Factors Related to the Tennessee K-12 Educators' Implementation of the Internet into Classroom Activities and Professional Development

Martha K. Davenport
East Tennessee State University

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Factors Related to the
Tennessee K-12 Educators' Implementation of the Internet into Classroom Activities and Professional Development

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

by
Martha Kelly Davenport
May 1995
APPROVAL

This is to certify that the Advanced Graduate Committee of

Martha Kelly Davenport

met on the

______3rd____ day of ______April____, 1995

The committee read and examined her dissertation, supervised her defense of it in an oral examination, and decided to recommend that her study be submitted to the Graduate Council and the Associate Vice-President for Research and Dean, School of Graduate Studies, in partial fulfillment of the requirements for the degree Doctor of Education.

[Signatures]

Chairman, Advanced Graduate Committee

Signed on behalf of the Graduate Council

Associate Vice-President for Research and Dean, School of Graduate Studies
ABSTRACT

FACTORS RELATED TO THE TENNESSEE K-12 EDUCATORS' IMPLEMENTATION OF THE INTERNET INTO CLASSROOM ACTIVITIES AND PROFESSIONAL DEVELOPMENT

by

Martha Kelly Davenport

The purpose of this study was to determine what factors influence educators to use the Internet in classroom activities or in their own professional development.

A random sample of 325 educators was selected from a population of Tennessee K-12 educators who were identified as having completed Internet training. Surveys were received from 198 educators.

The instrument was developed by the researcher for this study. Educators were asked to respond to questions regarding access to computers and the Internet, types of Internet classroom activities, types of professional development activities, types of Internet tools used, and training. Respondents were also asked to respond to 23 item likert-type statements regarding their beliefs about technology, training, and the educational use of the Internet. Data was analyzed using the Chi-square and Mann-Whitney U statistical tests.

Findings include the determination that the Internet is being used by educators who have attended Internet workshops or seminars. There is little organized staff development about the Internet available in Tennessee K-12 schools. There is a significant difference between those educators who use the Internet and those who do not use the Internet in relation to their beliefs about Internet training. There is also a significant difference in relation to beliefs about school support for Internet activities. E-mail and gopher are the Internet tools the most often used by Tennessee K-12 educators. Tennessee K-12 educators would like to receive more training on how to use the Internet for both classroom activities and professional development.
Sincere appreciation is extended to Dr. Robert McElrath, doctoral committee chairman, for his encouragement and guidance. I am truly glad that I was able to be one of his students.

Special thanks to Dr. Russ West for his assistance in the study and for introducing me to the Internet. I sincerely appreciate the assistance and guidance given to me by the other members of my doctoral committee, Dr. Marie Hill, Dr. Donn Gresso, and Dr. John Anderson.

Thanks are in order for my friends and family. To my special friend and co-worker Janice Riddle, who always believed in me. A special thank-you to my nephew Jeremy, who will be the next Dr. Davenport.

Finally, my appreciation goes to the most intelligent guy I know, my husband, Andy. Without his love, encouragement, and understanding, I could not have accomplished this dream.
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Chapter 1
Introduction

In the technological age of the 1990s, vast amounts of information are available and the rate at which new information is produced is accelerating at an incredible pace. Through the changes in travel and communication technologies, the world is growing into a smaller, more global but complex community. According to White (1987), the world is becoming an interconnected electronic nervous system over which immense amounts of information flow at nearly the speed of light. To solve problems, answer questions, and explore new ideas people must work together and gather information from a variety of sources (Roberts, Blakeslee, Brown, & Lenk, 1990). Vice President Al Gore (1994) discussed the insatiable hunger that exists for knowledge yet data sit rotting away, remaining unused. We need to be able to take advantage of the information explosion and to find what we need quickly and efficiently.

Often called a "network of networks," the Internet began over twenty years ago as a Department of Defense experiment. It contains thousands of separately administered computer networks of many sizes and types in dozens of countries, belonging to a variety of organizations. Through telecommunication networks, there is access to libraries and data bases and people are brought
together from diverse cultures. This high level of connectivity fosters an unparalleled degree of communication, collaboration, resource sharing, and information access (Tennant, 1992).

The Internet is an active, global community. The citizens of these communities are people whose computers connect through telephone lines to allow remote log-in, file sharing and transfer, and electronic mail (Dern, 1994). Universities, government and commercial organizations around the world have connected to the Internet.

Schools strive to prepare students for the information age. Through telecommunications, computers provide many school systems the ability to access vast amounts of previously unavailable information. Students learn to communicate with others, and to use collaboration to solve problems. The Internet is influencing education as it provides an electronic environment for active discussions and information distribution. Computer networking has become a part of educational technology implementation plans.

The Master Plan for Tennessee Schools: Preparing for the Twenty-First Century (1991) addressed educational reforms for Tennessee schools. One of the eight goals states:

State-of-the-art technology will be used to improve instruction and learning in all schools, to provide
professional development, to manage schools and school
systems, and to link all schools in a statewide
information network.

The strategy of this plan states:

1. Promote the application of state-of-the-art
technology in all instructional areas.
2. Expand the use of technology for professional
development and instructional planning.
3. Use technology to improve the management of
classrooms, schools, and local school systems and
to improve communication among schools, school
systems, and the state (p. 24-26).

During the 1993-94 school year, Internet training was
offered to Tennessee K-12 educators through Vanderbilt
University's "Virtual School." Other training sites and
schools developed as a response to the interest expressed by
educators. Training continued during the 1994-95 school
year by the Tennessee State Department of Education.

Statement of the Problem

Limited research is available concerning Tennessee K-12
teachers' implementation of the Internet into classroom
activities or professional development activities.
Purpose of the Study

The purpose of the study is to determine what factors influence educators to use the Internet in classroom activities or in their own professional development.

Significance of the Problem

Computer networks for communication, learning, and information exchange are part of a restructuring of education (Hunter, 1992). The information revolution has changed lives and is full of promise and potential. Students must learn to process data into information, refine information into knowledge, extract from knowledge understanding and then let understanding ferment into wisdom (Gore, 1990).

Technological understandings are essential to students to live in the twenty-first century. Integration of computer networking and telecommunications into classroom activities with professional development activities for teachers is an investment in financial resources and time. If Tennessee educators are to be involved in using the Internet as a student learning activity or for professional development, factors that influence the use of the Internet must be identified.
Research Questions

Research Question 1.
Are Tennessee K-12 educators using the Internet for classroom activities or for professional development?

Research Question 2.
What types of classroom activities are being used with the Internet?

Research Question 3.
What types of professional development activities are being used with the Internet?

Research Question 4.
What Internet tools are educators using?

Research Question 5.
Are Tennessee K-12 educators who have school access to the Internet using the Internet?

Research Question 6.
Are Tennessee K-12 educators who have home access to the Internet using the Internet?

Hypotheses

The following hypotheses will be tested:

$H_0$: There will be no significant relationship between the completion of Internet workshops and the educator's use of the Internet.
H\(_0\) 2: There will be no significant difference between male and female educators in relation to their use of the Internet.

H\(_0\) 3: There will be no significant difference between the age of the educators in relation to their use of the Internet.

H\(_0\) 4: There will be no significant difference between the educators' job assignments in relation to their use of the Internet.

H\(_0\) 5: There will be no significant difference between the educators' school level assignments in relation to their use of the Internet.

H\(_0\) 6: There will be no significant difference between the number of years of experience of the educators in relation to their use of the Internet.

H\(_0\) 7: There will be no significant difference between the educators' educational degree level in relation to their use of the Internet.

H\(_0\) 8: There will be no significant difference between the educators who use the Internet and those educators who do not use the Internet concerning their beliefs about the impact of technology and the Internet on classroom learning.

H\(_0\) 9: There will be no significant difference between the educators who use the Internet and those educators who do not use the Internet concerning their beliefs about school support for Internet learning activities.
H_{010}: There will be no significant difference between the educators who use the Internet and those educators who do not use the Internet concerning their beliefs about the benefits of using the Internet for classroom or professional development activities.

H_{011}: There will be no significant difference between the educators who use the Internet and those educators who do not use the Internet concerning their beliefs about Internet training.

**Definition of Terms**

The following definitions apply to this study:

**Administrative Support**: Moral and/or financial support supplied by school administrators.

**Bulletin Board**: A collection of information stored on a computer system, generally accessed through the public telephone system (Edmunds, 1985).

**Computer network**: A number of computers connected by communication lines. It may involve interaction between large and small computers and between computers and their associated peripheral devices (Edmunds, 1985).

**Electronic Mail (E-mail)**: The processing and delivery of messages via electronic means. Users of electronic mail interact with each other through computer terminals or microcomputers connected to a shared communications network. The system can store the recipient's mail, enabling him or
her to read it on the display or print it when it is convenient to do so (Edmunds, 1985).

Gopher: A hierarchical menuing system which organizes access to Internet resources (LaQuey, 1994).

Internet: A network of computer networks used by millions of people all over the world (LaQuey, 1994).

Log-on: A term that refers to the process of gaining access to a computer system. Usually involves an individual, using a terminal, identifying himself or herself to the computer system through an identification name and password (Edmunds, 1985).

Modem: A device for converting digital data, expressed in binary digits (bits), to analog signals, and vice-versa (Edmunds, 1985).

Professional Development: The process of increasing subject-matter knowledge, teaching skill and efficiency, and insight into educational problems, with a desire to gain success as a teacher (Good, 1973).

Telecommunications: The transmission of signals, including voice, data, facsimile, and other information over long distances (Edmunds, 1985).

Virtual School: The Internet training sessions and network established by Vanderbilt University.

Assumptions

The study is based on the following assumptions:
1. Tennessee K-12 educators who have had Internet training can be identified and will participate in the study.
2. The Internet training received by Tennessee K-12 educators is appropriate training.

Limitations

The study will be limited to those K-12 educators in Tennessee who were identified as having received Internet training through Vanderbilt University's Virtual School or Pellissippi Community College.

Research Procedure

1. Review related literature.
2. Develop research proposal and obtain approval from the graduate committee.
3. Obtain a list of Tennessee K-12 educators who have received training on the use of the Internet.
4. Develop a questionnaire by reviewing other sample questionnaires.
5. Determine content validity by piloting questionnaire with a jury of experts, chosen because of their background in educational use of the Internet.
6. Make necessary revisions on the instrument.
7. Determine reliability by piloting instrument with educators who have received Internet training at Northeast State.

8. Make necessary revisions on the instrument.

9. Determine number in sample or population to participate in the study. Select randomly.

10. Mail the questionnaire with cover letter explaining the nature of the study, and a postage-paid, self-addressed envelope.

11. Send a follow-up letter to educators who have not responded.

12. Gather and analyze data, make conclusions and recommendations.

Organization of the Remainder of the Study

Chapter two contains a review of literature related to the development of the Internet, Internet software commands, professional development, classroom activities and conditions that facilitate implementation of technology in education.

Chapter three describes and discusses the methodology used in developing the instrument for the study, collecting the data, and analyzing the data.

The fourth chapter summarizes the data obtained from the survey questionnaire.
Chapter five presents the summary, conclusions, and the recommendations based on the collected data.
Chapter 2

Review of Related Literature

Introduction

Internet access is bringing changes to education. Telecommunication allows teachers and students to participate in activities that would be completely unthinkable without it. Through computer networking, teachers can reach other professionals for exchange of ideas, research, and instructional plans (Hunter, 1992). The Internet allows access to a vast assembly of resources for educators. A variety of databases, archives of library information, lesson plans, electronic bulletin boards, and electronic mail are available (Carnegie Mellon University [CMU], 1993). Students are using the Internet to complete projects such as gathering and exchanging scientific data, completing writing and research assignments, or exchanging cultural and social information with other students.

Information about the range and type of educational activities being conducted on the Internet will inform other educators, technology co-ordinators, and school officials. While the advantages of using the Internet are shared, factors which encourage the implementation are not defined.

This chapter presents a review of literature and research examining educational applications of the Internet and implementation of technology. Conditions that
facilitate the implementation of technology in education have been reviewed through the literature. This chapter is divided into five main sections: history of the Internet, Internet tools, professional development, classroom activities, and conditions that facilitate technology implementation.

The first section reviews the development of the Internet from a military project to a worldwide computer network. Section two introduces computer applications for the Internet. Section three discusses professional development uses of telecommunications and section four discusses classroom applications. The fifth and final section discusses factors that influence the implementation of technology in education. A summary is included to present the major findings.

**The History of the Internet**

In 1969, the Department of Defense began an experimental project of developing a computer network, known as ARPANET, Advanced Research Projects Agency Net. The goal of the project was to develop technology that would allow a computer network to withstand outages in any of its links. A secondary goal was to provide support for military communications research (CMU, 1993; Krol, 1993). ARPANET was an experiment in reliable networking. It was an attempt at linking together Department of Defense and military
research contractors, including the large number of universities conducting military-funded research (Levine & Baroudi, 1993).

The ARPANET model used a software called an Internet Protocol (IP) packet. Internet Protocol software became a practical method for computers from different manufacturers to communicate. As organizations developed their local networks using Internet Protocol, users became interested in connecting directly to the ARPANET (Krol, 1993).

In the late 1980s, the National Science Foundation (NSF) created five regional supercomputer centers. This NSF action provided access to the world's fastest computers for scholarly research. To connect these centers and to allow clients to access each center, the NSF built its own network, the NSFNET. The NSF then established regional networks in each area of the country, allowing schools to connect to their nearest neighbor. Each chain connected to a supercomputer center, and the centers connected together. Any computer could eventually communicate with any other by forwarding the conversation through its neighbors. The NSF's networking effort opened access to the Internet and expanded the usefulness to universities and other research organizations for nonmilitary purposes (Krol, 1993).

Faster telephone lines and faster computers have been added to the initial network. The term, "information highway" is often used to describe the connections between
computer centers. Portions of the highway are still under construction due to new networks being added, new technology becoming available, and more users connecting (Krol, 1993).

The Internet continues to evolve from its original use of military support research (CMU, 1993). Universities and school systems around the world have connected to the Internet and discovered classroom and professional development resources. Locating these resources and information for K-12 educators involves the use of Internet Protocol tools.

Tools of the Internet

There are different Internet tools or applications available on different computer networks. Basic Internet Protocol applications are electronic mail, remote log-in, file transfer, and gopher (LaQuey, 1994). The tools offered by the network vary and change as new technology and computer software become available.

Electronic Mail

Electronic mail is a way for computer users to send and receive messages. The exchange may be between computer users on the same local area network, or the exchange of mail may be between distant networked computers (Dern, 1994).
Also called e-mail, electronic mail is the most commonly available and most frequently used service on the Internet. E-mail allows the user to send a text message to another person or to a whole group of people in seconds. A common characteristic of e-mail programs is that they allow the user to compose and send e-mail, and then read and organize the e-mail received. The recipient does not need to be present to receive electronic mail. All that is needed to use electronic mail through the Internet is an e-mail program, the e-mail address of the person, and access to the Internet (LaQuey, 1994).

Anything the user can store in a text file can be mailed, including announcements, electronic magazines, publications, and personal messages. An advantage of electronic mail is to allow people who are not near one another to work together on a project (Hahn & Stout, 1994).

Many people drift into informality when using electronic messages (Krol, 1993). Communication barriers are reduced. LaQuey (1994) states that people make no judgements based on appearance, or voice about those they are communicating with. People can be whomever they want to be, sharing their views and ideas.

Mailing list discussion groups utilize electronic mail. An electronic message sent to the list will be automatically sent to everyone in the group (Hahn & Stout, 1994). Electronic discussion groups exist for almost any discipline
and many choices are available to educators (Silva & Cartwright, 1993).

