

Rowan University

Rowan Digital Works

Theses and Dissertations

4-29-1999

Professional development through the use of technology

Joan M. Geraci
Rowan University

Follow this and additional works at: <https://rdw.rowan.edu/etd>



Part of the [Elementary and Middle and Secondary Education Administration Commons](#)

Recommended Citation

Geraci, Joan M., "Professional development through the use of technology" (1999). *Theses and Dissertations*. 1806.

<https://rdw.rowan.edu/etd/1806>

This Thesis is brought to you for free and open access by Rowan Digital Works. It has been accepted for inclusion in Theses and Dissertations by an authorized administrator of Rowan Digital Works. For more information, please contact graduateresearch@rowan.edu.

PROFESSIONAL DEVELOPMENT
THROUGH THE USE OF
TECHNOLOGY

by
Joan M. Geraci

A Master's Thesis

Submitted in partial fulfillment of the requirement of the
Master of Arts Degree
of
The Graduate School
at
Rowan University
April 28, 1999

Approved by

Date Approved April 29, 1999 Professor

ABSTRACT

Joan M. Geraci

Professional Development
Through the Use of
Technology
1999
Project Advisor:
Dr. Theodore B. Johnson
School Administration

The purpose of this study was to introduce the Gloucester County Special Services School District educators to the concept of using technology for the purpose of professional development.

A descriptive research method was used in the study that included a Technology Survey of the Compensatory Education Teachers. Surveys were distributed prior to and following the inservice component of the study. The technology survey instrument utilized was developed by the Intern and pretested by administrators and educators in the district. The frequency of responses were recorded and calculated into percentages for purposes of data analysis.

After experiencing exposure to the Internet through a Technology Inservice program, an overall improvement in attitude and comfort level regarding technology and accessing the Internet was reported by respondents. Individuals self-rating themselves within the ranges of “very comfortable” to “somewhat comfortable” increased

substantially and the percentage of individuals rating themselves as “uncomfortable” prior to the inservice decreased. Following the inservice, 86% of the individuals surveyed reported utilizing the Internet as a resource for lesson planning and locating educational materials. This figure is significant in that it represents an increase of 64% as reported by respondents.

The study supports establishing a relationship between professional development and technology and identifies the important role inservice plays in this process.

MINI-ABSTRACT

Joan M. Geraci

Professional Development
Through the Use of
Technology
1999
Project Advisor:
Dr. Theodore B. Johnson
School Administration

The purpose of this study was to introduce the GCSSSD educators to the concept of using technology for the purpose of professional development.

The results of the study survey indicated that following the inservice project, 86% of the teacher respondents reported utilizing the Internet for educational materials and lesson planning.

Acknowledgements

A debt of gratitude is owed to many individuals who assisted with this project. Thanks to the Intern's field mentors, Dr. Robert A. Sulzman and Mrs. Catherine Springsted for their professional support and the excellent administrative example they set forth. Thanks to Mrs. Sandra Evans for her professional guidance and personal support throughout the Intern's entire university experience. Thanks to Mr. Fredrick Keating for permitting the Intern to complete the Internship experience within the Gloucester County Special Services School District. Many thanks to Dr. Theodore Johnson for his advisement and assistance throughout the project and in the thesis development process.

A personal note of thanks to the friends and family of the Intern, for their support throughout this experience. A special note of thanks to Ms. Lynn Clark and Mrs. Debra Jennings for their personal support, as well as the countless hours they spent on the arduous task of typing the project proposals and study thesis.

Table of Contents

Acknowledgments	ii
Chapter 1 Introduction: Focus of the Study	1
Purpose of Study	2
Definitions	4
Limitations of the Study	4
Setting of the Study	5
Significance of the Study	6
Organization of the Study	7
Chapter 2 Review of Literature	8
Chapter 3 Design of the Study	27
Description of the Research Design	27
Research Instruments	28
Design and Procedures	29
Data Analysis Plan	30
Chapter 4 Presentation of the Research Findings	32
Analysis of the Results	40
Chapter 5 Conclusions, Implications, and Further Study	43
Major Conclusions for:	
The Project	43
The Intern's Leadership Development	45
Organizational Change as a Result of the Study	46
Recommendations for Further Study	47

References	49
Appendix A Survey	52
Biographical Data	53

List of Figures

Figure 1: Part I - Frequency of Responses Chart	33
Figure 2: Part I - Percentage of Frequencies Chart	34
Figure 3: Part I - Average of Frequencies Chart	36

CHAPTER 1

Introduction: Focus of Study

Gloucester County Special Services School District (GCSSSD) is a public school district providing services to special needs and nonpublic students. The population serviced varies greatly in age and ability and many educational resources are required by the instructors to meet their diverse needs.

All teachers in the Compensatory Education Program have their own on-site computer with appropriate software as well as a printer. There are additional computer programs teachers may utilize in the Educational Materials Resource Room located at the GCSSSD Central Office. The missing link in this technological chain is a connection to the Internet and the vast resources of the World Wide Web.

The goal of the intern is to establish two Internet sites in the GCSSSD Resource Room and provide the support needed to encourage their use for professional development.

This project has been discussed in the past but has not been executed to date within the district. The initial step in this process will be to meet with the educator in our district who oversees the installation of computers and addresses teacher's concerns relating to the use of computer software. The intern will enlist this individual as a technical consultant to help implement the project and as a co-support person for teachers that may experience difficulties as the project progresses.

The physical establishment of the Internet sites and process for installing the necessary phone lines will be worked on with the intern's field mentor and the GCSSSD maintenance personnel. The physical placement of the computers and printers will be worked on jointly as well. Once the physical aspects of the installation are completed,

then begins the task of preparing to introduce the world of the Internet to the educators in the Compensatory Education Program.

The compelling reason for introducing technology is the belief that technology will enhance teaching and learning (FARNET, 1994). Teachers need to be persuaded that the technology being introduced is relevant, can be incorporated into their methodology, and will benefit them instructionally. Research shows that schools which have become active participants on the Internet have been led by self-taught visionaries who are highly motivated and enthusiastic (Honey, 1993). State and national groups exploring these issues have reached similar conclusions relating to the characteristics necessary to effectively integrate technology into schools. The intern will survey the staff to find such individuals to act as support personnel/mentors for the faculty throughout the project. The survey will also help the intern to assess the level of prior knowledge all participants have before they participate in the inservice training for the project.

Purpose of the Study

The purpose of this project is to introduce the GCSSSD educators to the concept of using technology as a venue for professional development. The goal of the project is to establish two Internet sites providing district educators a connection to the World Wide Web. The intern will supply the support needed to promote their use for purposes of professional development.

