>.
- Quality Education Data (2001). Internet usasge in teaching 2001-2002. Retrieved February 26, 2002. <http://www.qeddata.com/>.
- Qualitative Solutions and Research Pty Ltd. (1997). *QSR NUD.IST 4 User Guide (2nd Ed.)*. Thousands Oaks, CA: Sage.
- Riel, M., Schwarz, J., Peterson, H., & Henricks, J. (2000). The power of owning technology. *Educational Leadership*, (57) 8. 58-60.
- Roblyer, M. D., Edwards J. (2000). *Integrating educational technology into teaching*. Upper Saddle River, NJ: Prentice Hall.
- Saettler, P. (1990). *The evolution of American educational technology*. Englewood, CO: Libraries Unlimited.
- Schutte, J. G. (nd) Virtual teaching in higher education . Retrieved August 13, 1999. <http://www.csun.edu/sociology/virtexp.htm>.
- Sergiovanni, T. J. (1994). *Building community in schools*. San Francisco: Jossey-Bass.
- Serim, F., Koch, M. (1996) *NetLearning: Why teachers use the Internet*. Sebastopol, CA: Songline Studios.
- Slowinski, J. (2001). *Becoming a technologically savvy administrator*. ERIC Clearinghouse on Educational Management. Eugene, OR. (ERIC Document Reproduction Service) No. ED438593.

- Software Publishers Association's Report on the Effectiveness of Technology in Schools, 1990-97: Executive Summary. *Technology Connection*. May/June 1998. 25-37.
- Stake, R.E. (1995). *The art of case study research*. Thousand Oaks, CA: Sage.
- Tapscott, D. (1998). *Growing up digital: The rise of the Net generation*. New York: McGraw Hill.
- Tapscott, D. (1999). Educating the Net generation. *Educational Leadership*, 56 (5), 6-11.
- Tell, C. (2000). The I-generation- from toddlers to teenagers: A conversation with Jane M. Healy. *Educational Leadership*. 58 (2). 7-13.
- Tennessee State Board of Education. (1991). *Master plan for Tennessee schools: Preparing for the twenty-first century*. Nashville, TN. (ERIC Document Reproduction Service No. ED 342 070). Retrieved on September 15, 2000. <http://www.state.TN.US./OTHER/SDE>.
- U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System. (2001). *Survey on Public School Teacher Use of Computers and the Internet, FRSS 70, 1999*. Retrieved June 15, 2000, <http://www.gov/nces/results.html>.
- Valdez, G. M. McNabb, M. Foertisch, M. Anderson. M. Hawkes, and L. Rassck. (1999) *Computer-based technology and learning: Evolving uses and expectations*. Oak Brook, IL: North Central Regional Educational Laboratory. [NCREL].
- Wasley, P. A. (1991). *Teachers who lead: The rhetoric of reform and the realities of practice*. New York: Teachers College Press: Columbia University.
- Wilkinson, K., Echternacht, L. (1998). Internet homework activities and traditional homework activities: The effects on achievement, completion time, and perception. *Delta Pi Epsilon Journal*: Spring issue. XXXIX, 1.214-231.

APPENDICES

APPENDIX A

Letter of Request to Directors of Schools

Catherine Edwards/Media Specialist
University School/ETSU
Box 70632
Johnson City, TN 37614

(423) 555-5555 (office-ETSU)

September 1, 2001

Dear Director of Schools:

My name is Catherine A. Edwards and I am currently a doctoral student at East Tennessee State University in the Educational Leadership and Policy Analysis (ELPA) program.

I am interested in completing my doctoral work within the 2001-2002 school year. In order to do this, I am asking permission from you to interview the Technology coordinator, or curriculum supervisor in your system. During my interview with them, I will be inquiring about a classroom teacher in your system whom the administrator feels displays successful practices using the Internet as an additional instructional tool in the classroom. I will then interview the building level principal of the teacher in order to see if there are any characteristics, trends, or perceptions that emerge pertaining to successful integration of Internet technology in the K-12 classroom. I will then arrange a time to interview the classroom teacher who has been recommended to me. My goal of this study is to see if there are any trends, successful practices, or characteristics of those teachers who are perceived to have successfully integrated Internet technology into an existing curriculum which then can modeled by other teachers for more effective classroom instruction. I will be asking specific questions about staff development, training, successful practices, and time involved in incorporating Internet technology into the classroom routine.