Remote Log-in or Telnet

Remote log-in is an interactive tool that allows access to programs and applications available on another computer. Telnet is the name of the protocol that enables remote log-in (LaQuey, 1994). The remote log-in connection can be to a machine in the same room, in the same town, or a computer in another country of the world.

The remote machine provides user access to whatever services that remote machine provides to its local terminals. User keyboards perform as if the connection was direct to the remote computer. The remote computer may have a different log-in prompt, ask for a password, and may have special log-out commands (Krol, 1993).

The Internet's remote log-in facility provides access to an ever-growing universe of information and systems. Telnet is often used for accessing on-line library systems and their catalogs and databases, supercomputers, and geographic information (Dern, 1994). Through the use of Telnet, it is possible to keep abreast of new publications and locate obscure materials. Telnet allows the user to electronically visit sites that have materials of particular interest or access databases such as Educational Resources Information System (Silva & Cartwright, 1993).
File Transfer

Also called FTP for file transfer protocol, file transfer allows a copy of a file to be transferred from one computer to another. A file can be a document, graphics, software, or a spreadsheet. The files can be downloaded from the computer where they are stored to the user's computer (LaQuey, 1994). If both computers use the file transfer protocol and have access to the Internet, the FTP command can be used to transfer files (Krol, 1993).

Electronic publishing has made journals available on the Internet. These electronic journals can be retrieved in full text through FTP (Silva & Cartwright, 1993).

Gopher

Gopher was created at the University of Minnesota to provide a cheap and easy way for various campus departments to make information available to the campus (Hahn & Stout, 1994). Gopher organizes access to Internet resources using a menu system. When an item is selected from a menu, the Gopher will issue the computer commands to carry out that request. A page of menu items may contain one or more sub-menu levels. Menu after menu may be selected during a gopher session, allowing the user to browse and search documents (Dern, 1994; Hahn & Stout, 1994; LaQuey, 1994).

Electronic mail, file transfer, gopher, and remote log-in assist users to locate Internet resources and
communicate electronically. Teachers and students can communicate with peers and locate electronic resources as they wish (Eisenberg & Ely, 1993). Utilization of the Internet tools provides educators opportunities for professional development and new classroom activities.

The Internet and Professional Development

Computer networks can provide significant opportunities for professional development and new learning. The Internet can be used for explorations of research, reflective dialogues on professional issues, and the sharing of experiences (Watts & Castle, 1992).

Honey and Henriquez (1993) conducted a survey to obtain a systematic profile of activities currently being undertaken by K-12 educators in telecommunications technology. The survey sample was developed by posting online announcements on more than fifty educational, commercial, and state-operated telecommunications networks. Respondents were also solicited through mailing lists, conferences, state education departments, and professional contacts. The responses included 550 educators from 48 states. The study found that electronic collegial exchanges are used for professional purposes. These exchanges included sending e-mail to colleagues and posting questions or exchanging ideas on forums and bulletin boards. The study also found that information retrieval services are
widely used, including databases that contain information about students and databases of educational research.

The isolation of the classroom teacher often prohibits opportunities to share ideas and concerns with other professionals. Through computer networks, administrators and teachers communicate easily and frequently (Merseth, 1992). Honey and Henriquez (1993) found that networking activities combat teachers' isolation and provide opportunities to communicate with other educators and share ideas. Educators on electronic networks ask questions of one another, share stories of triumphs and failures and seek advice. The network conversations create an atmosphere of support, collegiality, and shared professional growth (Merseth, 1992). Educators can obtain rapid responses to curricular issues and other topics of professional interest, and stay current on subject matter and technology trends (Honey & Henriquez, 1993).

Networks may encourage new leadership roles for educators. Through the use of networks, educators can receive support, knowledge, and encouragement necessary to implement innovative ideas. As educators communicate and share ideas, they become more confident, more committed to change, willing to take risks, and dedicated to self-improvement (Lieberman & McLaughlin, 1992). Educators also find new ways to involve and teach students through the use of networks in classroom activities.
The Internet and Classroom Activities

Student activities using the Internet enable students to search resources and to learn through collaborative projects. Through the information highway, a student can plug into the Library of Congress every afternoon and explore a universe of knowledge (Gore, 1990). Students can interact with students everywhere and resources are no longer limited by the size of the school’s library (CMU, 1993).

Carnegie Mellon University (1993) completed a project that examined the issues associated with the introduction of the Internet into Pittsburgh Public Schools. One goal of the project was to establish a sample of K-12 classroom Internet activities. Twenty-one responses were received in which thirty-four activities were discussed. In the project, educators indicated that the Internet brings a sense of global awareness to the classroom. The project also indicated that Internet student activities stimulate thinking, expand available resources, and improve computer literacy.

One popular type of educational telecommunication activity involves individuals or groups communicating electronically with other individuals or groups. Since teachers with Internet access can use electronic mail, many projects employ E-mail, newsgroups, discussion groups or bulletin boards for projects (Harris, 1994a).
Keypals are the electronic version of penpals. Students share personal information, social customs, environmental issues or geographical data about their region, with students in another location. Some teachers use keypal projects to develop classroom objectives such as correct sentence structure or composing letters. Many keypal projects emphasize the importance of students learning about each other's cultures. After exchanging a few e-mail letters, the students learn about the other student's country through research. They may look at maps, books, or computer data. After the research is complete, students write a paper on what they think the other student's life is like. The papers are exchanged and critiqued (Harris, 1994a). Through global classroom projects, two or more classrooms can study a common topic together. Although the two classes may be located anywhere in the world, students can study and share current issues or environmental issues. Each class researches the topic and shares what they are learning with the other class (Harris, 1994a).

Information collection and exchange can occur through the electronic publishing of a common document, such as a newspaper, poem, or literary magazine. Students may submit articles for an electronic newspaper or add a chapter to a short story (Harris, 1994b).
Information search projects involve students using electronic references to solve problems. For example, groups of students provide the same eight pieces of information about their school's location. The coordinators of the game then scramble the city names, and all groups use reference materials to match the cities with the information sets. Emphasis on curriculum integrated learning rather than on the technologies that can facilitate that learning, makes Internet-based problem-solving projects powerful. (Harris, 1994c)

Collaborative projects, research, electronic discussions, keypals, information collection and information search projects are different methods and ideas available which incorporate the Internet into educational activities. Conditions that facilitate the implementation of educational technology have been identified.

Conditions That Facilitate Technology Implementation

In 1988, the United States Congress Office of Technology Assessment (OTA) prepared a report entitled Power On! New Tools for Teaching and Learning. Power On! was requested by the House Committee on Education and Labor to better understand the potential of new interactive technologies for improving learning. The study reported that investments in technology cannot be fully effective unless teachers receive training and support. The report
stated that four interrelated conditions must be met before technology is used to enhance and enrich teaching. These conditions are training in the skills needed to work with technology, education that provides vision and understanding of state-of-the-art developments and applications, support for experimentation and innovation, and time for learning and practice. The OTA also found that teachers' use of computers depends on their instructional goals, teaching approach, training, the software and hardware available to them, and the instructional setting.

Ely (1990) identified conditions that facilitate the implementation of educational technology innovations. The conditions are dissatisfaction with the status quo, knowledge and skills, resources, time, rewards, participation, commitment, and leadership.

Training

Educators may want change. However, without the specific knowledge and skills to bring about the change, they are helpless (Ely, 1990). Teachers are likely to be less resistant to changes to which they have a favorable attitude and in which they have received adequate training (Rhodes, 1989). Knowledge and skills can be acquired through training. Training helps teachers find and use on-line resources creatively. After the teachers are trained, they can train the students (Herndon, 1994).
Internet training for educators should include guided, structured training and demonstrations of real applications (Honey & McMillan, in press).

Group training can be effective when it is combined with on-line tutorials or videotapes. These can be accessed any time by the user and they supply an extra measure of personalized training (Lavin & Phillipo, 1990).

In *The Internet in K-12 Education* (CMU, 1993), educators indicated that training in the use of the Internet did not require a university course or other organized workshop. Of the twenty-one educators in the study, fourteen indicated that they received no formal training. They relied upon experimentation and printed literature.

Training in technology must often overcome the experienced teacher's varying levels of technology anxiety. There must be understanding of some teachers' special concerns regarding computers. Follow-up and continuing assistance should be included in the training (OTA, 1988).

Honey and Moeller (1990) completed a study to determine characteristics of teachers who had either a high level or low level of technology implementation in the classroom. Interviews were conducted with twenty teachers who either used or did not use computer technologies in their classroom. Teachers with a low level of technology implementation indicated that their first experience with technology had been a negative one, and because they had not
seen appropriate examples in their subject area, they lacked ideas of how to incorporate technology into their curriculum.

**Resources**

Ely (1990) defines resources as those tools and other relevant materials that are accessible to help learners to acquire learning objectives. To implement the use of the Internet, there must be access to the Internet, computer hardware and software.

However, many classrooms do not have basic access to technology resources. Almost 90 percent of K-12 classrooms do not have access to basic telephone service. About one-half of the public schools in the United States use both networks and modems (Carter, 1994).

A teacher’s personal network account may be the only network access available to a classroom. Many educators try to organize activities for an entire class on their personal network accounts. This requires the individual teacher to send or receive documents for the students (CMU, 1993).

**Time**

To implement technology change, educators must have time to learn, adapt, integrate, and reflect on what they are doing. Teachers need time for inservice training and time to practice with new materials (Ely, 1990).
Carnegie Mellon University (1993) found that successful implementation of activities was the result of a significant amount of individual effort by educators. The study indicated that educators are using their personal time to explore the Internet. Teachers without access to the Internet at home used the school's equipment immediately before or after classes.

The Office of Technology Assessment (1988) found that very few teachers have adequate time for planning and preparing to use technology. There is very little time available for teachers to study on their own or in formal courses, to attend conferences and professional meetings, and to gain comfort with the technology and find applications for the classroom.

Rewards

The rewards or incentives for implementing technology varies for individuals. Rewards may include increased salaries, professional opportunities, or self-satisfaction. Each person needs to feel that he or she has had an opportunity to comment on innovations that will directly affect his or her work (Ely, 1990). Some educators indicate their use of telecommunications is driven by personal interest and motivation, rather than by school or district initiatives (Honey & Henriquez, 1993). Administrators can
provide rewards through recognition and encouragement for teachers using technology (Wiburg, 1994).

**Commitment and Leadership**

Commitment communicates support. Leaders must offer inspiration and encouragement. They must offer enthusiasm (Ely, 1990). When teachers see chief administrators using technology, they feel the need to learn it themselves (Wiburg, 1994). Becker (1993) also identified administrative support and leadership as characteristics that encourage educators computer use.

Honey & McMillan (in press) completed a study to determine ways in which different environments influence and shape interpretations of the Internet as a resource for K-12 education. The study was based on the responses of eighteen educators, including classroom teachers, technology specialists, and district coordinators. Honey & McMillan (in press) found that schools that encourage the use of the Internet have an atmosphere of collegiality between teachers and administrators. The schools are investing in hardware, release time, and training, which all work to support the teachers in their efforts. The working conditions allow the educators to find the process of learning exciting, rather than insurmountable or frustrating. The teachers who were more positive about the usefulness and excitement of using the Internet in their teaching were teachers who were
working with groups, who were engaged in an ongoing process that involved both extensive training from experts and consistent support from colleagues. Administrators need to support training opportunities and make time available. Flexible structures as team teaching, interdisciplinary work, and shared planning time are needed.

The Office of Technology Assessment (1988) reports that after training is completed, an environment of support is even more critical once teachers are in the classroom. Organized support for teachers is demonstrated in the form of staff development activities and concern about equity of access to computers (Becker, 1993). Support of the school administration can be displayed by the hiring of substitutes to release teachers to attend training sessions on school time (Herndon, 1994).

**Teacher Beliefs**

With computers and telecommunications, the range of opportunities for educational activities increases. Teachers have to be allowed to choose, willing to make choices, and qualified to make choices effectively. Flexibility should be encouraged (OTA, 1988).

A dissatisfaction with things as they are often initiates change in an education environment (Ely, 1990). The dissatisfaction may occur because the educator wants to improve or find a new way to motivate.
Honey and Moeller (1990) found that teachers with a high level of technology implementation were fairly homogeneous, and tended to focus on instilling a sense of curiosity and desire to learn in their students. Technology was used as a tool for thinking and exploring more deeply into a subject. More classroom time was devoted to an inquiry-based approach that helped students develop critical thinking. Students were allowed to explore and use applications such as telecommunications.

Honey and Moeller (1990) found that teachers with a low level of technology implementation were more heterogeneous. Teachers indicated the main reason for not using technology in the classroom was that it was too disruptive. When the group with the low level of technology implementation did use technology, its purpose was to reinforce basic skills or boost motivation rather than enhance the curriculum.

Summary

The review of literature provides a brief introduction into the development of the Internet and its use in education today. Sections of the review describe professional development activities and classroom activities.

Tools of the Internet include electronic mail, remote log-in, file transfer, and gopher. The Internet is used by teachers for electronic collegial exchanges, information
retrieval, combat isolation, and professional support. Classroom activities include collaborative projects, keypals, research, global classroom projects and information collection.

Brief summaries of studies provide factors that influence the implementation of technology into education. Those factors are training, resources, time, rewards, support, and teacher beliefs. Training includes on-line tutorials and follow-up. The training should cover varying levels of technology anxiety, include continued assistance, and offer appropriate examples in subject areas.

Resources include access to telephone lines, computer hardware, software, and network accounts. Time is needed for training, planning and preparing. Rewards may be personal satisfaction, increased salaries or recognition. Administrators show support and commitment through actions such as providing time for staff development.
Chapter 3

Methods and Procedures

This chapter includes a description of the study, the selection of subjects, a description of the survey instrument, data collection procedures, data analysis techniques, and a summary.

Description of the Study

Descriptive data were collected in order to test hypotheses relative to the use of the Internet by Tennessee K-12 educators. Included was a description of the range and type of activities being employed by educators as they use the Internet. The study was a causal-comparative study. A causal-comparative study aims at the discovery of possible causes for a phenomenon being studied by comparing subjects in whom a characteristic is present with similar subjects in whom it is absent or present to a lesser degree (Borg & Gall, 1989). The purpose of the study was to determine factors which influence educators to use the Internet for their own professional development or for classroom activities. A survey instrument was used to collect the necessary data. The data collected were used to develop recommendations in the area of Internet implementation in Tennessee schools.
Population

The population for this study consisted of Tennessee K-12 educators who have received Internet training through the Virtual School at Vanderbilt University and at Pellissippi Community College.

A list of educators who had received Virtual School Internet training was obtained through the Tennessee State Department of Education, Vanderbilt University and Pellissippi College. One thousand three hundred K-12 educators were included on the lists.

To determine an appropriate sample size, the following formula provided by Schaeffer, Mendenhall, and Ott (1986) for sample size was used:

\[ n = \frac{Npq}{(N-1)D^2 + pq} \]

where \( q = 1 - p \), \( D = \frac{B^2}{4} \).

In the formula \( p \) was set at .5 and a bound error of estimation was set at \( B = .05 \). The total population number was represented by \( N \). The sample size was determined to be 306.

Simple random sampling was used to select 325 educators for this study. In simple random sampling, all the
individuals in the defined population have an equal and independent chance of being selected as a member of the sample. Random sampling techniques yield research data that can be generalized to a larger population. Random sampling is preferred because it permits the researcher to apply inferential statistics to the data (Borg & Gall, 1989). The random sample was generated using a table of random numbers. The results of the research can be generalized to all Tennessee K-12 educators who received the Internet training.