In the Industrial Age, the school as factory model worked well, teachers assumed traditional roles of workers and students were the products. But the world has since changed, and new workplace demands raise questions about whether the educational system is changing as quickly as it can in response to the changing needs of society. Many believe that our educational system is so outdated that revolutionary, not evolutionary reforms are needed to address the necessary changes (Newman, 1991). The

needs of the Information Age are dramatically different from those of the Industrial Age and many are calling for major restructuring of the educational system. Kolerie (1980) defines restructuring as more than fine-tuning, restructuring implies major change. Providing the Internet sites for GCSSSD educators is a form of restructuring by the district. It is providing a connection to the Internet, to a world of information, in hopes that district educators will utilize this resource and reevaluate some of the traditional sources of information they utilize in their lesson planning and instructional activities. The Internet provides free materials to enrich lessons and sample lesson plans on various topics. Being on-line connects a teacher's classroom to every corner of the world. Teachers may access information from museums and foreign governments and explore every topic from archeology to zoology. Professional journals and current research are readily accessible on-line thus making professional development as easy and close as a click of the mouse.

It is the hope of the intern that with the proper introduction and support, the GCSSSD educators will take advantage of the wealth of information the Internet can provide to enrich their teaching and to grow professionally. As educators grow professionally, the organizational change that results is one of improved instruction. The district's goal of educating students is therefore enhanced through the implementation of this project.

Definitions

The following project terms are defined as they are used in the context of this study in an attempt to provide clarity for the reader:

- Gloucester County Special Services School District (GCSSSD) - The GCSSSD was established in 1991 by the Board of Chosen Freeholders. The district's role is to provide special education and related services to public and nonpublic students from the preschool years through age twenty-one. This is the district in which the intern will conduct the study.
- GCSSSD Compensatory Education Program - a program providing remedial reading, writing, and math services to nonpublic school students in grades kindergarten through twelve. The instructors from this program will be participants in this study.
- Telecommunication - transmission and reception of information using electrical or optical signals sent over wires, fibers, or through the air (Microsoft Press, 1997). This project will use the computer as the electronic source.
- Internet - a worldwide collection of networks that provide the means by which communication between computers is possible.
- World Wide Web - interlinked hypertext documents residing on HTTP servers all around the world (Microsoft Press, 1997).

Limitations of the Study

Participants in the study will be Compensatory Education teachers who provide remediation to students in grades kindergarten through twelve. The various ages and grade levels of the students instructed is a benefit to the study. However, the subject areas in which these individuals provide instruction is limited to reading, writing, and

math which narrows the scope of teaching resources these individuals may seek to access throughout the project. From this perspective, applying the conclusions of the study to educators teaching all subjects at one grade level in a self contained traditional classroom setting, may not be possible.

The Internet sites will be located at the GCSSSD Central Office and accessibility will be limited to the hours which the office is open. Only having two Internet sites available may also serve as a limitation to the opportunities individuals may have to utilize this resource. The amount of time each participant's schedule allows for returning to the central office will be a final factor limiting the results of the project.

Setting of the Study

The study will take place in the GCSSSD Central Administration Building which is located in Sewell, NJ. The role of the GCSSSD is to provide quality programs of special education, remediation, and related services to public and nonpublic students from the preschool years to age 21. The participants in the study will be the educators in the Compensatory Education Program who provide remedial services to nonpublic students in grades Kindergarten through twelve. These individuals are assigned to nonpublic schools located throughout Gloucester, Salem, Burlington, Atlantic, and Cumberland Counties. As a result of the widespread geographical locations, the educators in this study provide services to populations of students with diverse socioeconomic levels, diverse ethnic backgrounds and in locations ranging from urban to rural.

The Central Administration Building is a common location to which all participants are required to return. It will serve as the location for the Internet sites established for the study, allowing participants access to the building from 7:30 a.m. to 5:00 p.m., Monday through Friday, each day school is in session.

Significance of the Study

The significance of establishing the Internet sites is to provide a telecommunication conduit through which information may be accessed by educators for purposes of improved instruction and professional development. Conducting this study should therefore positively impact upon the district's goal of educating students.

In preparing to conduct the study many factors needed to be considered, such as the human nature of the participants. People are naturally resistant to change and fearful of things perceived as complicated or different, and educators are no exception to this premise. In addition to being resistant to change, many educators may be "technophobic" and experience anxiety in relation to the introduction of technology. The Office of Technology and Assessment (1988) reports three reasons are commonly identified for computer anxiety among teachers. The first reason is that teachers fear their lack of expertise with computers will be embarrassing and undermine their classroom authority. This is supported by the Wirthlin Group (1989) who found through their research that most teachers consider themselves less computer literate than their students. The second reason is the discomfort some teachers feel at the prospect of having their relationship with students change as computers are introduced into the classroom. Finally, some teachers report concern in regards to accountability. They feel not all of a teacher's productivity or all success experienced by students can be monitored with computers, and if computers are used in this manner, the resulting monitoring would be an incomplete reflection of what is actually accomplished in their classrooms. No matter what its basis, computer anxiety must be acknowledged as it affects user motivation and the ability to master computer skills (Wood, Barnes, 1991). These are important points to remember when planning the inservice and tutorial program. It will be important to establish a comfortable climate when engaging the educators in the project and to provide easily accessible, clearly identifiable, on-going support as the project progresses.

Organization of the Study

The purpose of this chapter is to provide an overview of the study. The chapters that follow will each serve a specific purpose.

The following chapter, Chapter 2, is a review of the literature relating to the use of technology for the purpose of professional development. Many surveys, research studies, and professional journal articles have been reviewed and articulated upon in order to establish a research base for this study. The purpose of the literature review is to thoroughly investigate the topic and to provide support for the rationale to demonstrate the significance of the study. The literature reviewed influenced the research design and methodology with which the intern will conduct the study.

Chapter 3 will articulate the design of the study and the methodology. It will begin with defining the research design utilized by the intern. The development process in which the research instruments were designed will be reviewed in detail. Finally, a description of the research instruments utilized, the data collection process, and the data analysis plan will be provided. This chapter will report on the type of evidence gathered to evaluate the impact of the project.

Chapter 4 will be a presentation of the research findings. This chapter will review and evaluate all data collected throughout the course of the study. It will provide an interpretation of the data and report all results in accordance with the established data analysis plan.

The final chapter will report the major conclusions that can be drawn from the completion of the project, as well as any corresponding implications. This chapter will examine and draw conclusions regarding the impact of the project upon the development of the intern's leadership abilities. It will report on the organizational changes that may occur and address the need for further study of the utilization of technology for purposes of professional development.

CHAPTER 2

Review of Literature

The purpose of this study is to introduce the Gloucester County Special Services School District educators to the concept of using technology for the purpose of professional development. The goal of this project is to establish district Internet sites providing a connection to the educational resources of the World Wide Web. As educators grow professionally, the resulting organizational change is one of improved instruction, helping the district fulfill its goal of educating students.

In evaluating the factors that will affect the successful integration of technology by educators, many potential areas of research were examined by the intern. Issues of restructuring education, successfully overcoming resistance to change, and the need for support beyond inservicing were addressed in Chapter One. In further evaluating this topic, research relating to the effectiveness of computer-based instruction and teacher attitudes and characteristics were reviewed. This inevitably lead to an examination of the changing roles of teachers in technology-based classrooms. As expected, not all educators, nor researchers support the move toward technology and opposing opinions were researched in relation to using technology and the Internet as instructional resources.