If your permission is granted, I assure you the participants will receive written transcripts of our interviews in order to be comfortable and assure that the interviews are unbiased and true to the intent of the participant in your school system. I will not use the name of your school system nor will I use the name of the employee from your system in any place in my study.

I will interview the participants at their convenience.

We all know how important educational research is to our field, and I feel very fortunate to be able to interview and see, first hand, some of the finest and most caring practitioners in our field.

A copy of the information obtained will be provided to you at the conclusion of the study.

If you have any questions concerning this request, please do not hesitate to call or email me with your concerns. If you agree for me to interview and conduct my study in your school system, please sign the attached form and return to me in the enclosed envelope.

Thank you very much for this opportunity to visit your school system

Sincerely,

Catherine Edwards
University School/ETSU

Permission for interview request for doctoral study in your school system:

The signature on this form signifies permission for Catherine A. Edwards to conduct a study pertaining to use of the Internet technology in your school system. The study will be conducted during the 2001-2002 school year at the convenience of the participants. All interviews will be scheduled before hand.

In addition, no information including names, school systems will be used in the study. The interviews will be taped then transcribed by a professional transcriber. The participants will then receive a written copy of the interviews in order to clarify, approve, or disapprove any part of the interview.

I have been informed that a copy of the completed project will be made available to me.

Signature of Director of Schools

APPENDIX B

Guided Questions used in Interviews: Administrator (Technology Coordinator or Equivalent Supervisor)

The following questions were expanded during each interview during probing and the natural flow of the conversation. Some answers lead to more detailed questions for clarification of answers. As research continued, and phenomena emerged, questions became more detailed.

When answering these questions, please feel free to explain and clarify your answers.

1. Describe the vision you have for your school system for technology.
2. Is the Internet part of the overall vision? Explain your answer.
3. Describe the characteristic(s) you think a classroom teacher exhibits when successfully using Internet technology in the classroom.
4. Explain in detail why you are suggesting the particular teacher you feel is successfully using Internet technology in their classroom.
5. Is staff development for teachers and administrators using Internet technology part of your overall plan?

APPENDIX C

Guided Questions used in Interviews: Building Level Administrator

The following questions were expanded during each interview during probing and the natural flow of the conversation. Some answers lead to more detailed questions for clarification of answers. As research continued, and phenomena emerged, questions became more detailed.

When answering these questions, please feel free to explain and clarify your answers.

1. Do you have a vision or a plan for technology in your school? Is the Internet part of that plan? If so, can you give examples?
2. Describe in detail the characteristics the teacher exhibits that make you think that Internet technology is successfully being used in his or her classroom.
3. Describe specific characteristics you think you would see being practiced by a teacher successfully using Internet technology.
4. What characteristics used by perceived successful teachers integrating Internet technology would you encourage other teachers to implement or model their teaching after?
5. Describe your own personal feelings towards Internet technology in the classroom.
6. What is your vision for Internet technology in your school?
7. What is the importance of staff development for Internet integration?
8. Is the integration of Internet technology part of the evaluation process for teachers?

APPENDIX D

Guided Questions used in Interviews: Classroom Teacher or Instructor

The following questions were expanded during each interview during probing and the natural flow of the conversation. Some answers lead to more detailed questions for clarification of answers. As research continued, and phenomena emerged, questions became more detailed.

When answering these questions, please feel free to explain and clarify your answers.

1. Do you have a personal technology plan or vision for your classroom concerning technology? The Internet?
2. Do you use the Internet to prepare instructional material and lesson plans?
3. How do you use the computer in classroom management?
4. Have you used the Internet to correspond with students via email?
5. Have your students corresponded with you via email?
6. Have you had any experience with creating web pages for your class or with your classes?
7. Describe with as much detail as you would care to give how you use the Internet for instruction.
8. Do you use the Internet for small group instruction? (For the purpose of this study, a small group will constitute 2-6 students).
9. Do you use the Internet for whole class instruction? Please give an example if you answer this question with yes.
10. Describe how the students use the Internet in your classroom.

11. Is there any one person who has influenced you or you have modeled your use of Internet integration after? This person can be in your school system or another school system.
12. Give an overview of the equipment and technology available in your classroom for you and your students.

APPENDIX E

East Tennessee State University Informed Consent

East Tennessee State University

INFORMED CONSENT

Principal Investigator: Catherine Edwards-Cunningham

Page 1 of 2

Title of Project: INTERNET INFUSION: CHARACTERISTICS, PROFESSIONAL PRACTICES, AND PERCEPTIONS OF SUCCESSFUL INTEGRATION OF INTERNET TECHNOLOGY IN THE K-12 CLASSROOM.