**Instrumentation**

A survey instrument in the questionnaire format was used to provide data for the study. Through the review of literature, those areas determined to influence educators to use the Internet were identified. Areas that were initially identified are access to computers and the Internet, the teacher's beliefs about computer education, beliefs about the extent of school administrator support, and the amount of Internet training received. From these areas, questions were developed for the initial instrument (Appendix A). Included were questions about the amount of Internet training, access to computers, access to the Internet and the educator's use of the Internet. Questions were included to gather data regarding the demographics of the respondents. Thirty-two statements were developed to determine the beliefs of educators about computer education,
the benefits of the Internet, and the extent of school administrator support.

Content validity is the degree to which the sample of test items represents the content that the test is designed to measure (Borg & Gall, 1989). A panel of experts examined the document for content validity. The panel of experts was selected for their background in educational use of the Internet. The panel consisted of Mr. Elijah E. Hall, Assistant Vice Chancellor for Information Systems, Tennessee Board of Regents; Dr. George E. Malo, Assistant Vice Chancellor for Research and Assessment, Tennessee Board of Regents; Dr. Robert Kriebel, Technology Consultant for the Tennessee State Department of Education; Ms. Susan Kuner, Virtual School Coordinator, Vanderbilt University; Mr. Mike Carter, 21st Century Teacher, Sullivan County Schools; and Mrs. JoAnn Stanley, 21st Century Teacher, Sullivan County Schools. Each person was asked to validate the instrument by responding to its clarity, completeness, and accuracy. These experts were encouraged to suggest additional questions or improvements to the instrument (Appendix B).

Suggestions made by the panel of experts were used to revise the questionnaire. Additions to the survey instrument included questions regarding prior experience with computer networks and bulletin boards and additional types of Internet tools. Because the educator's training was not being evaluated, questions related to the evaluation
of training were omitted. Changes were made to clarify the types of classroom activities. Internet access was written to include access through a network. Tools used were separated into classroom use and professional development use. Recommendations from the panel were considered and incorporated into a revised questionnaire (Appendix C).

To determine reliability, the revised questionnaire was piloted with Tennessee K-12 educators who had received the Virtual School Internet training at Northeast State Community College. The pilot group was representative of the population and was not considered in the sample of the population. Included with the pilot questionnaire were a cover letter requesting the educator to review the instrument (Appendix D). The pilot study resulted in forty-three returns from the sixty-five educators involved, a 66 percent return. The pilot study responses were analyzed by computer using the Statistical Package for the Social Sciences (SPSS/PC).

Factor analysis was applied to questions 1 through 18 on the Internet Use Survey Instrument. Using a varimax rotation, the factor analysis identified four factors regarding the educator's beliefs. Factor one measured beliefs about the impact of technology and the Internet on classroom learning. Factor two measured the educator's beliefs about the benefits of using the Internet and factor three measured the educator's beliefs about school support.
Factor four measured the educator's beliefs about Internet training.

Reliability was established through the administration of Cronbach's Coefficient Alpha to each factor. The alpha reliability coefficient level for factor 1 was .8721. Factor 2 resulted in an alpha reliability coefficient of .8849. Factor 3 had a reliability coefficient of .7772 with only 3 questions. Factor 4 had a reliability coefficient of .6098 with only 2 questions.

Based on the computer analysis and comments from the pilot study responses, changes were incorporated into the finalized questionnaire (Appendix E). Statements 19 and 22 were added to the survey instrument to increase the number of statements in factor three. Statements 18, 20, and 23 were added to the survey instrument to increase the number of statements in factor four. Questions regarding the hours per week, the percentage of teachers, and the number of days since completion of training were omitted due to the vague answers received from the pilot group. To encourage all respondents to complete the Internet use questions, the page was moved to page two. The instructions were altered to encourage the user to complete the questions whether the Internet was used or not. The questions regarding Virtual School Step 1 and Step 2 were combined into one general question due to concerns noted by the pilot group. A
section was added for respondents to add comments at the end of the survey.

**Data Collection**

The survey instrument was mailed January 31, 1995 to 325 randomly sampled Tennessee K-12 educators who had received the Virtual School training. Respondents were asked to read statements regarding educators' training, access to computer equipment, support from school administrators, and educator beliefs about computer education. They were asked to respond using the following format: Strongly Disagree (1), Moderately Disagree (2), Neither Agree nor Disagree (3), Moderately Agree (4), and Strongly Agree (5). Included with the questionnaire were a cover letter explaining the nature of the study (Appendix F), and a self-addressed stamped envelope. On February 11, 1995, a follow-up mailing was sent to encourage non-respondents to reply. (Appendix G). A total of 219 educators or 67%, responded by March 1, 1995. Data were obtained through the educators' response to the questionnaire.

**Data Analysis**

Data from the questionnaire were analyzed using descriptive and inferential statistics. The data collected from the survey was analyzed by computer using the
Statistical Package for the Social Sciences (SPSS/PC). Descriptive statistical procedures were used for summary measures including frequency and percentage. The chi-square test was used to test nominal data at a .05 level of significance. Ordinal data were tested by using the Mann-Whitney U-test to determine whether two uncorrelated medians differ significantly from each other at a .05 level of significance. The Mann-Whitney U-test requires that the sample be a random sample and that values can be ordered from smallest to largest (Norusis, 1991).

**Research Questions**

**Research Question 1.**

Are Tennessee K-12 educators using the Internet for classroom activities or for professional development?

**Research Question 2.**

What types of classroom activities are being used with the Internet?

**Research Question 3.**

What types of professional development activities are being used with the Internet?

**Research Question 4.**

What Internet tools are educators using?

**Research Question 5.**

Are Tennessee K-12 educators who have school access to the Internet using the Internet?
Research Question 6.

Are Tennessee K-12 educators who have home access to the Internet using the Internet?

Hypotheses

These hypotheses, stated in the null, were tested at the .05 level of significance.

$H_{01}$: There will be no significant relationship between the completion of Internet workshops and the educator's use of the Internet.

$H_{02}$: There will be no significant difference between male and female educators in relation to their use of the Internet.

$H_{03}$: There will be no significant difference between the age of the educators in relation to their use of the Internet.

$H_{04}$: There will be no significant difference between the educators' job assignments in relation to their use of the Internet.

$H_{05}$: There will be no significant difference between the educators' school level assignments in relation to their use of the Internet.

$H_{06}$: There will be no significant difference between the number of years of experience of the educators in relation to their use of the Internet.
**H_07:** There will be no significant difference between the educators' educational degree level in relation to their use of the Internet.

**H_08:** There will be no significant difference between the educators who use the Internet and those educators who do not use the Internet concerning their beliefs about the impact of technology and the Internet on classroom learning.

**H_09:** There will be no significant difference between the educators who use the Internet and those educators who do not use the Internet concerning their beliefs about school support for Internet learning activities.

**H_010:** There will be no significant difference between the educators who use the Internet and those educators who do not use the Internet concerning their beliefs about the benefits of using the Internet for classroom or professional development activities.

**H_011:** There will be no significant difference between the educators who use the Internet and those educators who do not use the Internet concerning their beliefs about Internet training.

**Summary**

This chapter presented the methodology and procedures used in this study. The chapter included a description of the study, the population, the instrumentation, data collection, data analysis, research questions and
hypotheses. The population consisted of randomly selected Tennessee K-12 educators who had received Internet training through the Virtual School at Vanderbilt University and at Pellissippi Community College. The instrument consisted of questions regarding educators' training, access to computer equipment, support from school administrators, educator beliefs about computer education, and demographic data. Data for the study were obtained through educators' responses to the questionnaires. Data were tabulated by computer using the Statistical Package for the Social Sciences. Results of these analyses are found in Chapter 4.
Chapter 4
Analysis of Data

Introduction

The purpose of this study was to determine what factors influence educators to use the Internet in classroom activities or in their own professional development. The data collected from this study were obtained from questionnaires sent to 325 Tennessee educators. The questionnaire consisted of questions related to computer and Internet access, training, types of activities and tools used, beliefs about the use of the Internet, and demographic questions. An area was provided for comments concerning the use of the Internet in K-12 education.

Respondents

The questionnaire was returned by 219 educators. Of the 219 K-12 educators, 198 or 90.4% indicated they had completed Virtual School training. Nineteen or 8.7% indicated they had not completed the training and two or .9% did not respond to the question. Because the study was limited to those K-12 educators who had received the Internet training, the 21 responses were not included in the sample data. The 198 responses represented a 61% response rate.

As indicated in Table 1, there were 44 questionnaires returned from male educators and there were 153
questionnaires returned from female educators. There were 120 or 60.9% of the respondents in the 40-49 age group.

Table 1

<table>
<thead>
<tr>
<th>Age</th>
<th>Male</th>
<th>Female</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>20-29</td>
<td>3</td>
<td>9</td>
<td>12 (6.1%)</td>
</tr>
<tr>
<td>30-39</td>
<td>2</td>
<td>25</td>
<td>27 (13.7%)</td>
</tr>
<tr>
<td>40-49</td>
<td>33</td>
<td>87</td>
<td>120 (60.9%)</td>
</tr>
<tr>
<td>50-59</td>
<td>5</td>
<td>28</td>
<td>33 (16.8%)</td>
</tr>
<tr>
<td>60-69</td>
<td>1</td>
<td>4</td>
<td>5 (2.5%)</td>
</tr>
<tr>
<td>Total</td>
<td>44</td>
<td>153</td>
<td>197 (100%)</td>
</tr>
</tbody>
</table>

Note: Missing values are excluded from the table.

Table 2 presents the respondents' job titles. The job title identified by 126 or 63.6% of the educators was teacher and 43 or 21.7% identified their current job title as librarian. There were 15 administrators, 5 supervisors, technology coordinators, 3 counselors, a speech therapist and a special projects coordinator.
Table 2

**Number and Percentage of Respondents by Job Title**

<table>
<thead>
<tr>
<th>Job Title</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teacher</td>
<td>126</td>
<td>63.6%</td>
</tr>
<tr>
<td>Librarian</td>
<td>43</td>
<td>21.7%</td>
</tr>
<tr>
<td>Administrator</td>
<td>15</td>
<td>7.6%</td>
</tr>
<tr>
<td>Supervisor</td>
<td>5</td>
<td>2.5%</td>
</tr>
<tr>
<td>Tech Coordinator</td>
<td>4</td>
<td>2.0%</td>
</tr>
<tr>
<td>Counselor</td>
<td>3</td>
<td>1.5%</td>
</tr>
<tr>
<td>Speech Therapist</td>
<td>1</td>
<td>.5%</td>
</tr>
<tr>
<td>Special Projects</td>
<td>1</td>
<td>.5%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>198</strong></td>
<td><strong>99.9%</strong></td>
</tr>
</tbody>
</table>

**Note:** Percentages may not add up to 100% due to rounding.

As indicated in Table 3, 79 or 39.9% of the respondents indicated their current job position was at the elementary school level. There were 40 or 20.2% who indicated middle school locations and 63 or 31.8% who indicated high school locations. Ten educators or 5.1% indicated they worked with all grade levels. Six responses indicated a combination of school levels.
Table 3

Respondents' School Level Teaching/Supervising

<table>
<thead>
<tr>
<th>School Level</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Elementary School</td>
<td>79</td>
<td>39.9%</td>
</tr>
<tr>
<td>Middle School</td>
<td>40</td>
<td>20.2%</td>
</tr>
<tr>
<td>High School</td>
<td>63</td>
<td>31.8%</td>
</tr>
<tr>
<td>All Grades</td>
<td>10</td>
<td>5.1%</td>
</tr>
<tr>
<td>Elementary/Middle</td>
<td>5</td>
<td>2.5%</td>
</tr>
<tr>
<td>Middle/High School</td>
<td>1</td>
<td>.5%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>198</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>

As Table 4 indicates, 75.5% of the respondents indicated they had not completed a class in which the Internet was used as a resource for educational research. Twenty-two educators indicated they had completed one class and 18 indicated they had completed two classes. The highest number of classes indicated by one respondent was nine classes.
Table 4  
**Frequency and Percentage of Number of Classes With Internet as a Resource**

<table>
<thead>
<tr>
<th>Number of Classes</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>148</td>
<td>75.5%</td>
</tr>
<tr>
<td>1</td>
<td>22</td>
<td>11.2%</td>
</tr>
<tr>
<td>2</td>
<td>18</td>
<td>9.2%</td>
</tr>
<tr>
<td>3</td>
<td>1</td>
<td>.5%</td>
</tr>
<tr>
<td>4</td>
<td>3</td>
<td>1.5%</td>
</tr>
<tr>
<td>5</td>
<td>2</td>
<td>1.0%</td>
</tr>
<tr>
<td>8</td>
<td>1</td>
<td>.5%</td>
</tr>
<tr>
<td>9</td>
<td>1</td>
<td>.5%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>196</strong></td>
<td><strong>99.9%</strong></td>
</tr>
</tbody>
</table>

Note: Percentages may not add up to 100% due to rounding. Missing values are excluded from the table.

As indicated in Table 5, commercial computer networks such as American Online and Delphi were used by 71 educators or 35.9%. There were 127 or 64.1% who indicated they were not using commercial networks. There were 74 or 37.4% of the educators who indicated they use local electronic bulletin boards and 124 or 62.6% who indicated they did not use electronic bulletin boards.
Table 5

**Frequency and Percentage of Commercial Network Users and Electronic Bulletin Board Users**

<table>
<thead>
<tr>
<th></th>
<th>Commercial Networks</th>
<th>Bulletin Boards</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Frequency</td>
<td>Percentage</td>
</tr>
<tr>
<td>Yes</td>
<td>71</td>
<td>35.9%</td>
</tr>
<tr>
<td>No</td>
<td>127</td>
<td>64.1%</td>
</tr>
<tr>
<td>Total</td>
<td>198</td>
<td>100.0%</td>
</tr>
</tbody>
</table>

Thirty-four or 17.4% of the respondents indicated there were organized staff development activities about the Internet available in their school. Over 82% or 161 indicated there were none. Eighty-six or 44.1% of the educators indicated they received continued support from colleagues using the Internet. Over 55% or 109 educators indicated they did not receive continued support from colleagues (Table 6).
Table 6

Frequency and Percentage of Organized Staff Development and Colleague Support

<table>
<thead>
<tr>
<th>Staff Development</th>
<th>Frequency</th>
<th>Percentage</th>
<th>Colleague Support</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>34</td>
<td>17.4%</td>
<td>86</td>
<td>44.1%</td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>161</td>
<td>82.6%</td>
<td>109</td>
<td>55.9%</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>195</td>
<td>100.0%</td>
<td>195</td>
<td>100.0%</td>
<td></td>
</tr>
</tbody>
</table>

Note: Missing values are excluded from the table.

As Table 7 indicates, 92.3% of the respondents would like to receive more training on how to use the Internet for professional development activities and 90.4% would like to receive more training on how to use the Internet in the classroom.
Table 7

Frequency and Percentage of Request for More Internet Training

<table>
<thead>
<tr>
<th>Professional Development</th>
<th>Classroom Activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency</td>
<td>Percentage</td>
</tr>
<tr>
<td>Yes</td>
<td>179</td>
</tr>
<tr>
<td>No</td>
<td>15</td>
</tr>
<tr>
<td>Total</td>
<td>194</td>
</tr>
</tbody>
</table>

Note: Missing values are excluded from the table.

Research Questions

Research Question 1.

Are Tennessee K-12 educators using the Internet for classroom activities or for professional development?

An analysis of the data indicated that 33.8% or 67 of the educators responding use the Internet for classroom activities (Table 8). There were 60.6% or 120 of the educators who indicated they use the Internet for professional development.
Table 8

Frequency and Percentage of Respondents' Use of the Internet for Classroom Activities or Professional Development

<table>
<thead>
<tr>
<th>Classroom Activities</th>
<th>Professional Development</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency</td>
<td>Percentage</td>
</tr>
<tr>
<td>Yes</td>
<td>67</td>
</tr>
<tr>
<td>No</td>
<td>131</td>
</tr>
<tr>
<td>Total</td>
<td>198</td>
</tr>
</tbody>
</table>

Research Question 2.