In attempting to answer the question of how to successfully integrate technology, research relied heavily on preservice, inservice, and follow-up support systems by districts. The intern examined the role research suggests an administrator assumes in the inservice and integrating process, as well as the question of accountability an administrator may face in evaluating the effectiveness of technology in a district.

The following research articles are the highlights of many examined by the intern in an attempt to evaluate the diverse issues that may affect a school districts successful implementation of technology.

Research on the effectiveness of computer-based instruction makes many references to the “Microcomputer Revolution”. Such references imply that due to the use of computers, a fundamental change in education is taking place. In a comprehensive study on this subject, Roblyer et. al. (1998) reached the following general conclusions:

- Computer applications (i.e., drill and practice, tutorials, and simulations) were equally successful among students with greatly varying ability levels, and equally effective with males and females.
- Effects from elementary levels were slightly higher than those reported for secondary levels. The highest results were obtained at college levels.
- Computer applications in reading, math, and cognitive skill areas all showed similar positive effects, with science showing the greatest positive effect.
- All types of computer applications for mathematics were found to be equally effective.

- In computer applications for reading, tutorials showed greater effects than other kinds of software programs.
- Student attitudes toward school and subjects taught were affected positively by the use of computers.

As reported above, student attitudes were positively affected by the use of computers. The intern wanted to learn how teachers' attitudes are affected through the use of computers in their classrooms, and discovered the following research.

A survey of elementary and secondary educators was completed in 1989 (Becker, 1990), to measure teacher attitudes toward computer-based instruction. The findings were quite encouraging and were reported as follows:

- Sixty-four percent of the teachers surveyed said computer use helped to reduce the dropout rate of at-risk students.
- Eighty-two percent of the teachers surveyed felt using reading/writing programs that were computer-based in the early grades contributed to improving literacy.
- Ninety-one percent of the teachers surveyed claimed computers were effective at helping students develop basic reading and writing skills.
- Nearly eighty-five percent of the teachers surveyed felt computer use increased student motivation, creativity, and self-confidence and helped with critical thinking/problem solving.
- Sixty-two percent of the teachers surveyed felt the use of computers could help reduce discipline problems in the classroom.

- Seventy percent of the teachers surveyed felt that using computers could be an effective way of reaching students with messages relating to alcohol, drugs, and sexuality.
- Sixty-three percent of the teachers surveyed felt parent involvement could be improved through the use of computers in the classroom.
- Ninety percent of the teachers surveyed felt students who could not access computers in school were at a disadvantage.

The results of this survey reflect enthusiasm concerning the potential of instructional technology within the classroom setting. The statistic reporting the percentage of teachers that viewed computers as an educational advantage for students was especially impressive. This led the intern on a search of literature that identified factors necessary for the effective use of educational technology.

What are the characteristics of accomplished computer-using teachers? Sheingold and Hadley (1990) attempted to answer this question as they conducted a nationwide survey of 608 teachers, recognized for their experience and accomplishments in integrating computers into their instruction. They found the majority of these individuals had thirteen or more years of teaching experience and were between the ages of 40 and 49 years of age. Ninety percent of the individuals surveyed were largely self-taught and had seized opportunities to learn about technology at their own expense and on their own time. Seventy-seven percent had regular on-site assistance available from a variety of sources. In addition to these characteristics, these educators reported devoting considerable time and effort to using computers as multipurpose teaching tools and

encouraged their students to use these tools in their learning process. The respondents to the survey reported changing their teaching roles and adjusting their standards with regard to increased student expectations.

Sheingold and Hadley (1990) conclude there are three conditions necessary to help teachers become more technologically literate. First they must have the ability to access adequate resources in technology. Secondly, they must be provided ample time and opportunity to learn how to use and plan for technology. Finally, the last condition necessary is a school structure and school culture which supports a professional and experimental approach to this work. These conditions along with proper inservicing of computers will help promote an improved literacy in technology.

As computer-based instruction is incorporated into the classroom, the role of the classroom teacher is evolving. The Christa McAuliffe Institute for Educational Pioneering has identified five key roles for teachers using technology (Roberts, 1989). The first role is that of Collaborator, one who shares knowledge with colleagues and initiates relationships that expand the boundaries of the classroom. The second role is that of Mentor/Mentee, one who assumes both roles respectively, teaching and learning from the community, colleagues, and students. The third role is that of the Planner, who creates and develops a method to achieve a vision, structuring and revising the learning environment as needed. The fourth role is that of Researcher, one who accesses, analyzes, and organizes information to guide students in developing problem solving strategies and discovery learning skills. The last of the roles is identified as the Seeker, who frequently seeks to gain new ideas and resources outside of the classroom. As

teachers assume these new roles there is a shift in the emphasis of their instructional styles from product based to process based. Such a changing of roles will occur slowly over time as a teacher increases the amount of technology based instruction he/she incorporates into the classroom environment.

D'Ignazio (1990), reexamines the expanded and multiple roles of teachers. He acknowledges a new era for the teaching profession, one that requires educators to display their individual leadership abilities. D'Ignazio urges all teachers to become leaders and visionaries for change because it accomplishes the following:

- improves the quality of their working environment
- elevates the status of educators in the eyes of the community
- helps to make educators more successful in teaching their students

As educators usher in this new era of technology, they are asked to assume their most important role, that of change agent.

As well as changing roles, educators pass through several stages as they attempt to use computers more often and more effectively in their classrooms. Dwyer et. al. (1991) discuss how initially a text-based curriculum is strengthened through the use of technology and then gradually is replaced by far more dynamic learning experiences. They report a change toward child-centered rather than curriculum-centered instruction, toward active rather than passive learning, and toward collaborative tasks rather than individual tasks as the degree of computer-based instruction is increased. The conflict an educator may feel as deeply held beliefs are challenged during these transitions was acknowledged by the researchers and the need for support was addressed.

In order for teachers to support the fundamental changes occurring in education, they must be given the tools to do so. Two of these essential tools are adequate teacher workstations and access to telecommunications. A teacher's workstation is a combination of computer hardware and software designed to accommodate the instructional and administrative needs of educators. In a survey of seven hundred teachers, Forrester (1992) identified the features prioritized as most desirable in a workstation. The respondents to the survey felt a teacher workstation should:

- facilitate oral, written, and electronic communication.
- aid teachers in designing and producing professional instructional materials and newsletters.
- allow teachers to develop multimedia presentations.
- provide individualized instruction to both remediate and challenge students of varying ability levels.
- help accomplish administrative tasks and provide curriculum information/resources.

In addition, workstations must have a computer with adequate processing ability and storage capacity. It was recommended that the workstation be modular to allow for the addition of peripheral devices as needed by educators.