This Informed Consent will explain about a research project in which I would appreciate your participation. It is important that you read this material carefully and then decide if you wish to be a volunteer. By no means is there any pressure for you participate in this research.

PURPOSE

The purposes of this research study are to collect and analyze data on the trends, characteristics and practices of K-12 classroom teachers recognized by administrators as successfully integrating Internet technology. The information from this study will enhance staff development and teacher preparation on the use of the Internet in the classroom.

DURATION

The interviews with the participants will take approximately forty-five minutes. The researcher has created guided questions to be used in the interview process. The interviews will then be transcribed. The written responses will be emailed or mailed back to the participants of this study in order to confirm reliability.

PROCEDURES

The instrument to be used in this study is made up of predetermined or guided questions created by the researcher. The participants will be interviewed and audio recorded. The tapes of the interviews will be transcribed. However, the actual names of the participants will not be used in the study. In no way would the identification number be utilized to determine the identity of the participant. After the tapes of the interview have been transcribed, the tapes will be destroyed in order to provide the participants of this study complete and total privacy and confidentiality of their opinions and pedagogy concerning this topic.

POSSIBLE RISKS / DISCOMFORTS

No risks or discomforts should be associated with this research, nor is there any direct benefit or compensation to the volunteer participants. Any potential benefit to the participant would arise from that individual's reflection upon the items contained on the survey instrument and his or her personal reaction to those items. The benefits to the institution would be a better understanding and definitive characteristics of successful Internet integration in the K-12 classroom.

APPENDIX F

Email sent to Winners of the Family PC Top 100 Wired Schools

My name is Catherine Edwards and I am a doctoral student at East Tennessee State University. I am working on a dissertation concerning the perceptions and characteristics of successful Internet integration in the K-12 classroom.

In the recent issue (May 2001) of *Family PC*, your school was listed as one of the top 100 connected schools in the country. Congratulations on this honor!

Since your school has been recognized as one of the cutting edge schools in our country, it only seemed natural to ask for your help on my study.

I have attached to this letter a sample of my guided questions that I will be using in the interview process of my study. Would you please take a few moments, and read the questions? I would like you to consider these points as you read them:

- Are these questions relevant to my topic?
- Are there other questions a researcher should ask a teacher concerning integration of Internet technology in the classroom? If so, please add them to your response.
- Are there questions you would delete?

Your assistance is appreciated and will enable me to more effectively address the topic and produce more meaningful research.

Questions for system Technology Coordinators or equivalent Administrative supervisors of Instructional Technology for K-12 school systems.

When answering these questions, please feel free to explain and clarify your answers.

- Describe the vision you have for your school system for technology.
- Is the Internet part of the overall vision? Explain your answer.
- Describe the characteristic(s) you think a classroom teacher exhibits when successfully using Internet technology in the classroom.
- Explain in detail why you are suggesting the particular teacher you feel is successfully using Internet technology in their classroom.
- Is staff development for teachers and administrators using Internet technology part of your overall plan?

Questions for interview of building administrators of teachers that are considered successfully using the Internet in the classroom.

When answering these questions, please feel free to explain and clarify your answers.

- Do you have a vision or a plan for technology in your school? Is the Internet part of that plan? If so, can you give examples?
- Describe in detail the characteristics the teacher exhibits that make you think that Internet technology is successfully being used in his or her classroom.
- Describe specific characteristics you think you would see being practiced by a teacher successfully using Internet technology.
- What characteristics used by perceived successful teachers integrating Internet technology would you encourage other teachers to implement or model their teaching after?
- Describe your own personal feelings towards Internet technology in the classroom.
- What is your vision for Internet technology in your school?
- What is the importance of staff development for Internet integration?
- Is the integration of Internet technology part of the evaluation process for teachers?

Questions for interview of teachers that are considered successfully using the Internet in the classroom by administrators and supervisors.

When answering these questions, please feel free to explain and clarify your answers.

- Do you have a personal technology plan or vision for your classroom concerning technology? The Internet?
- Do you use the Internet to prepare instructional material and lesson plans?
- How do you use the computer in classroom management?
- Have you used the Internet to correspond with students via email?
- Have your students corresponded with you via email?
- Have you had any experience with creating web pages for your class or with your classes?
- Describe with as much detail as you would care to give how you use the Internet for instruction.
- Do you use the Internet for small group instruction? (For the purpose of this study, a small group will constitute 2-6 students).
- Do you use the Internet for whole class instruction? Please give an example if you answer this question with yes.
- Describe how the students use the Internet in your classroom.
- Is there any one person who has influenced you or you have modeled your use of Internet integration after? This person can be in your school system or another school system.
- Give an overview of the equipment and technology available in your classroom for you and your students.