What types of classroom activities are being used with the Internet?

As Table 9 indicates, 43 educators indicated the most frequently used classroom activity, research and ERIC searches. Keypals was the second most frequent, at a frequency of 32. Seven educators indicated other classroom activities. These included teacher e-mail, AT & T Learning Circle, Lynx, information from ListServs, electronic bulletin boards, module on telecommunications and lesson plans.
### Table 9

Types of Classroom Activities Used by Educators

<table>
<thead>
<tr>
<th>Classroom Activity</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Research and ERIC</td>
<td>43</td>
</tr>
<tr>
<td>Keypals</td>
<td>32</td>
</tr>
<tr>
<td>Electronic Discussion</td>
<td>22</td>
</tr>
<tr>
<td>Global Classroom</td>
<td>19</td>
</tr>
<tr>
<td>Collaborative Projects</td>
<td>18</td>
</tr>
<tr>
<td>Electronic Publishing</td>
<td>5</td>
</tr>
<tr>
<td>Other*</td>
<td>7</td>
</tr>
</tbody>
</table>

*Other includes teacher e-mail, AT & T Learning Circle, Lynx, information from ListServs, electronic bulletin boards, module on telecommunications and lesson plans.

**Research Question 3.**

What types of professional development activities are being used with the Internet?

The most frequent type of professional development activity indicated by 94 educators was educational research for personal use. Exchanging ideas with other educators was indicated by 89 educators and information retrieval was indicated by 73. The use of bulletin boards and ListServs was indicated by 38 educators. Six responses indicated
other uses as exploring the Internet, training on the Internet, grant writing, grantsmanship, ISDN line, and entertainment (Table 10).

Table 10

Types of Professional Development Activities

<table>
<thead>
<tr>
<th>Professional Development</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Educational Research</td>
<td>94</td>
</tr>
<tr>
<td>Exchanging Ideas</td>
<td>89</td>
</tr>
<tr>
<td>Information Retrieval</td>
<td>73</td>
</tr>
<tr>
<td>Bulletin Boards/ListSers</td>
<td>38</td>
</tr>
<tr>
<td>Other*</td>
<td>6</td>
</tr>
</tbody>
</table>

*Includes exploring the Internet, training on the Internet, grant writing, grantsmanship, ISDN line, and entertainment.

Research Question 4.

What Internet tools are educators using?

The most frequently used Internet tool for both professional development or classroom activities was e-mail. As Table 11 indicates, 112 educators indicated they used e-mail for professional development activities and 63 indicated they used e-mail for classroom activities. Gopher and telnet were the second and third most frequent.
Table 11

Internet Tools used for Classroom Activities and Professional Development

<table>
<thead>
<tr>
<th>Internet Tool</th>
<th>Classroom Activities Frequency</th>
<th>Professional Development Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>E-Mail</td>
<td>63</td>
<td>112</td>
</tr>
<tr>
<td>FTP</td>
<td>20</td>
<td>42</td>
</tr>
<tr>
<td>Gopher</td>
<td>52</td>
<td>91</td>
</tr>
<tr>
<td>Telnet</td>
<td>35</td>
<td>54</td>
</tr>
<tr>
<td>WWW</td>
<td>16</td>
<td>26</td>
</tr>
<tr>
<td>Mosaic</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>Archie</td>
<td>14</td>
<td>30</td>
</tr>
<tr>
<td>Veronica</td>
<td>26</td>
<td>41</td>
</tr>
<tr>
<td>Other*</td>
<td>6</td>
<td>6</td>
</tr>
</tbody>
</table>

* Other classroom activity tools includes WAIS, Netscape, Lynx, Fetch, and Bulletin Boards. Other professional development activity tools includes IRC, Slipnot, Pine, WAIS, ISDN, and Netscape.

Research Question 5.

Are Tennessee K-12 educators who have school access to the Internet using the Internet?
As indicated in Table 12, 89.4% or 177 of the educators indicated they have a computer in their classroom or office and of those, 106 indicated they have access to the Internet from school. Of the 106 with Internet access, 87 or 82.1% use the Internet.

Table 12

Tennessee K-12 Educators Access to Computer Equipment and the Internet from School

<table>
<thead>
<tr>
<th>Computer Access</th>
<th>Internet Access</th>
<th>Use The Internet</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>177 (89.4%)</td>
<td>106 (59.9%)</td>
</tr>
<tr>
<td>No</td>
<td>21 (10.6%)</td>
<td>66 (37.3%)</td>
</tr>
<tr>
<td>Do Not Know</td>
<td>5 (2.8%)</td>
<td></td>
</tr>
</tbody>
</table>

Total 198 177 106

Research Question 6.

Are Tennessee K-12 educators who have home access to the Internet using the Internet?

As Table 13 indicates, 171 or 86.4% of the educators use a computer at home and of those, 127 or 74.3% indicated they have hardware and software to access the Internet from
home. Of the 127 with home access, 104 or 81.9% use the Internet.

Table 13

**Tennessee K-12 Educators Access to Computer Equipment and the Internet from Home**

<table>
<thead>
<tr>
<th></th>
<th>Use Home</th>
<th>Internet</th>
<th>Use the Internet</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Computer</td>
<td>Access</td>
<td>Internet</td>
</tr>
<tr>
<td>Yes</td>
<td>171 (86.4%)</td>
<td>127 (74.3%)</td>
<td>104 (81.9%)</td>
</tr>
<tr>
<td>No</td>
<td>27 (13.6%)</td>
<td>43 (25.1%)</td>
<td>23 (18.1%)</td>
</tr>
<tr>
<td>Do Not Know</td>
<td></td>
<td>1 (.6%)</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>198</td>
<td>171</td>
<td>127</td>
</tr>
</tbody>
</table>

**Hypothesis**

For the purpose of testing the hypothesis, Internet usage was defined as using the Internet for either professional development or for classroom activities. Of the 198 educators responding, 128 or 64.6% used the Internet. Seventy or 35.4% of the educators did not use the Internet for either activity (Table 14). All statistical tests were conducted with an alpha level of .05.
Table 14

Frequency and Percentage of K-12 Educators Using the Internet for Either Professional Development or for Classroom Activities

<table>
<thead>
<tr>
<th>Use the Internet</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>128</td>
<td>64.6%</td>
</tr>
<tr>
<td>No</td>
<td>70</td>
<td>35.4%</td>
</tr>
<tr>
<td>Total</td>
<td>198</td>
<td>100.0%</td>
</tr>
</tbody>
</table>

Hypothesis 1

There will be no significant relationship between the completion of Internet workshops and the educator's use of the Internet.

The number of educators who had not completed an Internet workshop or seminar other than Virtual School was 108 or 54.8% (Table 15). Fifty-one educators had completed at least one workshop or seminar. Fourteen educators had completed more than three workshops. Those educators who had completed at least one workshop or seminar were grouped together for testing this hypothesis.
Table 15

Number of Additional Internet Seminars or Workshops Attended by Educators

<table>
<thead>
<tr>
<th>Number of Workshops</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>108</td>
<td>54.8%</td>
</tr>
<tr>
<td>1</td>
<td>51</td>
<td>25.9%</td>
</tr>
<tr>
<td>2</td>
<td>24</td>
<td>12.2%</td>
</tr>
<tr>
<td>3</td>
<td>7</td>
<td>3.6%</td>
</tr>
<tr>
<td>4</td>
<td>3</td>
<td>1.5%</td>
</tr>
<tr>
<td>5</td>
<td>3</td>
<td>1.5%</td>
</tr>
<tr>
<td>7</td>
<td>1</td>
<td>.5%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>197</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>

*Note: Missing values are excluded from the table.*

The results of the Chi-square test as reflected in Table 16, indicates 56% of the educators who use the Internet have completed a workshop or seminar about the Internet. A Chi-square of 16.61 was derived with a significance of $p = .00005$. The results of this test indicated that those educators who had attended a workshop or seminar used the Internet to a greater extent than those educators who did not attend workshops. The null hypothesis was rejected.
Table 16

Relationship Between Workshop Attendance and Use of the Internet

<table>
<thead>
<tr>
<th>Workshop Attended</th>
<th>Use the Internet</th>
<th>Do Not Use the Internet</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>71 (56%)</td>
<td>18 (26%)</td>
</tr>
<tr>
<td>No</td>
<td>56 (44%)</td>
<td>52 (74%)</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>127</strong></td>
<td><strong>70</strong></td>
</tr>
</tbody>
</table>

\(X^2 = 16.61, df = 1, p < .05\)

Hypothesis 2

There will be no significant difference between male and female educators in relation to their use of the Internet for either classroom activities or professional development activities.

As Table 17 indicates, 63% of the female educators use the Internet and 70% of the male educators use the Internet. A Chi-Square of .835 was derived with a significance of \(p = .36083\) when testing the data provided by the sample. The results of this test indicated that male educators used the Internet at about the same extent as female educators. The null hypothesis was retained.
Table 17

Relationship Between The Educator's Gender and Use of the Internet

<table>
<thead>
<tr>
<th>Use the Internet</th>
<th>Males</th>
<th>Females</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>31 (70%)</td>
<td>97 (63%)</td>
</tr>
<tr>
<td>No</td>
<td>13 (30%)</td>
<td>57 (37%)</td>
</tr>
<tr>
<td>Total</td>
<td>44</td>
<td>154</td>
</tr>
</tbody>
</table>

$X^2 = .835$, df = 1, p > .05

Hypothesis 3

There will be no significant difference between the age of the educators in relation to their use of the Internet.

As indicated in Table 18, 86 or 67.2% of the educators who use the Internet were in the 40-49 age group. Thirty-four or 49.3% of the educators who indicated they do not use the Internet were in the 40-49 age group.

Table 19 indicates the results of the Mann-Whitney U test. The age of the educator did not show significant differences using the 2-tailed p value of .9773. The null hypothesis was retained.
Table 18

Frequency and Percentage of K-12 Educators' Use of the Internet by Age

<table>
<thead>
<tr>
<th>Age</th>
<th>Use the Internet</th>
<th>Do Not Use</th>
</tr>
</thead>
<tbody>
<tr>
<td>20-29</td>
<td>7 (5.5%)</td>
<td>5 (7.2%)</td>
</tr>
<tr>
<td>30-39</td>
<td>14 (10.9%)</td>
<td>13 (18.8%)</td>
</tr>
<tr>
<td>40-49</td>
<td>86 (67.2%)</td>
<td>34 (49.3%)</td>
</tr>
<tr>
<td>50-59</td>
<td>21 (16.4%)</td>
<td>12 (17.4%)</td>
</tr>
<tr>
<td>60-69</td>
<td>0</td>
<td>5 (7.3%)</td>
</tr>
<tr>
<td>Total</td>
<td>127</td>
<td>69</td>
</tr>
</tbody>
</table>

Table 19

Mann-Whitney U Test Results of Comparison of Educator's Age by Use of the Internet

<table>
<thead>
<tr>
<th>Mean Rank</th>
<th>Frequency</th>
<th>Use of the Internet</th>
<th>U</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>98.93</td>
<td>128</td>
<td>Use Internet</td>
<td>4406.5</td>
<td>.9773</td>
</tr>
<tr>
<td>99.14</td>
<td>69</td>
<td>Do Not Use</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*p < .05
**Hypothesis 4**

There will be no significant difference between the educators' job assignments in relation to their use of the Internet.

The results of the Chi-square test, as reflected in Table 20, indicated that 78 or 60.9% of the responding educators who use the Internet were teachers. Included in other were four technology coordinators, three counselors, one speech therapist, and one special projects coordinator.

**Table 20**

**Relationship Between the Educator's Job Assignment and Use of the Internet**

<table>
<thead>
<tr>
<th>Job Assignment</th>
<th>Use the Internet</th>
<th>Do Not Use</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teacher</td>
<td>78 (60.9%)</td>
<td>48 (68.6%)</td>
</tr>
<tr>
<td>Librarian</td>
<td>29 (22.7%)</td>
<td>14 (20%)</td>
</tr>
<tr>
<td>Administrator/Supervisor</td>
<td>14 (10.9%)</td>
<td>6 (8.6%)</td>
</tr>
<tr>
<td>Other</td>
<td>7 (5.5%)</td>
<td>2 (2.8%)</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>128 (100%)</strong></td>
<td><strong>70 (100%)</strong></td>
</tr>
</tbody>
</table>

\[ X^2 = 1.49125 \text{ df } = 3, \ p > .05 \]
Forty-eight or 68.6% of the educators who do not use the Internet were teachers. A Chi-Square of 1.49125 was derived with a significance of \( p = .68429 \). The results of this test indicated that there are no significant differences between the educator's job assignment and use of the Internet. The null hypothesis was retained.

**Hypothesis 5**

There will be no significant difference between the educators' school level assignments in relation to their use of the Internet.

The results of the Chi-square test are presented in Table 21. Forty-eight or 37.5% of the educators who use the Internet indicated they worked at the elementary school level. Thirty-one or 44.3% of the educators who do not use the Internet indicated they worked at the elementary school level. A Chi-Square of 3.43446 was derived with a significance of \( p = .32936 \) when testing the data provided by the sample. The results of this test indicated that there are no significant differences between the school level of the educator and their use of the Internet. The null hypothesis was retained.
Table 21

**Relationship Between the School Level of the Educator’s Job Assignment and Use of the Internet**

<table>
<thead>
<tr>
<th>Grade Level</th>
<th>Use the Internet</th>
<th>Do Not Use</th>
</tr>
</thead>
<tbody>
<tr>
<td>Elementary</td>
<td>48 (37.5%)</td>
<td>31 (44.3%)</td>
</tr>
<tr>
<td>Middle School</td>
<td>23 (18%)</td>
<td>17 (24.3%)</td>
</tr>
<tr>
<td>High School</td>
<td>45 (35.2%)</td>
<td>18 (25.7%)</td>
</tr>
<tr>
<td>All Grades</td>
<td>12 (9.3%)</td>
<td>4 (5.7%)</td>
</tr>
</tbody>
</table>

Total 128 70

\[ X^2 = 3.43446 \text{ df } = 3, \ p > .05 \]

**Hypothesis 6**

There will be no significant difference between the number of years of experience of the educators in relation to their use of the Internet.

For the purpose of testing this hypothesis, the data describing the years of experience in K-12 education were collapsed into four categories, 1–9 years, 10–18 years, 19–27 years and 28–36 years.

As Table 22 indicates, there were 76 educators responding to the survey who had between 19 and 27 years of experience in K-12 education. Forty-four educators indicated they had
between one and nine years of experience. Thirteen respondents did not indicate their years of experience.

Table 22

Frequency and Percentage of Respondents' Years of Experience in K-12 Education

<table>
<thead>
<tr>
<th>Years Experience</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-9 Years</td>
<td>44</td>
<td>23.8%</td>
</tr>
<tr>
<td>10-18 Years</td>
<td>54</td>
<td>29.2%</td>
</tr>
<tr>
<td>19-27 Years</td>
<td>76</td>
<td>41.1%</td>
</tr>
<tr>
<td>28-36 Years</td>
<td>11</td>
<td>5.9%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>185</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>

Table 23 indicates the results of the Mann-Whitney U test. The educator's years of experience did not show significant differences using the 2-tailed p value of .6359. The null hypothesis was retained.
Table 23

Mann-Whitney U Test Results of Comparison of Educator's Years of Experience by Use of the Internet

<table>
<thead>
<tr>
<th>Mean Rank</th>
<th>Frequency</th>
<th>Use of the Internet</th>
<th>U</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>94.30</td>
<td>120</td>
<td>Use Internet</td>
<td></td>
<td></td>
</tr>
<tr>
<td>90.61</td>
<td>65</td>
<td>Do Not Use</td>
<td>3744.5</td>
<td>.6359</td>
</tr>
</tbody>
</table>

*p < .05

Hypothesis 7

There will be no significant difference between the educators' educational degree level in relation to their use of the Internet.