A workstation as described above, is only one of the essential tools needed by educators. The second is access to telecommunications. Ambler and Jacobs (1991) and Potter and Davis (1991) review the benefits of computer telecommunications in a two part article. They review the ability of telecommunications to overcome two barriers to communication, distance and time. These barriers are dissolved as access to people,

information, and learning opportunities are provided. Access to experts for both students and teachers and the ability to rapidly share information or data not available locally are among the basic benefits. Exposure through telecommunications can provide an opportunity to broaden student and teacher perspectives of the world and provide greater opportunities for collaboration. Once considered a frill, telecommunications is now an essential resource for students and educators. However, as the following paragraph will illustrate, not everyone shares this belief.

The Internet is not completely accepted as a learning tool and is actually viewed by some individuals as a threat to students. This belief is addressed by two authors, Friedman and McGrath (1998) in an Education Week article. They address the concerns of whether the Internet is developmentally correct for children, whether it inappropriately substitutes virtual experiences for real experiences, and whether it promotes information overload. The authors report that systematic long-range studies on the impact of the Internet on students are rare. The reports of classroom experiences with this technology are however, abundant. The authors relate that there is a wealth of information from which we can judge the Internet, such as self-studies, peer reviews, and observations of Internet use by experts.

Many organizations such as the U.S. Department of Education, National Science Foundation, state education authorities, local school systems, public foundations, private foundations and corporations have supported scores of pilot projects using the Internet in America's schools. Since 1994, the Center for Improved Engineering and Science Education has instituted an Internet-in-Education project within New Jersey's schools.

Workshops have been conducted for more than 3,000 teachers from over 700 schools by the Center. School administrators, as well as an evaluation team from the Educational Testing Service, have been involved in the project and to date it continues to successfully grow.

The authors claim that the biggest impact of the Internet on education will be for educational uses that cannot be duplicated through other means. An example of this would be accessing real-time data from instruments located throughout the world. Another example would be data collection of observations from widely varying locations, shared student to student. Teachers reportedly believe that students learn to evaluate information while learning useful information-retrieval strategies through exposure to the Internet. The authors close by stating the need for creative curriculum development, as well as the pursuit of higher standards and training programs to expand the number of educators who are able to artfully apply the use of this new tool into their teaching programs.

As previously stated, the concept of using technology in the classroom is not accepted by everyone and many individuals remain skeptical. Stephen Kleinsmith (1997) addresses this in his article, "Technology in the Schools, So What?". He acknowledges the group of individuals who equate the computer age with the use of televisions in the classroom. In the 1950's, people believed television would radically impact on how children were instructed. This belief did not come to fruition and many believe the so-called "Computer Age" will ultimately have an equally unimpressive impact on education.

The remainder of Kleinsmith's article focuses on answering the questions raised by those parents and teachers that are skeptical. He begins by addressing the question, "How are we supposed to fit technology into our already busy days?". In responding to this question, he acknowledges the great degree of existing subject matter to be taught by educators, but identifies technology as a tool for learning rather than an additional subject area to be incorporated into the curriculum. Technology in learning relates to how children will learn and not what they will learn. The author also addresses questions relating to training individuals, funding, and implementing a technology plan into a district. He attempts to answer the questions that might be raised by those individuals who remain skeptical of technologies impact on education.

Doug Johnson's (1998) article also addresses some of the concerns of the "Naysayers" of technology. A primary concern noted is that programs in the arts area that have been proven to be effective are being replaced by unproven technologies. Social commentators raise concerns that computers will have a dehumanizing affect on education and other researchers referred to by this author predict that schools will not effectively use computers even when they have a sufficient number of computers available. The author shares his belief that some of the "Naysayers" have political agendas of their own but feels that others are those with well-meaning concerns for the future of education. The author feels an underlying problem to silencing the "Naysayers" is the difficulty in finding definitive studies that report the positive impact technology has on learning. The reason he feels educators find it difficult to evaluate technology's

impact is that schools use technology in many ways for many purposes, with no well defined common uses articulated.

Johnson continues his article attempting to define the four major uses of technology in schools. He defines them as follows:

- (1) To improve administrative effectiveness
- (2) To provide access to current, extensive information resources for all learners in the district and community
- (3) To provide teachers the tools and resources needed to ensure students will meet local and state learning objectives
- (4) To allow students to learn and demonstrate their mastery of technology

Johnson feels once the uses are well defined, the benchmarks can be set and data can be collected. The final step would be finding ways to aggregate the data to evaluate the impact of technology, and modify instructional practices accordingly.

The debate continues to rage between technology advocates and lawmakers on Capitol Hill, as portrayed by Andrew Trotter (1998). In relation to funding, lawmakers are asking the question, “Is technology an effective educational tool?” to which Trotter replies, “By what measure?”. Trotter affirms other researchers findings that the difficulty in determining the effectiveness of education technology lies in the lack of consensus about its purpose. Polls show that many parents see technology mainly as a tool to prepare students for the workplace of the future. Meanwhile, skeptics are looking for a more immediate, concrete measurement of technology’s impact upon education. Standardized tests are considered by these individuals to provide a means of

accountability by which growth could be measured. Technology advocates view this as a partial measure and complain that standardized test scores won't accurately reflect the range of benefits students experience from using technology. These individuals feel standardized tests cannot measure students' creative work abilities nor their quality of thought, and offer performance assessments as an alternative means to measure the effectiveness of technology.

Trotter proceeds to address the small amount of research available on the effectiveness of technology in the classroom, and the mixed conclusions reported. Evidence has consistently shown that drill-and-practice computer activities help students develop basic skills. The results reportedly blur when addressing more sophisticated uses of technology in the classroom. Two suggested explanations were shared by the author. Teachers may be struggling to learn to use technology while trying at the same time to incorporate new practices into their instructional styles, and improvements may not appear quickly as a result. Another explanation may be the mismatch between the kinds of changes expected from the use of technology and the outcome measures that are used to evaluate results. To improve the quality of available research, the author suggests more longitudinal studies, studies that focus on fewer technologies, and studies that rely less on self-reporting and more on observations of trained individuals. In conclusion, findings from such studies must be made more accessible to practicing educators, parents, and policy makers to bring calm to the raging debates over the effectiveness of education technology.

Another audience with which to share technology research would be future educators. Neiss (1990) addresses the need to begin to prepare future educators for the world of instructional technology during their college experience. He refers to this technology training as preservice experiences. Neiss reports the rapid changes in computer technology and its growing impact on education requires teachers to have a solid preservice foundation upon which inservice training can build. He recommends that preservice teachers be required to use computers throughout their entire program of study in preparing for their vocation, and not just a few random courses.

This philosophy is supported by Stakenas et. al. (1992). They suggest that the foundation in instructional technology for preservice training for undergraduate educators include the following:

- A comprehensive course in instructional technology - to acquaint students with the basic capabilities of various technology
- A comprehensive course in computer applications - to provide students with a degree of mastery with word processing, databases, and spreadsheets
- Technology incorporated into methods courses for specific subjects - seminars and practice teaching sessions which include discussions and demonstrations of appropriate ways to integrate technology into teaching

All of these courses would emphasize the need for future educators to establish a degree of literacy in technology during their college experience.