APPENDIX G

Auditor Request and Report

Catherine A. Edwards
University School
East Tennessee State University
Box 70632
Johnson City, Tennessee 37614

Dr. Jane Jones
East Tennessee State University
Office of the President
East Tennessee State University
Johnson City, Tennessee 37614

Dear Dr. Jones,

Thank you for agreeing to audit the research I am conducting for my doctoral dissertation. I hope that the process will prove an interesting and useful experience for you and that it will prove to be useful for the field. The following components are submitted for conducting the audit.

According to Guba and Lincoln (1989) the concept of the audit is based on the metaphor of the fiscal audit. The auditor in the research process is interested in the quality and appropriateness of the research process. The auditor also must attest to the fact that the “data” can be traced to original sources and confirmed.

Eisner (1991) contended that credibility in qualitative research depended on structural corroboration, consensual validation, and referential adequacy. Structural corroboration, or utilizing multiple types of data was not used by the researcher due to the nature of the study. The auditor will provide consensual validation or “agreement among competent others that the description, interpretation, evaluation, and thematics of an educational situation are right” (p. 112). Referential adequacy is the extent to which the researcher brings meaning to or illuminates the study.

You will be provided with the data analysis, tapes of the interviews, transcripts of the interviews, data analysis documents, field notes, and informed consent forms.

Your professionalism and expertise are greatly valued. Thank you for your willingness to help.

Sincerely,

Catherine Edwards

March 19, 2002

Ms. Catherine Edwards
University School
East Tennessee State University
Johnson City, Tennessee 37614

Dear Ms. Edwards:

I thank you for the opportunity to serve as auditor for your qualitative dissertation. It was a pleasure to review this most interesting research project.

The external audit procedures have been completed. After careful review of the data collected, coded, and reported in the study, the auditor concluded that the processes were carefully followed, documented, and confirmed. It is the auditor's finding that the data and its interpretation are based upon the actual interviews conducted rather the researcher's personal bias and opinions.

According to specified criteria based on the work of Lincoln and Guba, the audit addressed the dependability, confirmability, and credibility of the tapes, transcripts, and actual data analysis. In the area of dependability, data from the selected samples were accounted for and all key areas were explored. Both negative and positive critical incidents, as cited by the participants were recorded. In giving directions and in the actual interview process, the researcher made every attempt not to lead the responses. The confirmability of the findings is grounded in the data. In discussion with the researcher, the verification of the categories, as well as the incidents identified by the researcher and the categories identified by the auditor were in congruence. The auditor concludes that the data gathering process, transcription, categorization, congruence of incidents and identification of categories, are dependable, confirmable, and credible.

I commend you on conducting a study that I believe will be a very useful contribution to the field. You have adhered to and maintained a high degree of professionalism as a researcher. Congratulations on this milestone. I feel privileged to have worked with you and I wish you much success.

Sincerely,

Jane M. Jones, Ed.D.
Executive Assistant to the President

VITA

Catherine Anne Edwards

- Education: East Tennessee State University, Johnson City, Tennessee;
English Education, Music Education, B.S., 1979
- Tusculum College, Greeneville, Tennessee;
Secondary Education, Ma.Ed., 1987
Thesis: Reading attitudes of 10th grade students at Tennessee High School in
Bristol, Tennessee
- East Tennessee State University, Johnson City, Tennessee;
Educational Leadership and Policy Analysis, Ed.D.2002
- Professional
Experience: Secondary Teacher, Tennessee High School, Bristol, Tennessee
1979-1989.
- Elementary Librarian, Unicoi County, Erwin, Tennessee
1989-1991
- Secondary Librarian, Unicoi County High School, Erwin, Tennessee
1991-1995
- Media Specialist, University School/ETSU, Johnson City, Tennessee
1995-present
- Adjunct faculty, East Tennessee State University, Johnson City, Tennessee.
Curriculum and Instruction. Educational Leadership and Policy Analysis/College
of Education.
- Honors
& Awards: Recipient of the Teacher of the Year Award, Unicoi County, Tennessee. 1990.
- Publications: *Perspectives: Instructional Technology for Teachers* (ed) 1997. 1998 (2nd ed).
Coursewise. College textbook.
- Presentations: International, National, State presentations on Innovative Teaching using
technology