The educational level attained by the respondents is represented in Table 24. Over 72% had attained above the bachelors degree. There were 46 or 23.3% with a master's degree and 12 or 6.1% of the educators indicated they had attained the doctorate.

Table 25 indicates the results of the Mann-Whitney U test. The degree level of the educator did not show significant differences using the 2-tailed p value of .3312. The null hypothesis was retained.
Table 24

**Highest Educational Level Attained by Respondents**

<table>
<thead>
<tr>
<th>Educational Level</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bachelors</td>
<td>55</td>
<td>27.9%</td>
</tr>
<tr>
<td>Masters</td>
<td>46</td>
<td>23.3%</td>
</tr>
<tr>
<td>Masters Plus</td>
<td>75</td>
<td>38.1%</td>
</tr>
<tr>
<td>EDS</td>
<td>9</td>
<td>4.6%</td>
</tr>
<tr>
<td>Doctorate</td>
<td>12</td>
<td>6.1%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>197</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>

Note: Missing values are excluded from the table.

Table 25

**Mann-Whitney U Test Results of Comparison of Educator's Degree Level by Use of the Internet**

<table>
<thead>
<tr>
<th>Mean Rank</th>
<th>Frequency</th>
<th>Use of the Internet</th>
<th>U</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>101.83</td>
<td>127</td>
<td>Use Internet</td>
<td></td>
<td></td>
</tr>
<tr>
<td>93.93</td>
<td>70</td>
<td>Do Not Use</td>
<td>4090.0</td>
<td>.3312</td>
</tr>
</tbody>
</table>

*p < .05
Hypothesis 8

There will be no significant difference between the educators who use the Internet and those educators who do not use the Internet concerning their beliefs about the impact of technology and the Internet on classroom learning.

Questions 1, 4, 7, 8, 15, 16, and 21 were used to determine the educator's beliefs concerning the impact of technology and the Internet on classroom learning. Educators were asked to respond to the statements using the following scale: Strongly Disagree (1), Moderately Disagree (2), Neither Agree nor Disagree (3), Moderately Agree (4), and Strongly Agree (5). A review of the frequency percentages of responses for these questions for all respondents is represented in Table 26.

The scores from the seven statements were calculated using SPSS/PC. The results of the Mann-Whitney U test for the calculated scores, as reflected in table 27, indicated that at the .05 level, there is no significant difference between the educators who use the Internet and those educators who do not use the Internet concerning their beliefs about the impact of technology and the Internet on classroom learning. The null hypothesis was retained.
Table 26

Percentages of Responses for Statements Pertaining to the Impact of Technology and the Internet on Learning

<table>
<thead>
<tr>
<th>Item</th>
<th>G</th>
<th>SD</th>
<th>MD</th>
<th>N</th>
<th>MA</th>
<th>SA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q1. Reinforces basic skills.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>U</td>
<td>.8</td>
<td>3.2</td>
<td>6.3</td>
<td>26.2</td>
<td>63.5</td>
<td></td>
</tr>
<tr>
<td>N</td>
<td>4.3</td>
<td>2.9</td>
<td>5.7</td>
<td>28.6</td>
<td>58.6</td>
<td></td>
</tr>
<tr>
<td>Q4. Internet stimulates thinking.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>U</td>
<td>.8</td>
<td>3.9</td>
<td>12.6</td>
<td>35.4</td>
<td>47.2</td>
<td></td>
</tr>
<tr>
<td>N</td>
<td>1.4</td>
<td>4.3</td>
<td>37.1</td>
<td>21.4</td>
<td>35.7</td>
<td></td>
</tr>
<tr>
<td>Q7. Technology stimulates thinking.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>U</td>
<td>3.1</td>
<td>3.9</td>
<td>3.9</td>
<td>21.3</td>
<td>67.7</td>
<td></td>
</tr>
<tr>
<td>N</td>
<td>2.9</td>
<td>1.4</td>
<td>2.9</td>
<td>32.9</td>
<td>60.0</td>
<td></td>
</tr>
<tr>
<td>Q8. Concern/anxiety about using a computer.</td>
<td>U</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>N</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Q15. A tool for exploring more deeply into a subject.</td>
<td>U</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>N</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Q16. Internet activities improve computer literacy.</td>
<td>U</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>N</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Q21. Technology in the classroom is exciting.</td>
<td>U</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>N</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: Missing values are excluded from the table.

G = Group, SD = Strongly Disagree, MD = Moderately Disagree, N = Neither Agree nor Disagree, MA = Moderately Agree, SA = Strongly Agree, U = Internet User, N = Non-user.
Table 27

Mean Rank, Mann-Whitney U, and Probability Results of Calculated Scores of Educators' Beliefs About the Impact of Technology and the Internet on Classroom Learning

<table>
<thead>
<tr>
<th>Mean Rank</th>
<th>Frequency</th>
<th>Use of the Internet</th>
<th>U</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>103.42</td>
<td>124</td>
<td>Use Internet</td>
<td></td>
<td></td>
</tr>
<tr>
<td>87.02</td>
<td>70</td>
<td>Do Not Use</td>
<td>3606.5</td>
<td>.0505</td>
</tr>
</tbody>
</table>

*p < .05

Hypothesis 9

There will be no significant difference between the educators who use the Internet and those educators who do not use the Internet concerning their beliefs about school support for Internet learning activities.

Questions 2, 5, 9, 17, 19, and 22 were used to determine the educator's beliefs concerning the support for Internet learning activities. Educators were asked to respond to the statements using the following scale: Strongly Disagree (1), Moderately Disagree (2), Neither Agree nor Disagree (3), Moderately Agree (4), and Strongly Agree (5). A review of the frequency percentages of
responses for these questions for all respondents is represented in Table 28.

Table 28

Percentages of Responses for Statements Pertaining to the Support for Internet Learning Activities

<table>
<thead>
<tr>
<th>Item</th>
<th>G</th>
<th>SD</th>
<th>MD</th>
<th>N</th>
<th>MA</th>
<th>SA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q2. School administrators use the Internet.</td>
<td>U</td>
<td>38.3</td>
<td>12.5</td>
<td>24.2</td>
<td>10.9</td>
<td>14.1</td>
</tr>
<tr>
<td>Q5. Combats the isolation of the classroom teacher.</td>
<td>N</td>
<td>33.3</td>
<td>10.1</td>
<td>39.1</td>
<td>5.8</td>
<td>11.6</td>
</tr>
<tr>
<td>Q9. School encourages students to use Internet.</td>
<td>U</td>
<td>2.4</td>
<td>3.9</td>
<td>9.4</td>
<td>35.4</td>
<td>48.8</td>
</tr>
<tr>
<td>Q17. School encourages teachers to use Internet.</td>
<td>N</td>
<td>4.3</td>
<td>7.1</td>
<td>34.3</td>
<td>22.9</td>
<td>31.4</td>
</tr>
<tr>
<td>Q19. School encourages teacher Internet training.</td>
<td>U</td>
<td>21.4</td>
<td>11.1</td>
<td>33.3</td>
<td>17.5</td>
<td>16.7</td>
</tr>
<tr>
<td>Q22. Educators share Internet projects.</td>
<td>N</td>
<td>36.2</td>
<td>8.7</td>
<td>36.2</td>
<td>10.1</td>
<td>8.7</td>
</tr>
<tr>
<td></td>
<td>N</td>
<td>36.2</td>
<td>8.7</td>
<td>36.2</td>
<td>10.1</td>
<td>8.7</td>
</tr>
</tbody>
</table>

Note: Missing values are excluded from the table.

G = Group, SD = Strongly Disagree, MD = Moderately Disagree, N = Neither Agree nor Disagree, MA = Moderately Agree, SA = Strongly Agree, U = Internet User, N = Non-user.
The scores from the six statements were calculated using SPSS/PC. The results of the Mann-Whitney U test for the calculated scores, as reflected in Table 29, indicated that at the .05 level, there is a significant difference between the educators who use the Internet and those educators who do not use the Internet concerning their beliefs about the support for Internet learning activities. The null hypothesis was rejected.

Table 29
Mean Rank, Mann-Whitney U, and Probability Results of Calculated Scores of Educators' Beliefs About the Support for Internet Learning Activities

<table>
<thead>
<tr>
<th>Mean Rank</th>
<th>Frequency</th>
<th>Use of the Internet</th>
<th>U</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>104.39</td>
<td>125</td>
<td>Use Internet</td>
<td></td>
<td></td>
</tr>
<tr>
<td>85.01</td>
<td>69</td>
<td>Do Not Use</td>
<td>3451.0</td>
<td>.0214*</td>
</tr>
</tbody>
</table>

*p < .05

Hypothesis 10
There will be no significant difference between the educators who use the Internet and those educators who do not use the Internet concerning their beliefs about the
benefits of using the Internet for classroom or professional development activities.

Questions 3, 6, 10, 12, and 14 were used to determine the educator's beliefs concerning the benefits of using the Internet. Educators were asked to respond to the statements using the following scale: Strongly Disagree (1), Moderately Disagree (2), Neither Agree nor Disagree (3), Moderately Agree (4), and Strongly Agree (5). A review of the frequency percentages of responses for these questions for all respondents is represented in Table 30.

The scores from the five statements were calculated using SPSS/PC. The results of the Mann-Whitney U test for the calculated scores, as reflected in Table 31, indicated there is no significant difference between the educators who use the Internet and those educators who do not use the Internet concerning their beliefs about the benefits of using the Internet. The null hypothesis was retained.
Table 30

**Percentages of Responses for Statements Pertaining to the Benefits of Using the Internet**

<table>
<thead>
<tr>
<th>Item</th>
<th>G</th>
<th>SD</th>
<th>MD</th>
<th>N</th>
<th>MA</th>
<th>SA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q3. Creates atmosphere of support, collegiality.</td>
<td>U</td>
<td>0.8</td>
<td>3.9</td>
<td>20.3</td>
<td>28.9</td>
<td>46.1</td>
</tr>
<tr>
<td></td>
<td>N</td>
<td>4.3</td>
<td>5.7</td>
<td>37.1</td>
<td>18.6</td>
<td>34.3</td>
</tr>
<tr>
<td>Q6. Students learn through collaborative projects.</td>
<td>U</td>
<td>1.6</td>
<td>2.4</td>
<td>12.6</td>
<td>41.7</td>
<td>41.7</td>
</tr>
<tr>
<td></td>
<td>N</td>
<td>1.4</td>
<td>4.3</td>
<td>37.1</td>
<td>25.7</td>
<td>31.4</td>
</tr>
<tr>
<td>Q10. Helps me to stay current.</td>
<td>U</td>
<td>3.2</td>
<td>4.8</td>
<td>23.0</td>
<td>40.5</td>
<td>28.6</td>
</tr>
<tr>
<td></td>
<td>N</td>
<td>17.4</td>
<td>5.8</td>
<td>49.3</td>
<td>20.3</td>
<td>7.2</td>
</tr>
<tr>
<td>Q12. Answers questions of curricular or professional interest.</td>
<td>U</td>
<td>1.6</td>
<td>5.5</td>
<td>15.7</td>
<td>44.9</td>
<td>32.3</td>
</tr>
<tr>
<td></td>
<td>N</td>
<td>5.7</td>
<td>7.1</td>
<td>40.0</td>
<td>30.0</td>
<td>17.1</td>
</tr>
<tr>
<td>Q14. Expands the resources available to students.</td>
<td>U</td>
<td>1.6</td>
<td>4.7</td>
<td>7.9</td>
<td>35.4</td>
<td>50.4</td>
</tr>
<tr>
<td></td>
<td>N</td>
<td>1.4</td>
<td>7.2</td>
<td>21.7</td>
<td>26.1</td>
<td>43.5</td>
</tr>
</tbody>
</table>

**Note:** Missing values are excluded from the table.

G = Group, SD = Strongly Disagree, MD = Moderately Disagree, N = Neither Agree nor Disagree, MA = Moderately Agree, SA = Strongly Agree, U = Internet User, N = Non-user.
Table 31
Mean Rank, Mann-Whitney U, and Probability Results of Calculated Scores of Educators' Beliefs About the Benefits of Using Internet Activities

<table>
<thead>
<tr>
<th>Mean Rank</th>
<th>Frequency</th>
<th>Use of The Internet</th>
<th>U</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>103.27</td>
<td>126</td>
<td>Use Internet</td>
<td></td>
<td></td>
</tr>
<tr>
<td>86.82</td>
<td>68</td>
<td>Do Not Use</td>
<td>3557.5</td>
<td>.0514</td>
</tr>
</tbody>
</table>

*p < .05

Hypothesis 11
There will be no significant difference between the educators who use the Internet and those educators who do not use the Internet concerning their beliefs about Internet training.

Questions 11, 13, 18, 20 and 23 were used to determine the educator's beliefs concerning Internet training. Educators were asked to respond to the statements using the following scale: Strongly Disagree (1), Moderately Disagree (2), Neither Agree nor Disagree (3), Moderately Agree (4), and Strongly Agree (5). A review of the frequency percentages of responses for these questions for all respondents is represented in Table 32.
### Table 32

**Percentages of Responses for Statements Pertaining to Internet Training**

<table>
<thead>
<tr>
<th>Item</th>
<th>G</th>
<th>SD</th>
<th>MD</th>
<th>N</th>
<th>MA</th>
<th>SA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q11. Time is available for technology training</td>
<td>U</td>
<td>26.6</td>
<td>20.3</td>
<td>8.6</td>
<td>30.5</td>
<td>14.1</td>
</tr>
<tr>
<td></td>
<td>N</td>
<td>30.0</td>
<td>20.0</td>
<td>12.9</td>
<td>21.4</td>
<td>15.7</td>
</tr>
<tr>
<td>Q13. Professional leave is available for</td>
<td>U</td>
<td>14.1</td>
<td>14.8</td>
<td>12.5</td>
<td>25.8</td>
<td>32.8</td>
</tr>
<tr>
<td>technology training.</td>
<td>N</td>
<td>12.9</td>
<td>10.0</td>
<td>8.6</td>
<td>32.9</td>
<td>35.7</td>
</tr>
<tr>
<td>Q18. Educators received support from mentors.</td>
<td>U</td>
<td>15.1</td>
<td>22.8</td>
<td>26.0</td>
<td>22.8</td>
<td>13.4</td>
</tr>
<tr>
<td></td>
<td>N</td>
<td>34.3</td>
<td>20.0</td>
<td>28.6</td>
<td>11.4</td>
<td>5.7</td>
</tr>
<tr>
<td>Q20. Time is available for practicing Internet</td>
<td>U</td>
<td>32.8</td>
<td>26.6</td>
<td>19.5</td>
<td>15.6</td>
<td>5.5</td>
</tr>
<tr>
<td>skills after training.</td>
<td>N</td>
<td>48.6</td>
<td>25.7</td>
<td>15.7</td>
<td>8.6</td>
<td>1.4</td>
</tr>
<tr>
<td>Q23. Additional Internet training provided.</td>
<td>U</td>
<td>36.7</td>
<td>21.9</td>
<td>13.3</td>
<td>17.2</td>
<td>10.9</td>
</tr>
<tr>
<td></td>
<td>N</td>
<td>38.6</td>
<td>20.0</td>
<td>22.9</td>
<td>11.4</td>
<td>7.1</td>
</tr>
</tbody>
</table>

**Note:** Missing values are excluded from the table.

G = Group, SD = Strongly Disagree, MD = Moderately Disagree, N = Neither Agree nor Disagree, MA = Moderately Agree, SA = Strongly Agree, U = Internet User, N = Non-user.