The Office of Technology Assessment (1988) reports the need for postgraduate, certified educators to regularly upgrade their knowledge of computers and their computer

experiences. In order for teachers to use technology to teach, they need to receive training in the effective use of technology, and more than this, they need to receive technology education. The article reports the need for educators to know more than only how to operate technology to meet their goals. They must also know how to work with technology and adjust it to their goals as their goals change. This will require rethinking computer inservice training.

Inservice computer training for educators mainly focuses on the mechanical operation of hardware and establishing a familiarity with specific software products. Stakenas et. al. (1990) report a required shift in the focus for inservice training from the mechanical to an application mode. The Information Age requires teachers to be able to apply their knowledge of teaching utilizing computers in the classroom. Acknowledging this shift, the researchers of this article suggest the following five areas of computer competence for K-12 classroom teachers:

1. Basic Knowledge of Computer Technology

- * a general understanding of how computers work
- * the ability to use basic computer terminology
- * the ability to discuss the impact of computers on society

2. Equipment Operating Skills

- * ability to perform standard operating procedures
- * ability to troubleshoot for minor problems
- * ability to use a variety of input/output devices, projection devices, interactive discs, and modems

3. Productivity Tools Skills

- * ability to use and teach word processing, database, and spreadsheet
- * ability to use and teach graphics and desktop publishing software

4. Instructional Application Skills

- * ability to evaluate and utilize different types of specialized software
- * ability to integrate appropriate applications in a variety of content areas, using varied teaching/learning strategies
- * ability to customize multimedia learning activities

5. Management Application Skills

- * ability to manage administrative tasks on the computer
- * ability to use electronic mail and Local Area Networks

In structuring a technology inservice, Cuban (1986) addresses the importance of utility and practicality. He acknowledges that teachers are wary of intrusions on their time. They will weigh the value of any inservice training against their professional obligations: lesson planning, helping students, grading papers, conferencing with parents or peers, etc. As a result, computer inservice training must emphasize practical classroom applications if it is to be valued. Cuban states that teachers will selectively alter classroom behavior as long as technologies help them to solve problems they consider important. Teachers will either resist or be indifferent to changes they perceive as irrelevant to their practice and not befitting their students learning. Cuban reinforces the concept that practicality is the key which will encourage teachers to open the door to technology.

Clemente (1991) reinforces the need for technology inservicing to be practical and useful. He suggests initially completing a needs assessment in which teachers identify topics of interest, to permit detailed scrutiny of actual training requirements. Teachers should be asked to collaborate with administrators in setting goals and planning the inservice program. Inservices should take place at the school as school-based programs are more convenient and applicable than off-site programs. Have the inservice instructor(s) be knowledgeable peers. Experienced teachers using relevant tested ideas are perceived as more credible than outside experts. Teachers should be encouraged to actively participate during the inservice to help them determine if new ideas will work with their students. The final and most important factor contributing to the successful implementation of computer-based learning suggested by Clemente is providing follow-up support.

Clemente also examines the role administrators play in the process of technology inservice education. He suggests they can best support technology staff development by seeking teachers' advice when developing long-range staff needs. Administrators must provide release time for teachers to participate in staff development. They must budget the money needed to assure long-term learning opportunities and commit to provide follow-up until new ideas are implemented. Administrators and teachers need to play collaborative roles in this process.

Inservicing is an important component in the process of successfully integrating technology into a school district, but there are other factors that need to be considered. School districts around the country are discovering that it is not enough to install an

expensive networked computer system that connects all classrooms to the Internet. After spending considerable time in the planning phase and considerable dollars to implement the system, schools are finding that their network or computers are not being used to any meaningful extent. Jamieson McKenzie (1998) reports the main reason this occurs is that the computer technology is not perceived as part of the school's primary mission. As a result, teachers are not willing to integrate the technology into their instruction. The author also reports that teachers are sometimes "ill prepared" to integrate the available technology as a result of a lack of support, proper resources, and a possible resulting lack of motivation.

The author offers some suggestions on how to alter the aforementioned situation through examining some of the simple lessons learned in school districts that have successfully integrated technology. The author's suggestions are as follows:

- Make learning goals clear.

Goals should translate concretely into daily classroom realities.

- Identify the classroom opportunities.

Clearly establish the connection between available technologies and teachers' work.

- Provide extended funding and commitment.

A technology plan should focus on cultivating resource people as well as the financial means for necessary installations.

- Emphasize staff development and the development of a supportive culture.
Provide teachers with hands-on opportunities to personally discover the power of new technologies.
- Combine rich information with powerful tools.
Provide information that relates to the curricula.
- Match rigorous assessment to learning goals and student outcomes.
Measure what students are able to do with these new technologies and the growth they experience.
- Combine the elements.
Develop a strategic, systematic approach to combining all of the elements mentioned.

The author feels technology will be welcomed and used fully if the elements above are applied consistently and appropriately.

McKenzie's research is a good culminating article for this chapter as it encompasses all of the issues the intern reviewed in relation to technology. McKenzie reports the connection between the curricula and the available technologies must be clearly established and research supports this finding. The recruitment of resource people to provide support following the critically important inservicing phase is also supported by research. For the inservicing to be perceived as meaningful to educators, the above factors must hold true. Teachers must be provided the necessary tools and supportive physical and emotional climate to successfully make the necessary changes to incorporate new technologies into their teaching styles. An administrator must strive to work

collaboratively with teachers to develop assessment tools to measure learning goals and student growth as technologies are utilized.

The intern sees this collaborative approach as the key to creating a safe environment, where teachers and administrators alike can make the changes required for the successful implementation of technology.

CHAPTER 3

The Design of the Study

Description of the Research Design

The purpose of this project is to introduce the concept of utilizing technology as a venue for professional development. The goal of the project is to establish two District Internet sites providing a connection to the educational resources of the World Wide Web. The significance of establishing the sites is to provide a telecommunication conduit through which information may be accessed by district educators for purposes of improved instruction and professional development. The problem in the study was developing a plan to introduce the use of the Internet to the study population. A teacher inservice was selected as the means through which to do this. Assessing the prior knowledge of individuals and their attitudes toward technology and the Internet was critical to developing an effective inservice. To study the problem and collect the data needed to measure growth, the Intern chose a descriptive research design that included pre and post teacher surveys. This research approach was selected because of the documented difficulties experienced when attempting to conduct experimental research in an educational setting, and also because this research venue provides a reliable means to assessing teacher attitudes (Gay, 1996).

Research Instruments

A review of the literature in regards to the study did not provide the Intern with a survey that would measure a subject's prior knowledge and attitude toward the Internet and technology. As a result, the Intern developed the surveys that would be administered to the study population of Compensatory Education Teachers.

Section 1 of the Technology Survey is comprised of fourteen questions and uses a three point Likert scale to assess each subject's prior knowledge and degree of exposure to the Internet and computer technology. The scale ranges from a numerical value of 1 which indicates a positive response to 3 which indicates an individual has no access to the technology referred to in the question. Low point values will indicate an individual has a degree of self-perceived prior knowledge and exposure to the Internet and computer technology. Conversely, high point values will indicate little or no prior knowledge or exposure to the Internet and computer technology.