The scores from the five statements were calculated using SPSS/PC. The results of the Mann-Whitney U test for
the calculated scores, as reflected in table 33, indicated there is a significant difference between the educators who use the Internet and those educators who do not use the Internet concerning their beliefs about Internet training. The null hypothesis was rejected.

Table 33

Mean Rank, Mann-Whitney U, and Probability Results of Calculated Scores of Educators' Beliefs About Internet Training

<table>
<thead>
<tr>
<th>Mean Use of Rank</th>
<th>Frequency</th>
<th>the Internet U</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>108.75</td>
<td>127</td>
<td>Use Internet</td>
<td></td>
</tr>
<tr>
<td>81.31</td>
<td>70</td>
<td>Do Not Use 3207.0</td>
<td>.0012*</td>
</tr>
</tbody>
</table>

*p < .05

Written Comments

Sixty-two or 31.3% of the K-12 educators responded with written comments (Appendix H). An analysis of the comments indicated four main topics of concern expressed by the educators. Training, access to equipment, time, and support were addressed. The respondents also included positive and negative comments about the Internet.
Training

Comments about training included requesting more training, follow-up to the training, and ways to use the Internet. One educator wrote "I am trying to learn the Internet on my own. One training session does not seem to be enough. I would love more training and time to learn to put the training to use in my classroom". Another educator stated "Training on using the Internet in K-12 education is greatly needed".

Ways to use the Internet were addressed by one educator who wrote "Teachers and librarians need help in ways to incorporate Internet into the curriculum" and another who stated "We need more training on Internet and how to incorporate it in a traditional classroom".

Ideas about follow-up training were expressed by the educator who stated "The training was not comprehensive enough and there were no follow-up activities."

Access to Equipment

Access to hardware, software, and phone lines were mentioned by the educators. One educator expresses frustration in the following statement:

Without classroom or home access to Internet, the vision of a collaborative education environment is unrealistic. At the end of January, I received my teacher work station and two student computers. No modems, no additional software other than Microsoft
Works and probably most importantly, no teacher laptop computers. To use technology, teachers must have access to technological tools. Provide modems and access and technology can be an invaluable tool. Another educator states "I have a modem but my administrator will not approve a telephone line. Money is not available for the telephone line cost." Another educator mentioned phone lines in the comment "I had an Internet address and training two years ago but I have had limited access due to getting a phone line connected." The computer hardware installation was addressed in this comment:

I have a 21st Century Classroom and a modem was provided but our school system will not have phone lines put into the classroom. I also have other items that have not been hooked up such as laser players and scanners. We were told not to do this ourselves. I have had these items sitting for 12 months. I would love to use the Internet in the classroom.

**Time**

The educators included comments about the lack of time for training and for using the Internet. One educator states "There is so much info on the Net and so little time to know how or what I want to use." Another educator writes "My biggest problem is time to investigate using Internet and getting help from a person who is nearby." One educator mentions "Time for practice is only available on
our own time." Another comment was that "Time is limited. Other teachers and I would use Internet more if we had more time. Although our school system is supportive of our use of the Internet, we still have to set our priorities of how we use school and personal time."

**Support**

A librarian wrote the following comment which addresses time, training, and support:

I believe the Internet to be a wonderful tool for educators but I believe, also, that many teachers are afraid of it because they do not know how to use it. I have spent many hours on it at home; there is hardly any time at school. As a librarian, I feel I do some with the students at school but not as much as I could if I were not used as a break time and loaded with students all the time. Also, the training I had for one day on Ten-Nash was not enough and I do not have anywhere for further training other than searching by myself. For this to take off there must be much better support than there is now.

Another educator expresses concern:

It is my understanding that all schools in Tennessee are supposed to receive computers with modems and one person per site to receive Internet training. We received training months ago but no computers. It seems like such a shame because I feel like I have
forgotten everything. I do wish we had more time to work with this - It is really exciting! Teachers are feeling extremely frustrated. We need more support! Administrative support is addressed by the comment "If the state and local systems would commit fully to this - obtain the hardware, demand that teachers get trained or get out, and really push authoritatively, we can have kids prepared for the new millennium."

Positive and Negative

Positive and negative comments about the Internet were written by the educators. One educator wrote "Internet was never intended for the uses to which educators seem to aim. Internet is a forum for discussion of intellectual problems and the exchanging of ideas and should not be clogged with banal traffic." A teacher stated "I cannot see how Internet can be useful to me. I teach computer but I do not have any C.D.'s or even a modem. My classes are too large and I do not feel comfortable using Internet."

One respondent expressed enthusiasm about the Internet: Virtual School got me involved in computer usage. My involvement is approximately one year. Since then, I have really learned word processing. Following virtual school, I hungered to learn computers. My suggestion is this. First get comfortable with the basics, then spread out. This, I felt was important so that when I got to using the computer in general, I could speak the
language and not feel intimidated. I feel that the Internet is an unusually significant element introduced for educational enhancement. Its uses and ramifications are so enormous! Internet can bring the world to the student's door.

Another educator stated "I view this as the most important educational tool offered to teachers in the last 50 years, second only to the overhead projector." One respondent stated "The Internet and telecommunications technology should be as ritual as the chalk (or dry-erase) board in every classroom."

**Summary**

Chapter 4 was a descriptive analysis of the responses included in the study. Demographic data were presented describing the respondents. Frequencies and percentages were used to describe types of professional development activities and classroom activities being used with the Internet. Tools used by K-12 educators to conduct activities with the Internet were identified. Six research questions were answered. The Chi-square test was used to test four hypothesis and the Mann-Whitney test was used to test seven hypothesis. Analysis of the respondents' written comments identified areas of concern about training, time, support, and access to equipment. Positive and negative comments about the Internet were identified. Chapter 5
contains a summary of the findings, conclusions, and recommendations of the study.
Chapter 5
Summary, Findings, Conclusions, and Recommendations

Summary
Limited research was available concerning Tennessee K-12 educators' implementation of the Internet into classroom activities or professional development activities. The Master Plan for Tennessee Schools: Preparing for the Twenty-First Century (1991) listed technology and the linking of schools in a statewide information network as one of the eight goals. Internet training was offered to Tennessee K-12 educators through Vanderbilt University's "Virtual School" and was continued during the 1994-95 school year by the Tennessee State Department of Education. The purpose of this study was to determine what factors influence educators to use the Internet in classroom activities or in their own professional development. Knowledge gained from this study can be used by educators and administrators in the implementation of the Internet in Tennessee K-12 schools.

The population consisted of Tennessee K-12 educators who have received Internet training through the Virtual School at Vanderbilt University and at Pellissippi Community College. Simple random sampling was used to select 325 educators for this study. The 198 responses represented a 61% response rate.

Over 63% of the responses were received from teachers and 21.7% were from librarians. Administrators,
supervisors, technology coordinators, counselors, speech therapists and special projects personnel also responded. Of the 198 responses, 79 or 39.9% identified their job assignment as the elementary school level. Almost 75% of the respondents had not completed a class in which the Internet was used as a resource. Commercial computer networks were used by 71 educators or 35.9%. Local electronic bulletin boards were being used by 74 or 37.4% of the educators. Over 80% indicated there were no organized staff development activities about the Internet available in their schools and over 54.6% indicated they did not receive continued support from their colleagues. There were 90.4% of the educators who would like to receive additional training on how to use the Internet for professional development activities and 89.9% of the educators would like to receive more training on how to use the Internet in the classroom. Sixty-two educators responded with written comments about the use of the Internet in K-12 education.

Findings

Findings for this study are discussed relative to the six research questions and 11 hypotheses. The hypotheses were written in the null form for testing. Three of the 11 hypotheses were rejected.

Research Questions

1. Are Tennessee K-12 educators using the Internet for classroom activities or for professional development?
Sixty-seven of the respondents indicated they were using the Internet for classroom activities. This represented 33.8% of the respondents. There were 131 or 66.2% who indicated they were not using the Internet for classroom activities.

There were 120 or 60.6% who indicated they use the Internet for professional development activities. Seventy-eight educators or 39.4% indicated they do not use the Internet for professional development activities.

2. What types of classroom activities are being used with the Internet?

The most frequently used classroom activity being used with the Internet was research and ERIC searches which received 43 responses. Keypals was the second most frequently used with 32 responses. Electronic discussion was used by 22 educators and global classroom projects were used by 19. Electronic publishing was indicated by 5 educators. Other Internet classroom activities included teacher e-mail, AT & T learning circle, information from Listservs, electronic bulletin boards, telecommunication module, and lesson plans.

3. What types of professional development activities are being used with the Internet?

There were 94 educators who indicated that educational research was being used with the Internet for professional development. Eighty-nine educators indicated they used the
Internet for exchanging ideas and 73 indicated they used the Internet for information retrieval. Thirty-eight educators indicated they used the Internet for bulletin boards and ListServs. Other professional development activities included exploring the Internet, training on the Internet, grant writing, ISDN line, and entertainment.

4. What Internet tools are educators using?

The most frequently used Internet tool for classroom activity or professional development activity was electronic mail. Sixty-three educators indicated they used e-mail for classroom activities. Other Internet tools used for classroom activities were FTP, gopher, telnet, WWW, mosaic, Archie, Veronica, WAIS, Netscape, Lynx, Fetch, and bulletin boards. There were 112 educators who indicated they used e-mail for professional development activities. Other Internet tools used for professional development activities were FTP, gopher, telnet, WWW, mosaic, Archie, Veronica, IRC, Slipnot, Pine, WAIS, ISDN, and Netscape.

5. Are Tennessee K-12 educators who have school access to the Internet using the Internet?

There were 177 or 89.4% of the educators who indicated they have a computer in their classroom or office and of those, 106 indicated they have access to the Internet from school. Of the 106 with Internet access, 87 or 82.1% use the Internet.
6. Are Tennessee K-12 educators who have home access to the Internet using the Internet?

There were 171 or 86.4% of the educators who use a computer at home and of those, 127 or 74.3% indicated they have hardware and software to access the Internet from home. Of the 127 with home access, 104 or 81.9% use the Internet.

Hypotheses

1. There will be no significant relationship between the completion of Internet workshops and the educator's use of the Internet.

The null hypothesis was rejected. There was a significant relationship between the completion of an Internet workshop or seminar and the educator's use of the Internet. Those educators who had attended a workshop or seminar used the Internet to a greater extent that those educators who did not attend workshops.

2. There will be no significant difference between male and female educators in relation to their use of the Internet.

The null hypothesis was retained. There was no significant difference between male and female educators in relation to their use of the Internet. Male educators used the Internet at about the same extent as female educators.

3. There will be no significant difference between the age of the educators in relation to their use of the Internet.
There was no significant difference between the age of the educators in relation to their use of the Internet. The null hypothesis was retained.

4. There will be no significant difference between the educator's job assignment in relation to their use of the Internet.

There was no significant differences between the educator's job assignment and use of the Internet. The null hypothesis was retained.

5. There will be no significant difference between the educator's school level assignment and their use of the Internet.

There was no significant difference between the school level assignment of the educator in relation to their use of the Internet. The null hypothesis was retained.

6. There will be no significant difference between the number of years of experience of the educator in relation to their use of the Internet.

There was no significant difference between the educator's number of years of experience in relation to their use of the Internet. The null hypothesis was retained.

7. There will be no significant difference between the educator's educational degree level and their use of the Internet.
There was no significant difference between the degree level of the educator in relation to their use of the Internet. The null hypothesis was retained.

8. There will be no significant difference between the educators who use the Internet and those educators who do not use the Internet concerning their beliefs about the impact of the Internet on classroom learning.

There was no significant difference between the educators who use the Internet and those educators who do not use the Internet concerning their beliefs about the impact of the Internet on classroom learning. The null hypothesis was retained.

9. There will be no significant difference between the educators who use the Internet and those educators who do not use the Internet concerning their beliefs about school support for Internet learning activities.

There was a significant difference between the educators who use the Internet and those educators who do not use the Internet concerning their beliefs about the support for Internet learning activities. The null hypothesis was rejected.

10. There will be no significant difference between the educators who use the Internet and those educators who do not use the Internet concerning their beliefs about the benefits of using the Internet for classroom or professional development activities.
There was no significant difference between the educators who use the Internet and those educators who do not use the Internet concerning their beliefs about the benefits of using the Internet. The null hypothesis was retained.

11. There will be no significant difference between the educators who use the Internet and those educators who do not use the Internet concerning their beliefs about Internet training.

There was a significant difference between the educators who use the Internet and those educators who do not use the Internet concerning their beliefs about Internet training. The null hypothesis was rejected.

In summary, three null hypotheses were rejected. There was a significant difference between those educators who had attended an additional Internet workshop or seminar as to their use of the Internet. There were significant differences between educators' use of the Internet in relation to their beliefs about the support for Internet learning activities and in relation to their beliefs about Internet training.
Conclusions

The following conclusions were derived from the results of this study:

1. The Internet is being used by a third of the responding Tennessee K-12 educators for classroom activities. Research, ERIC searches, and keypals are the most often used activities.

2. The Internet is being used by over half of the responding Tennessee K-12 educators for professional development activities. Educational research and exchanging of ideas are the most often used activities.

3. E-mail and gopher are the Internet tools the most often used by K-12 educators.

4. A growing number of Tennessee K-12 educators have access to computers in their classroom or office. Only about half of the responding educators who had computer access also have access to the Internet. Most of the responding educators with Internet access at school use the Internet.

5. Most of the Tennessee K-12 educators responding to the questionnaire use computers at home and many have the hardware and software to access the Internet from home.

6. Educators who attend workshops or seminars about the Internet use the Internet to a greater extent that those educators who did not attend workshops.
7. The educator’s gender, age, job assignment, school level assignment, number of years of experience, or educational degree are not related to the degree of use of the Internet.

8. There is little organized staff development about the Internet available in Tennessee K-12 schools.

9. Users and non-users of the Internet believe that technology and the Internet will impact classroom learning.

10. Educators who use the Internet believe there is good school support for Internet learning activities.

11. Users and non-users of the Internet believe there are benefits of using the Internet in K-12 education.

12. Users and non-users of the Internet do not believe that time is available for training or practicing Internet skills.

13. Tennessee K-12 educators would like to receive more training on how to use the Internet for both classroom activities and professional development.

Recommendations

Based on the findings of this study, the following recommendations are offered:

1. Training on the use of the Internet needs to be continued for K-12 educators.

2. Training needs to include specific examples of how to use the Internet in different curriculum areas and at
different grade levels. The training needs to include immediate follow-up through an on-line tutor. The training needs to utilize on-line mentors.

3. Before an educator attends the training, there should be school Internet access available.

4. There needs to be regional education personnel who are skilled in the use of the Internet. This person should serve as a resource to local school systems.

5. The state department of education should require a computer skills class, including Internet applications, for all teacher re-certification and all new teacher certification.

6. Local education agencies should be accountable for connecting all computer hardware purchased for use in Tennessee schools.

7. The public service commission should work with the education departments to allow for economical phone installation for use in schools.

8. Universities should be encouraged to offer classes on-line for educators, to offer curriculum related Internet training for educators, and to provide Internet workshops or seminars to K-12 educators.

9. Time should be made available for educators to train, practice, and to implement Internet activities into education.
10. Efforts should be made by local school systems and the state department of education to increase the availability of Internet access in the schools.

11. After more training and time for implementation, further study should be conducted to determine ways K-12 education can benefit from Internet access.
References


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APPENDICES
APPENDIX A

INITIAL SURVEY INSTRUMENT
Please mark the appropriate response or fill in the blank.

### Demographic Information:

1. **Gender**
   - Male _____
   - Female _____

2. **Age**
   - 20-29 _____
   - 30-39 _____
   - 40-49 _____
   - 50-59 _____
   - 60-69 _____
   - 70 and over _____

3. **Years experience in education**

4. **Current job position**
   - teacher
   - librarian
   - administrator
   - supervisor
   - other (specify) _____

5. **Number of years in current position**

6. **The highest degree level you have achieved:**
   - (1) Bachelor's
   - (2) Master's
   - (3) Master's +
   - (4) EdS
   - (5) Doctorate

7. **Current grade level teaching/supervising**

8. **Current curriculum area teaching/supervising**

### Internet Training:

1. **Number of college/university level Internet courses you have completed:**

2. **Number of Internet seminar/workshops you have attended other than Virtual School:**

3. **Number of classes you have taken in which the Internet was used as a resource:**
### Access to Computers and the Internet:

1. Do you have a computer in your classroom or office? _____yes _____no  
   If yes does it have a modem? _____yes _____no _____don't know  
   Do you have a phone in your classroom? _____yes _____no  

2. Other than your classroom, is there a computer with a modem in your School?  
   _____yes _____no _____don't know  
   If yes, does this computer have access to the Internet?  
   _____yes _____no _____don't know  

3. Do you use a computer at home? _____yes _____no  
   If yes do you have a modem? _____yes _____no  
   If yes, do you use the Internet from home? _____yes _____no  

4. Do the students you teach have their own Internet access accounts?  
   _____yes _____no  

5. Is your personal account being used by students to access the Internet?  
   _____yes _____no  

### Use of the Internet:

1. Do you use the Internet for classroom activities? _____yes _____no  
   If yes, what types of classroom activities? (Check all that apply.)  
   _____Research  
   _____Keypals  
   _____Collaborative Projects  
   _____Global Classroom Projects  
   _____Information Collection and Exchange  
   _____Electronic Publishing of a Common Document  
   _____Electronic Discussion  
   _____Information Search Projects  
   Other (Please explain) ____________________________________________  

2. Do you use the Internet for your own professional development? _____yes _____no  
   If yes, what types of professional development activities?  
   (Check all that apply.)  
   _____educational research  
   _____information retrieval  
   _____exchanging ideas  
   _____posting questions on bulletin boards  
   _____voicing concerns with other professionals  
   Other (Please Explain) ____________________________________________
If yes to items #1 or #2 above, what Internet tools do you use?
- e-mail
- gopher
- file transfer
- telnet
- Other

Internet Use Survey Instrument

Please fill in the circle of the response that most closely matches your feelings regarding Internet training and Internet use. Use the following scale:

- Strongly Disagree (1)
- Moderately Disagree (2)
- Neither Agree nor Disagree (3)
- Moderately Agree (4)
- Strongly Agree (5)

<table>
<thead>
<tr>
<th></th>
<th>1. The Internet training I received was well planned.</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
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<td></td>
<td>2. The Internet training I received included demonstrations of real classroom applications.</td>
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<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>3. The Internet training I received included demonstrations of real professional development applications.</td>
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<td>2</td>
<td>3</td>
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<td>5</td>
</tr>
<tr>
<td></td>
<td>4. There should be on-line tutorials to go along with the Internet training.</td>
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<td>4</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>5. There should be video-tapes to go along with the Internet training.</td>
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<td>5</td>
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<td></td>
<td>6. After my Internet training, I received continued support and training from experts and from colleagues.</td>
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<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
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<td></td>
<td>7. The Internet training included appropriate examples in my subject area.</td>
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<td>3</td>
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<td>5</td>
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<td></td>
<td>8. I have concern/anxiety about using a computer.</td>
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<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>9. I lack ideas on how to use the Internet in my classroom.</td>
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<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
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<td></td>
<td>10. Use of the Internet helps me to stay current on subject matter and technology trends.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
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<td></td>
<td>11. By creating an atmosphere of support, collegiality and shared professional growth, the Internet helps to combat the isolation of the classroom teacher.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
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<td></td>
<td>12. The Internet offers rapid answers to questions of curricular or professional interest.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>
13. Use of the Internet in classroom activities encourages students to learn through collaborative projects.  

14. Internet classroom activities expand the resources available to students.  

15. Internet classroom activities stimulate thinking.  

16. Internet classroom activities improve computer literacy.  

17. Our school system allow professional leave time to practice with new materials.  

18. Technology in the classroom is disruptive.  

19. Our school administrators use the Internet.  

20. Classroom time should be spent in an inquiry-based approach to help students develop critical thinking.  

21. Our school encourages teacher use of the Internet.  

22. I try to focus on instilling a sense of curiosity and desire to learn in my students.  

23. Our school is investing in computer hardware.  

24. I work with other educators who are also using the Internet.  

25. Time is made available for technology training in our school.  

26. Our school system allows professional leave for training.  

27. There are organized staff development activities about the Internet available in our school.  

28. Our school encourages student use of the Internet.  

29. Technology is a tool for exploring more deeply into a subject.  

30. Technology is a tool to stimulate thinking.  

31. Our school is investing in Internet training.  

32. Technology should be used to reinforce basic skills.
APPENDIX B

LETTER TO PANEL OF EXPERTS
Dear

I am a doctoral student at East Tennessee State University pursuing a degree in Educational Leadership. In partial fulfillment of the requirements for the degree Doctor of Education, a research project has been approved which will study the implementation of the Internet into Tennessee K-12 education. Enclosed are copies of the problem statement, purpose, and hypothesis.

Because of your recognized expertise in educational technology, I am requesting that you serve as a member of the panel of experts. Your assistance in evaluating the survey instrument will be an important contribution to the project.

Please review the enclosed survey instrument, noting any difficulties or comments you have with the instrument. If the questions are not clear or another question should be asked, please insert on the questionnaire. Your assistance in support of the project is appreciated.

Sincerely,

Martha Davenport
APPENDIX C

PILOT SURVEY INSTRUMENT
Please mark the appropriate response or fill in the blank.

**Demographic Information:**

1. Gender  
   - Male _____  
   - Female _____

2. Age  
   - 20-29 _____  
   - 30-39 _____  
   - 40-49 _____  
   - 50-59 _____  
   - 60-69 _____  
   - 70 and over _____

3. Years experience in K-12 education ________

4. Current job position  
   - teacher _____  
   - librarian _____  
   - administrator _____  
   - supervisor _____  
   - other (specify) _____

5. Number of years in current position ________

6. The highest degree level you have achieved:  
   - (1) Bachelor's _____  
   - (2) Master's _____  
   - (3) Master's + _____  
   - (4) EdS _____  
   - (5) Doctorate _____

7. Current grade level teaching/supervising ____________  
   Current curriculum area teaching/supervising ____________

**Access to Computers and the Internet:**

1. Do you have a computer in your classroom, school and/or office?  
   - yes _____ no _____

   If yes does the computer have a modem or network access that allows you to connect to the Internet?  
   - yes _____ no _____ don't know _____

2. Do you use a computer at home?  
   - yes _____ no _____

   If yes do you have a modem?  
   - yes _____ no _____

   If yes, do you use the Internet from home?  
   - yes _____ no _____

   If yes, how many hours per week? ____________
Internet Training:

1. Approximate date (month/year) you received your Virtual School User ID or account number __________

2. Did you receive Virtual School Step 1 training? _____yes _____no
   If yes, which location? __________Memphis
   __________Nashville
   __________Pellissippi
   __________Other __________

3. Did you receive Virtual School Step 2 training? _____yes _____no
   If yes, which location? __________Memphis
   __________Nashville
   __________Pellissippi
   __________Other __________

4. How many days after you received the training did you use your account? __________

5. How many Internet seminar/workshops have you attended other than Virtual School? __________

6. Number of classes you have taken in which the Internet was used as a resource: __________

7. Have you used commercial computer networks such as America Online, Geine, Compuserv, Delphi, or Prodigy? _____yes _____no

8. Have you used local electronic bulletin boards? _____yes _____no

9. Are there organized staff development activities about the Internet available in your school? _____yes _____no

10. I would like to receive more training on how to use the Internet for professional development activities. _____yes _____no

11. I would like to receive more training on how to use the Internet in the classroom. _____yes _____no

12. I receive continued support from colleagues using the Internet. _____yes _____no

13. Estimate the percentage of teachers in your school that use the Internet: __________
1. Do you use the Internet for classroom activities? ___yes___ no
   If yes, what types of classroom activities? (Check all that apply.)
   ___ Research, ERIC searches
   ___ Keypals (exchanging e-mail with students from other areas)
   ___ Collaborative Projects with other classrooms
   ___ Global Classroom Projects (information collection and exchange with other students around the world)
   ___ Electronic Publishing of a common document, story or paper
   ___ Electronic Discussion on current events or concerns
   ___ Other (Please explain) _____________________________

2. If you checked any of the items in question #1, what Internet tools do you use?
   ___ e-mail
   ___ file transfer
   ___ gopher
   ___ telnet
   ___ WWW
   ___ mosaic
   ___ Archie
   ___ Veronica
   ___ Other (Please Identify) ________________

3. Do you use the Internet for your own professional development? ___yes___ no
   If yes, what types of professional development activities? (Check all that apply.)
   ___ educational research for personal knowledge
   ___ information retrieval to share with other educators
   ___ exchanging ideas with other educators through e-mail or discussion groups
   ___ posting curriculum/policy/current trends questions on bulletin boards or listservs
   ___ Other (Please Explain) _____________________________

4. If you checked yes to any item in #3 above, what Internet tools do you use?
   ___ e-mail
   ___ file transfer
   ___ gopher
   ___ telnet
   ___ WWW
   ___ mosaic
   ___ Archie
   ___ Veronica
   ___ Other (Please Identify) ________________

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Internet Use Survey Instrument

Please fill in the circle of the response that most closely matches your feelings regarding technology and Internet use. Use the following scale:

<table>
<thead>
<tr>
<th>Strongly Disagree</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Moderately Disagree</td>
<td>2</td>
</tr>
<tr>
<td>Neither Agree nor Disagree</td>
<td>3</td>
</tr>
<tr>
<td>Moderately Agree</td>
<td>4</td>
</tr>
<tr>
<td>Strongly Agree</td>
<td>5</td>
</tr>
</tbody>
</table>

1. Technology should be used to reinforce basic skills.  
2. Our school administrators use the Internet.  
3. Use of the Internet creates an atmosphere of support, collegiality and shared professional growth among educators.  
4. Internet classroom activities stimulate thinking.  
5. The Internet helps to combat the isolation of the classroom teacher.  
6. Use of the Internet in classroom activities encourages students to learn through collaborative projects.  
7. Technology is a tool to stimulate thinking.  
8. I have concern/anxiety about using a computer.  
9. Our school encourages student use of the Internet.  
10. Use of the Internet helps me to stay current on subject matter and technology trends.  
11. Time is made available for technology training in our school.  
12. The Internet offers answers to questions of curricular or professional interest.  
13. Our school system allows professional leave for technology training.  
14. Internet classroom activities expand the resources available to students.  
15. Technology is a tool for exploring more deeply into a subject.  
16. Internet classroom activities improve computer literacy.  
17. Our school encourages teacher use of the Internet.  
18. Technology in the classroom is disruptive.
7 January 1995

Dear Educator:

I am a doctoral student at East Tennessee State University. I would like to ask your assistance with my research project by piloting the enclosed questionnaire. The major purpose of the study is to determine what factors influence educators to use the Internet in classroom activities or in their own professional development.

Would you help me by completing the questionnaire? Please note any difficulties or comments you have with the instrument at the end of the questionnaire. If the questions are not clear or another question should be asked, please insert on the questionnaire.

When approved, this questionnaire will be sent to selected educators in Tennessee who have received training in the use of the Internet.

Please return your comments and the enclosed questionnaire by Tuesday, January 17, 1995 in the enclosed, stamped, addressed envelope.

As a fellow educator with Unicoi County Schools, I know what a busy day you have and I appreciate you taking the time to help me. Thank you for your assistance with this project.

Sincerely,

Martha Davenport
APPENDIX E

FINAL SURVEY INSTRUMENT
Please mark the appropriate response or fill in the blank.

Demographic Information:

1. Gender:
   (1) Male
   (2) Female

2. Age:
   (1) ________ 20-29
   (2) ________ 30-39
   (3) ________ 40-49
   (4) ________ 50-59
   (5) ________ 60-69
   (6) ________ 70 and over

3. Years experience in K-12 education ________

4. Current job position:
   (1) teacher
   (2) librarian
   (3) administrator
   (4) supervisor
   (5) other (specify) ________

5. The highest degree level you have achieved:
   (1) Bachelor's
   (2) Master's
   (3) Master's +
   (4) EdS
   (5) Doctorate

6. Current grade level teaching/supervising
   (1) Elementary
   (2) Middle School/Junior High
   (3) High School

Access to Computers and the Internet:

1. Do you have access to a computer in your classroom, school and/or office? ________yes ________no
   If yes does the computer have a modem or network access that allows you to connect to the Internet? ________yes ________no ________don't know

2. Do you use a computer at home? ________yes ________no
   If yes does the computer have a modem and software that allows you to connect to the Internet? ________yes ________no ________don't know
Please complete the following questions whether you use the Internet or not.
Fill in the circle of the response that most closely matches your feelings regarding technology and Internet use. Use the following scale:

<table>
<thead>
<tr>
<th>Strongly Disagree</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Moderately Disagree</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Neither Agree nor Disagree</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Moderately Agree</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Strongly Agree</td>
<td>5</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

1. Technology should be used to reinforce basic skills.  
2. Our school administrators use the Internet.  
3. Use of the Internet creates an atmosphere of support, collegiality and shared professional growth among educators.  
4. Internet classroom activities stimulate thinking.  
5. The Internet helps to combat the isolation of the classroom teacher.  
6. Use of the Internet in classroom activities encourages students to learn through collaborative projects.  
7. Technology is a tool to stimulate thinking.  
8. I have concern/anxiety about using a computer.  
9. Our school encourages student use of the Internet.  
10. Use of the Internet helps me to stay current on subject matter and technology trends.  
11. Time is made available for technology training in our school.  
12. The Internet offers answers to questions of curricular or professional interest.  
13. Our school system allows professional leave for technology training.  
14. Internet classroom activities expand the resources available to students.  
15. Technology is a tool for exploring more deeply into a subject.  
16. Internet classroom activities improve computer literacy.  
17. Our school encourages teacher use of the Internet.  
18. After receiving the Internet training, educators continued receiving support from mentors.  
19. Our school system encourages teachers to receive Internet training.  
20. Time is made available for educators to practice Internet skills after training.
21. Technology in the classroom is exciting.

22. Educators in our school system encourage Internet use by sharing projects or ideas.

23. Additional Internet training has been provided by our school system.

Use of the Internet:

1. Do you use the Internet for classroom activities? ______yes____no

If yes, what types of classroom activities? (Check all that apply.)

   (1) Research, ERIC searches
   (2) Keypals (exchanging e-mail with students from other areas)
   (3) Collaborative Projects with other classrooms
   (4) Global Classroom Projects (information collection and exchange with other students around the world)
   (5) Electronic Publishing of a common document, story or paper
   (6) Electronic Discussion on current events or concerns
   (7) Other (Please explain)____________________

2. If you checked any of the items in question #1, what Internet tools do you use?

   (1) e-mail
   (2) file transfer
   (3) gopher
   (4) telnet
   (5) WWW
   (6) mosaic
   (7) Archie
   (8) Veronica
   (9) Other (Please Identify)__________

3. Do you use the Internet for your own professional development? ______yes____no

If yes, what types of professional development activities?
(Check all that apply.)