The second part of the Technology Survey deals with assessing each subject's attitude and comfort level toward using the computer and accessing the Internet. It is comprised of seven statements to which the subject is asked to respond by selecting one or more of the multiple choice responses provided.

The survey instrument was pretested by two administrators and one teacher not included in the study population. This was to help ensure the relevancy of the survey questions and/or statements. It also helped the Intern determine if the directions for completing the survey were clearly articulated. All three individuals provided valuable input and subsequent revisions were made to the survey prior to its distribution to the

study population. The reliability of the survey will be determined by the degree of forthrightness with which each subject completes the survey. The number of subjects who return the survey will determine the validity of the study.

Appendix A contains a copy of the Technology Survey utilized in this research project for review.

Design and Procedures

Prior to the school year, the Intern met with the District Assistant Superintendent of Instruction to discuss options for collecting data to complete the study. It was jointly decided that a pre and post Technology Survey would best serve this purpose. A cover letter which explained the reason for the survey was developed and attached to the data collection instrument. Directions for completing the survey were printed on the survey in a bold uppercase font for easy readability. The survey was distributed to the study population through their individual mailboxes located in the district Resource Room. The Technology Survey, its purpose, and the overall project were introduced to the subjects by the Intern at the District initial faculty meeting. A due date was established allowing a three week period for individuals to complete the survey. A folder for collection was provided in a central location in the administrative offices with directions for collection printed on the cover letter.

Gay (1996) and other researchers suggest a response rate of 70% is desired to ensure the validity of a study. To encourage a high response rate, a reminder of the date the Technology Surveys were due to be returned was printed on a beginning-of-the-year calendar each teacher is required to maintain weekly in the administrative offices. After

three weeks, a response rate of 94% was obtained with only two subjects not responding to the Technology Survey. According to researchers, this high response rate will contribute to the validity of the conclusions drawn from the data collected.

The data compiled from this initial survey was evaluated and utilized to plan an effective inservice program introducing the study population to the Internet. Subjects with a high degree of prior knowledge and a positive attitude toward technology as determined by the survey, were paired with individuals who did not self-report having such attributes. Following the inservice, a post Technology Survey was distributed to the study population as a means of measuring any changes in attitudes and basic knowledge relating to the Internet and the use of technology. The data from the post survey, when compared to the initial survey, helped the Intern evaluate growth experienced by the subjects and will help the District to develop a future technology plan, providing ongoing support as needed.

Data Analysis Plan

Response rates for Part 1 of the Pre and Post Technology Surveys were compiled, evaluated, and reported utilizing a chart format. The frequency of responses for each item relating to prior knowledge and degree of exposure to the Internet and technology were reported numerically and in percentages. Responses scoring a 1 on the scale were assigned a positive rating, responses scored as a 2 were assigned a negative rating, and responses falling in the range of 3 were assigned a neutral rating.

The frequency of responses for part 2 of the surveys which assessed each individual's attitude and comfort level were compiled and reported in percentages

utilizing a narrative summary format. Pre and post data collected from this section of the survey were compared to determine if the project had a positive impact upon the study population's overall attitudes toward the Internet and the use of technology.

CHAPTER 4

Presentation of the Research Findings

To gather the necessary data for this study, technology surveys were distributed prior to and following the project inservice. Of the 36 presurveys sent to all the Compensatory Education Teachers in the GCSSSD, 34 were returned achieving a response rate of 94%. Following the project inservice, all of the 36 post surveys distributed were returned achieving a response rate of 100%. Both the pre and post survey response rates were above the desired return rate of 70%, lending validity to the studies findings (Gay, 1996). The numerical data for Part I of the pre and post Technology Surveys is presented in chart and graph form in figures 1, 2, and 3. Part II of the survey was comprised of seven multiple choice questions/statements and is reported in a narrative summary format identifying the percentages of respondents who expressed similar answers to each question.

Figure 1, on the following page, is a chart recording the frequency of responses to each of the fourteen questions in Part I of both the pre and post Technology Surveys. This portion of the survey used a three point Likert scale to assess each respondent's prior knowledge and degree of exposure to the Internet and technology.

**Figure 1: Part I - Prior Knowledge/Exposure to Technology
Frequency of Responses**

Item Number	Survey Question (Abridged)	Pre Survey			Post Survey		
		1	2	3	1	2	3
1	computer at home?	21	11	0	29	6	1
2	computer connected to Internet?	15	15	2	23	10	3
3	have any access to Internet?	18	14	0	27	7	2
4	identify a Web Page?	17	15	0	35	1	0
5	identify a search engine?	10	22	0	35	1	0
6	can use a search engine?	9	14	9	33	2	1
7	have e-mail address?	12	14	6	22	14	0
8	able to send/receive mail?	12	14	6	23	13	0
9	can download files from Internet?	6	20	6	5	31	0
10	can mark favorite site on Internet?	9	16	7	14	22	0
11	found lesson plans/educational material on Internet?	7	18	7	31	5	0
12	incorporated Internet materials into class preparations?	4	21	7	4	32	0
13	visited newsgroups on Internet?	4	21	7	12	24	0
14	read professional journals on-line?	3	23	6	1	35	0

Figure 2 is a chart reflecting the percentages of respondents who expressed similar answers to each question on the pre and post Technology Surveys. Using the Likert scale, responses falling within the category of 1 are identified as positive (+), with negative (-) responses reported as category 2. Responses in category 3 are identified as neutral (N).

**Figure 2: Part I - Prior Knowledge/Exposure to Technology
Percentages of Frequencies**

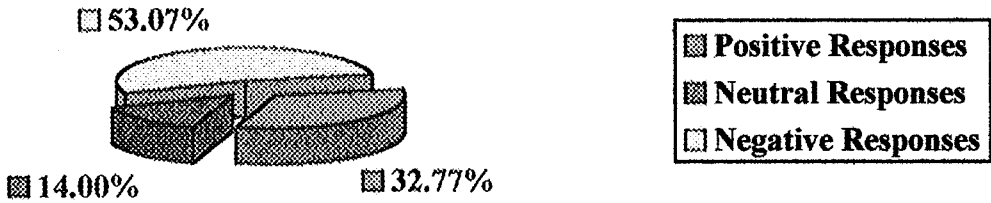
Item Number	Survey Question (Abridged)	Pre Survey			Post Survey		
		(+)	(-)	(N)	(+)	(-)	(N)
1	computer at home?	65.6%	34.3%	0%	80.5%	16.6%	2.7%
2	computer connected to Internet?	46.8%	46.8%	6.2%	63.8%	27.7%	8.3%
3	have any access to Internet?	56.2%	43.7%	0%	75%	19.4%	5.5%
4	identify a Web Page?	53.1%	46.8%	0%	97.2%	2.7%	0%
5	identify a search engine?	31.2%	68.7%	0%	97.2%	2.7%	0%
6	can use a search engine?	28.1%	43.7%	28.1%	91.6%	5.5%	2.7%
7	have e-mail address?	37.5%	43.7%	18.7%	61.1%	38.8%	0%
8	able to send/receive e-mail?	31.5%	43.7%	18.7%	63.8%	36.1%	0%
9	can download files from Internet?	18.7%	62.5%	18.7%	13.8%	86.1%	0%
10	can mark favorite site on Internet?	28.1%	50%	21.8%	38.8%	61.1%	0%
11	found lesson plans/educational material on Internet?	21.8%	56.2%	21.8%	86.1%	13.8%	0%
12	incorporated Internet materials into class preparations?	12.5%	65.6%	21.8%	11.1%	88.8%	0%
13	visited newsgroups on Internet?	12.5%	65.6%	21.8%	33.3%	66.6%	0%
14	read professional journals on-line?	9.3%	71.8%	18.7%	2.7%	97.2%	0%