   (1) educational research for personal knowledge
   (2) information retrieval to share with other educators
   (3) exchanging ideas with other educators through e-mail or discussion groups
   (4) posting curriculum/policy/current trends questions on bulletin boards or listservs
   (5) Other (Please Explain)________________________

4. If you checked yes to any item in #3 above, what Internet tools do you use?

   (1) e-mail
   (2) file transfer
   (3) gopher
   (4) telnet
   (5) WWW
   (6) mosaic
   (7) Archie
   (8) Veronica
   (9) Other (Please Identify)__________
<table>
<thead>
<tr>
<th>Question</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Did you receive Virtual School training?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. How many Internet seminar/workshops have you attended other than Virtual School?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Number of classes you have taken in which the Internet was used as a resource:</td>
<td></td>
<td></td>
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<tr>
<td>4. Have you used commercial computer networks such as America Online, Geine, Compuserv, Delphi, or Prodigy?</td>
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<td></td>
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<tr>
<td>5. Have you used local electronic bulletin boards?</td>
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<tr>
<td>6. Are there organized staff development activities about the Internet available in your school?</td>
<td></td>
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</tr>
<tr>
<td>7. Have you received continued support from colleagues using the Internet?</td>
<td></td>
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</tr>
<tr>
<td>8. Would you like to receive more training on how to use the Internet for professional development activities?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. Would you like to receive more training on how to use the Internet in the classroom?</td>
<td></td>
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</tbody>
</table>

Please add any comments you would like regarding the use of the Internet in K-12 education:
APPENDIX F

LETTER TO SAMPLE GROUP
January 31, 1995

Dear Colleague:

I am a supervisor in Unicoi County and a doctoral student at East Tennessee State University. I would like to ask your assistance in my research project by completing the enclosed questionnaire.

The questionnaire is being sent to randomly selected educators in Tennessee who have received Internet training. The purpose of the study is to determine factors that influence teachers to use the Internet for classroom activities or for professional development. The information obtained from this study should be of vital interest and importance to educators as Tennessee continues to implement technology in our schools.

I would appreciate your completing the enclosed questionnaire and returning it to me in the enclosed, stamped, addressed envelope by February 10, 1995. The envelope is coded to allow me to follow-up with those who have not responded. Your responses will be kept confidential.

Your willingness to take a few minutes from your busy schedule is certainly appreciated. Thank you.

Sincerely,

Martha Davenport
APPENDIX G:

FOLLOW-UP LETTER
February 10, 1995

Dear Colleague:

Recently I sent you a survey on the use of the Internet. The findings of this study will help educators as Tennessee continues to implement technology in our schools. Your participation and input in this study is vital to the research.

If you have not completed the questionnaire, would you please take just a few minutes, complete the questionnaire and return it to me in the stamped, addressed envelope? Again, your responses will be kept confidential. If you have completed the questionnaire, thank you very much for your time and participation in the research.

Sincerely,

Martha Davenport
APPENDIX H

WRITTEN COMMENTS
Written Comments

1. More training would definitely be a big step in expanding Internet classroom activities. I need more time to practice before I try to get students to use the Internet.

2. The Internet is great to work with, but there is a great need for more computers with the Internet system available for more classrooms.

3. A day and half is insufficient training - no substitute was provided when media specialists received training; therefore, increasing their return workloads. It also reflected to faculty and students the library media center was unimportant.

4. I currently still do not have a phone line to connect to Internet. I still do not see how one Internet computer per school has any worth. I have concerns at the high school level as to the accessibility of some questionable materials through Internet.

5. The training I received was good - however, no computer is available for follow-up.

6. There is one Internet computer in our K-8 school. Few teachers have been trained to use the Internet because it is very new. Teachers have little release time from the classroom to plan activities with the libraries.

7. The 21st Century Classroom includes no money for supplies and our school/system has made no provision for wiring the building or for installing telephones for modem access. I applied because I wanted to do E-mail exchanges. As it is, I have the equipment at home and am uploading student responses from disc. Until the systems get on board and the administrators are educated about the Internet, the situation is not likely to improve.

8. There is so much info on the net and so little time to know how or what I want to use. If I were single and had no other responsibilities, I would devote far more of my personal time to it. However, since my wife is not employed full time, I am heavily committed to finding ways to maintain my financial commitments. I need paid time to follow up on this interest either in the school year or during the summer.
9. I have a modem but my administrator will not approve a telephone line. Money is not available for the telephone line cost.

10. I wish we had modems in every machine. Of five, only mine (teacher's station) has a modem.

11. I would love to be able to use Internet but so far have not been given any computers which I could use. Supposedly our 21st Century Classroom will have access to Internet although I do not believe they have used it yet. My lab is still set up with those old Apple IIe's we originally got 10+ years ago.

12. I am trying to learn the Internet on my own. One training session does not seem to be enough. I would love more training and time to learn to put the training to use in my classroom. I've heard what some schools are doing and I am amazed!

13. I think the "thinking" behind Internet is great - our county is slow in connecting all of our schools to any "extras" concerning our computers.

14. The cost of hardware, phone lines, and training limit the use.

15. Using technology is a very big part of our media center. Students are continually on the computers and love them. It is fast and easy. Students enjoy it and so do we. I would rather use current computers and technology than out-dated books - however I do not want to see computers take the place of books.

16. I believe the Internet to be a wonderful tool for educators but I believe, also, that many teachers are afraid of it because they do not know how to use it. I have spent many hours on it at home; there is hardly anytime at school. As a librarian, I feel I do some with the students at school but not as much as I could if I were not used as a break time and loaded with students all the time. Also, the training I had for one day on Ten-Nash was not enough and I do not have anywhere for further training other than searching by myself. For this to take off there must be much better support than there is now.

17. I received Virtual School training and a $500 matching grant for attending a conference. The money was used to purchase a printer and modem for my classroom. With limited time with my Chapter students, I use it as often as possible. Whatever additional training I receive appears to be up to me since I am not aware of any encouragement from
the school system to involve the use of Internet or any release time to undertake training.

18. My biggest problem is time to investigate using Internet and getting help from a person who is near by.

19. Although we do not have a phone line with modem in our building, I feel the use of the Internet would prove quite valuable in the future. I would love to have some kind of workshop or seminar in our area that would specify uses in the classroom.

20. I have a 21st Century Classroom and a modem was provided but our school system will not have phone lines put into the classroom. I also have other items that have not been hooked up such as laser players and scanners. We were told not to do this ourselves. I have had these items sitting for 12 months. I would love to use the Internet in the classroom.

21. When working on my graduate degrees, it was an invaluable resource!

22. Teachers and librarians need help in ways to incorporate Internet into the curriculum. Time for practice is only available on our own time.

23. It is my understanding that all schools in Tennessee are supposed to receive computers with modems and one person per site to receive Internet training. We received training months ago but no computers. It seems like such a shame because I feel like I have forgotten everything. I do wish we had more time to work with this - It is really exciting! Teachers are feeling extremely frustrated. We need more support!

24. I would like ideas on how to use resources on Internet. All librarians have been trained in the system, but individual participation was voluntary.

25. Eric through Telnet and gopher has been very useful to our faculty members. Information for our students has been more difficult to find. Many places are too busy and we cannot connect during school hours. Sources are being sought on American authors, careers, and geographical and historical information. Also desire information on how to sight sources on this medium for term papers, etc.

26. We received computers but no modem plus one computer per classroom makes it difficult to encourage/plan classroom activities. I love my computer, but it has not been used as a classroom resource.
27. If the state and local systems would commit fully to this - obtain the hardware, demand that teachers get trained or get out, and really push authoritatively, we can have kids prepared for the new millennium.

28. The Internet and telecommunications technology should be as ritual as the chalk (or dry-erase) board in every classroom.

29. The training was not comprehensive enough and there were no follow-up activities.

30. We desperately need phone lines in our classroom. Wiring of the building will not be done pending building a new school in one to two years.

31. After initial training, there was little help.

32. My school, 7-8th inner-city, has the only total 21st Century Classroom set up in the state. This will offer many opportunities for Internet if anyone will take advantage of it.

33. My school system provides no technology for my foreign language classroom - not a tape recorder, not a computer - thank God for my Whittle TV!

34. Not having the technology in the classroom has left me rusty. It is similar to learning a foreign language but never having occasion to use it. My computer at home has a modem - but I am still unsure of how to do a large number of things - file transfers, for example. Despite my limitations, I have had many productive interactions with teachers from other states. I can see Potential in the Internet!

35. Internet training was very exciting but it was a year ago and I have forgotten how to do it without access to it in my classroom. I think this project should be pushed much more.

36. I have not got my modem working and have not got anyone with the time to help me. Something is wrong with our wiring. Technology can be exciting, but with 35 students in a class, it is really hard to incorporate effectively.

37. Effective use of the Net requires knowledge of Unix that few educators possess. On-line services provide limited but possibly productive access for lay users. Internet was never intended for the uses to which educators seem to aim. Internet is a forum for discussion of
intellectual problems and the exchanging of ideas and should not to be clogged with banal traffic.

38. For teachers to use technology, time must be allowed for training, learning and implementing. Also, this must be a priority within the school system and the local administration. Our students are "at-risk" and will not be competitive because of the lack of willingness by teachers to learn!

39. Thoughtful use of the Internet requires one to sit down and take the time to do a search. With the very busy schedule I have, finding time to do this is going to be difficult. I use the Internet most for my own professional development at home when I can quietly concentrate on what I am doing.

40. Time is limited. Other teachers and I would use Internet more if we had more time. Although our school system is supportive of our use of the Internet, we still have to set our priorities of how we use school and personal time.

41. Last year I received a 21st century classroom. If not for that I would not be familiar with Internet at all. I have used it more for personal reasons (E-mail, research, bulletin boards) than in a classroom setting. I am in the process of using it for an AT&T learning circle. The students find it exciting, but time to use it is very limited. Also, managing 22 students with one modem is difficult too. We need more training on Internet and how to incorporate it in a traditional classroom.

42. I cannot see how Internet can be useful to me. I teach computer but I do not have any C.D.'s or even a modem. My classes are too large and I do not feel comfortable using Internet.

43. Had a phone hook up in my classroom last year, but the wires were taken out over the summer and the administration is not willing to pay to put it back . . . this has been frustrating. Also, all I have learned has been on my own time.

44. We have a technology committee (on which I serve). Our executive principal is making every effort to obtain grant money, etc. However to my knowledge only one teacher has a modem in her classroom (which is in the vocational school). I have just recently gotten a computer in my classroom but costs for a modem are prohibitive.
45. I view this as the most important educational tool offered to teachers in the last 50 years, second only to the overhead projector.

46. We need more samples of user statements. I feel that at the high school level there is greater need to monitor or supervise a few computer hackers who might misuse the Internet. Most school administrators are not aware that potential problems could be avoided with a strong user statement. Teachers and librarians are not knowledgeable yet as to the problems that can develop. I feel the state officials are eager to provide money and training, yet not enough discussion is addressed to potential problems.

47. Students need access also— one modem will not provide this. Training is needed for WWW use. We have had none. Staff development time should be provided. I was chosen as a 21st Century classroom teacher. We have a very capable supervisor but the county uses him for anything and everything concerning technology. He cannot manage everything he is expected to do—therefore, there is little help for those of us trying to set up 21st century classrooms. I attended state training last February. My classroom computers were not set up until September. The training was not as beneficial as it would have been had I been able to come back to school and practice what I was learning. I wish there was more support in each county for teachers concerning technology. $20,000.00 of equipment with little training, support and follow-up training has been very frustrating this year. I want my students to get the benefit of every dollar spent on my classroom.

48. Training on using the Internet in K-12 education is greatly needed.

49. I would like to receive more training if we ever get Internet in our school. Our school is a 2nd-3rd grade school and if teachers were trained properly and each teacher had a computer in their rooms, Internet might be used for E-mail and teaching ideas. I cannot see our teachers coming into the library to use it because of lack of time. The training needs to assume a person knows nothing. Training should take place after Internet is in where teachers come back to it and practice on it.

50. I love using the Internet— I have access on my computer at home— not at school. I use it to research topics I will be teaching about. I would love to make this available to my students. Our system, like many others, is just waiting to get the funding to provide the service to more classrooms. Currently, only two of the 25 classes in our school has a computer with a modem.
51. Our library department has been very good to offer training for us - two days. However, we did not get the computer or modem for a while and I forgot half of what we learned! We only have five professional days a year - so if you go to any conferences, there is no time left for any other training. I would like some after school support group and additional training. It is impossible to spend much time during the school day exploring the Internet.

52. Teachers need additional training that emphasizes the use of the Internet in the classroom.

53. Without classroom or home access to Internet, the vision of a collaborative education environment is unrealistic. At the end of January, I received my teacher work station and two student computers. No modems, no additional software other than Microsoft Works and probably most importantly . . . no teacher laptop computers. To use technology teachers must have access to technological tools. Provide modems and access and technology can be an invaluable tool.

54. It is a slow process to learn how to use Internet back in my library with all the interruptions. The only way I could "get it all going" is because we can call a help desk at Pellissippi State. I really think it will be next fall after I have had this summer to bring a computer home to work on that I will feel more confident about Internet use.

55. I have learned a lot. I can use the computer in teaching and use the Internet. Still, it is only a drop in the bucket to what I still need to know, to do it well and teach even better. Although I am teaching now, I am at the lower end of what is possible.

56. We are part of the 21st Century Classroom. To this date, it has been two years since my training on the computer and my Saturday intro to Virtual School. We have yet to have the building wired for computers or security. There is no plan proposed for maintenance or repair. My question is: What is wrong with this picture?

57. I had an Internet address and training two years ago but I have had limited access due to getting a phone line connected.

58. Virtual School got me involved in computer usage. My involvement is approximately one year. Since then, I have really learned word processing. Following virtual school, I hungered to learn computers. My suggestion is this. First get comfortable with the basics, then spread out. This, I felt was important so that when I got to using the computer
in general, I could speak the language and not feel intimidated. I feel that Internet is an unusually significant element introduced for educational enhancement. Its uses and ramifications are so enormous! Internet can bring the world to the student's door. Indeed, it will revolutionize education like nothing this century.

59. We had a workshop on using the Internet, but we are still waiting for our equipment! I am sure most of us have forgotten everything we learned!

60. We have had the training and I would love to use Internet, but there has been no follow up training and we have no access to Internet.

61. I did not find Internet to be useful to me personally or professionally. There is not a computer or a phone line in my portable and if there was security would be an issue. Therefore, I never used it with students. When I did it at home, I found the system cumbersome due to the need to enter long codes and addresses. I am more of a point and click computer user. Prodigy is easier to use and visually attractive. My Internet account has expired.

62. Unless you have the resources and equipment available to you, technology becomes frustrating.
VITA

MARTHA KELLY DAVENPORT

Personal Data: Date of Birth: June 19, 1953
Place of Birth: Bristol, Virginia
Marital Status: Married

Education:
Public Schools, Norton, Virginia
East Tennessee State University,
Johnson City, Tennessee;
home economics, B.S., 1980.
East Tennessee State University,
Johnson City, Tennessee;
industrial technology, with
emphasis in vocational education,
M.S., 1986.
East Tennessee State University,
Johnson City, Tennessee;
educational leadership and policy

Professional Experience:
Teacher, Unicoi County Schools,
Food Service Supervisor, Unicoi County

Professional:
Phi Delta Kappa
American School Food Service Association
Tennessee School Food Service Association
Kappa Delta Pi Honor Society