The data from Part I of the study indicates the respondents reported an overall increase in positive responses in regards to their exposure to and knowledge of the Internet and technology following the Inservice project. Exceptions to these findings were the respondents responses to questions #9, #12, and #14. In question #9, “Do you know how to download files from the Internet?”, the percentage of positive responses dropped from 18.7% on the presurvey to 13.8% on the post survey. For question #12, “Have you physically incorporated any materials from the Internet into class preparations?”, the percentage of positive responses dropped slightly, from 12.5% on the presurvey to 11.1% on the post survey. On question #14, “Have you read any professional journals on-line?”, the reported positive responses decreased from 9.3% reported on the presurvey to 2.7% on the post survey following the inservice. Potential reasons for this will be addressed in the “Analysis of the Results” section.

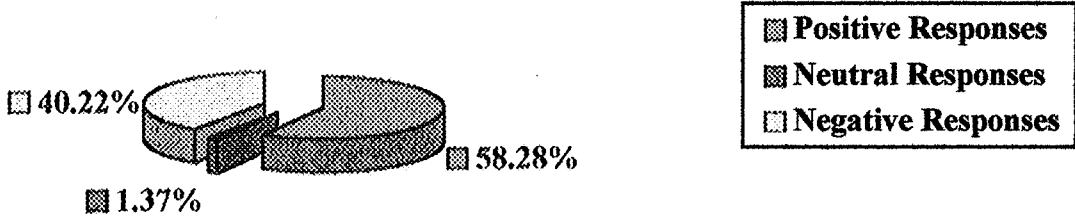
On average, for all fourteen questions regarding exposure to the Internet and knowledge of technology on Part I of the surveys, positive responses increased from 32.77% prior to the Inservice project to 58.28% following the Inservice. The negative responses dropped from 53.07% to 40.22% on the post survey, with neutral responses dropping from 14% to 1.37% following the Inservice project. Figure 3, on the following page, reflects a visual representation of the average of responses identified above as positive, neutral, and negative on Part I of the pre and post Technology Surveys.

**Figure 3: Part I – Visual Representation
Average of Responses**

**Part I: Technology Survey Responses
Prior to Inservice**



**Part I: Technology Survey Responses
Following Inservice**



Part II of the Technology Survey was developed to assess each subject's attitude and comfort level toward using the computer and accessing the Internet. It was comprised of seven questions/statements to which subjects were asked to respond. The questions/statements are listed below along with potential answers for each item. The data noted represents the percentage of respondents who expressed similar views on the surveys distributed prior to the inservice project, (presurvey) and following the project, (post survey).

Question #1: How comfortable do you feel using a variety of software on your school/home computer?

Very Comfortable	18.7% presurvey 27.7% post survey
Comfortable	34.3% presurvey 38.8% post survey
Somewhat Comfortable	43.7% presurvey 27.7% post survey
Uncomfortable	6.1% presurvey 5.5% post survey

Question #2: How comfortable do you feel using the word processing program on your school/home computer?

Very Comfortable	18.7% presurvey 30.5% post survey
Comfortable	28.1% presurvey 25.0% post survey
Somewhat Comfortable	34.3% presurvey 36.1% post survey
Uncomfortable	18.7% presurvey 8.3% post survey

Statement #3: I presently have access to the Internet and rate my comfort level as:

Very Comfortable	0% presurvey 2.7% post survey
Comfortable	12.5% presurvey 30.5% post survey
Somewhat Comfortable	25.0% presurvey 36.1% post survey
Uncomfortable	12.5% presurvey 8.3% post survey

Of the 34 respondents to the presurvey, 50% did not complete statement #3.
Of the 36 respondents to the post survey, 22.2% did not complete statement #3.

Statement #4: I presently access the Internet for the following reason(s):

Professional Growth	12.0% presurvey 17.0% post survey
Personal Growth	26.8% presurvey 16.0% post survey
Entertainment	29.2% presurvey 30.3% post survey
Information	31.7% presurvey 35.7% post survey

Question #5: How often do you presently access the Internet?

Daily	3.1% presurvey 5.5% post survey
2-4 Times Weekly	9.3% presurvey 19.4% post survey
1-2 Times Weekly	9.3% presurvey 2.5% post survey
1-2 Times Monthly	2.5% presurvey 19.4% post survey
No Access	50.0% presurvey 19.4% post survey

Of the 34 respondents to the presurvey, 3.1% did not answer question #5.

Of the 36 respondents to the post survey, 11.1% did not answer question #5.

Statement #6: I presently _____ the Internet.

Have No Access To	43.7% presurvey 29.0% post survey
Choose Not To Access	12.5% presurvey 11.1% post survey

Statement #7: I feel _____ when I think of attempting to access information from the Internet.

Very Comfortable	0% presurvey 5.5% post survey
Comfortable	18.7% presurvey 38.8% post survey
Somewhat Comfortable	25.0% presurvey 44.4% post survey
Uncomfortable	15.6% presurvey 8.3% post survey

Of the 34 respondents to the presurvey, 40.6% did not complete statement #7.

Of the 36 respondents to the post survey, 2.7% did not complete statement #7.

Analysis of the Results

Data from Part I of the pre and post Technology surveys showed that the respondents perceived knowledge of technology and exposure to the Internet increased by 25.5% following the project Technology Inservice. Over 90% of the respondents reported being able to identify a web page and identify and use a search engine to locate information on the Internet following the Inservice as compared to only 55% prior to the inservice. Following the inservice, over 70% of the respondents reported having access to a computer connected to the Internet and finding lesson plans and educational materials on the Internet. This reflects an average increase of 41.5% as compared to the presurvey data reported by the respondents.

On average, nine of the fourteen statements/questions on Part I of the post survey had positive responses above the 60% rate as compared to only one of fourteen meeting this criteria prior to the Inservice. Only the areas of downloading files from the Internet and reading professional journals on-line indicated a decrease in positive

responses of 7% or less as reported by respondents on the post survey. The final area reporting a decrease of 1.5% by respondents related to physically incorporating materials from the Internet into preparations for class. The findings may suggest a relationship between reported difficulties in the process of downloading materials and the slight decline in incorporating Internet materials into class preparations. The decrease in the percentage relating to reading professional journals on-line may relate to semantics. During the inservice program professional journals were reviewed on-line however, the term “professional journal” may not have been assigned to the materials being viewed by participants to the degree necessary to establish the connection.

Part II of the Technology Survey was used to assess each subject’s attitude and perceived comfort level toward using the computer and accessing the Internet. Respondents reported a slight increase of 1.8% in relation to their degree of comfort with using software programs and word processing programs on the computer following the inservice. When asked to rate their perceived comfort level toward accessing information on the Internet, 69.3% of the respondents rated themselves within the ranges of very comfortable to somewhat comfortable. This percentage reflects a 31.8% increase in positive responses on the post survey as compared to data collected prior to the inservice. The percentage of respondents rating themselves in the uncomfortable category in regards to using the Internet, declined from 12.5% on the presurvey to 8.3% on the post survey. Respondents were also asked to identify their purpose(s) for accessing the Internet. Professional Growth, Information, and Entertainment were purposes reflecting increases on the post surveys. Personal Growth was the only purpose which reflected a decrease when compared to the initial data collected.

There appears to be a relationship between inservicing and the utilization of

technology for purposes of professional development. Following the Inservice, 86.1% of the individuals surveyed reported utilizing the Internet to find lesson plans and education materials, reflecting an increase of 64.3%. A 5% increase of individuals utilizing the Internet for the purpose of professional growth was reported as well. Overall Internet usage was reported to increase following the inservice, with daily usage reflecting an increase of 2.4%, two to four times/week usage increasing by 10.1% and one to two times/week usage reportedly increasing by 15.7%. Increased Internet usage may increase the professional development opportunities experienced by individuals.

The data collected from this study supports the concept of utilizing technology for the purpose of professional development. As a result of comparing the data, the important role inservicing plays in promoting this process is clearly established as well.

CHAPTER 5

Conclusions, Implications, and Further Study

Major Conclusions For:

The Project:

The project of surveying the GCSSSD Compensatory Education Teachers prior to any training provided a baseline of valuable information. Part I of the presurvey helped to identify each individual's prior knowledge and degree of exposure to the Internet and technology. Part II of the presurvey was used to assess each individual's attitude and comfort level toward using the computer and accessing the Internet. The data provided from Parts I and II of the presurvey was utilized in planning the Technology Inservice component of the project. Respondents self-reporting high degrees of knowledge, exposure, and comfort in relation to technology and the Internet were identified, and asked to assume the role of Resource Personnel during the inservice program. The data provided also helped identify, focus, and sequence the topics introduced at the Technology Inservice. Only 37.5% of the respondents to the presurvey rated their comfort level toward accessing information on the Internet within the ranges of very comfortable to somewhat comfortable. This question also had a high rate of individuals, 50%, who did not respond at all, as well as a 12.5% rate of individuals who reported their Internet comfort level to be in the uncomfortable range. It was concluded that the high degree of non-responses to this question should be interpreted as negative responses in the planning process of the inservice. Based on this feedback, the Technology Inservice was planned accordingly, utilizing a hands-on approach, beginning with an introduction to the basics of the Internet, and progressing to exploring professional development sites

as a group. In further analysis of the surveys, data gathered prior to the inservice was compared to data gathered following the inservice to assess changes in knowledge, attitudes, and comfort levels as reported by respondents in regards to technology and accessing the Internet.

Following the Technology Inservice, the percentage of positive responses reported on Part I of the survey increased by 25.5%, with neutral responses dropping 12.6%. On average, nine of the fourteen questions/statements on Part I of the post survey had positive responses above the 60% rate as compared with only one of the fourteen meeting this criteria prior to the inservice. Data from Part II of the post survey reflected 69.3% of respondents rated themselves within the ranges of very comfortable to somewhat comfortable following the inservice, reflecting a 31.8% increase. The percentage of individuals rating themselves as uncomfortable dropped 4.2% based on post survey data. As a result of analyzing this data, a major conclusion of this study is identification of the important role inservice training plays in relation to technology. The increase of positive responses following the Technology Inservice was substantial as indicated by the post survey data collected.

The study also establishes a relationship between technology and professional development. After experiencing exposure to the Internet through the inservicing process, 86.1% of the individuals surveyed reported utilizing the Internet as a resource to find lesson plans and educational materials. This figure is of major significance in that it represents an increase of 64.3%. The individuals surveyed who reported utilizing the Internet for the purpose of professional growth increased by 5%, as did the overall number of times individuals reported accessing the Internet. Daily usage increased by 2.4% with individuals accessing the Internet at the rate of two times/week reportedly increasing by 15.7%. Increased Internet usage may increase the opportunities individuals have to experience professional development through the use of technology.

The high survey response rates of 94% (presurvey) and 100% (post survey) are indicative of the degree of professionalism and conscientiousness exhibited by the educators in the Gloucester County Special Services School District. It indicates the staff realizes the value of their input in the process of planning professional development activities. It is also a reflection of the importance generally placed upon responding to documents as articulated by district administrators.

The Intern's Leadership Development

In developing the Technology Survey, the Intern learned the importance of producing a clear, concise, properly structured document styled to fulfill its desired purpose. Through this process, the Intern learned how difficult it may be to develop a reliable instrument for collecting data necessary to fuel a study. Pretesting the instrument before utilizing it, though time consuming, proved to be a very beneficial step in the process. Survey statements/questions were rewritten and directions for completing the survey were clarified based on feedback. The Intern learned the value of refining an instrument prior to its utilization. The result was a survey that was concise, yet not too cumbersome to complete, while still providing the credible information required to complete the study.

Once the survey was drafted, developing the cover letter to communicate the purpose of the survey in a positive manner was the next task. Through formal instruction during the internship, as well as feedback from the Intern's field mentor, the proper format and the details that should be included in a cover letter for a survey document were learned by the Intern. Seeking approval of the final product, overseeing the copying and distribution, and establishing the collection method were learning experiences as well.

Upon collecting the completed surveys, the Intern became aware of the arduous task of compiling and reporting the data. This is a task which caused the Intern to rethink the process. A leader needs to seek ways of sharing the responsibility of such a task with others to lessen the burden and accomplish the goal. Future surveys conducted will be planned in accordance with this lesson learned.

In developing the Technology Inservice program, many leadership competencies were acquired and fine-tuned. The process of listening actively and responding appropriately to the ideas/opinions of others is a basic communication skill, yet critically important and often not cultivated. Shared decision making during meetings that were planned and conducted effectively by the Intern became an enjoyable experience as the project evolved. Identifying, recruiting, and assigning qualified personnel to participate in the project was a positive step toward achieving the goal of providing an inservice that would challenge the knowledgeable, yet meet the needs of those with less exposure to technology. Arranging to rent the EIRC computer lab and dealing with the financial and physical factors involved in providing an inservice were learning experiences as well.

During the study, the Intern's field mentor retired and the GCSSSD experienced a reorganization at the administrative level. As a result, a delay was experienced in establishing the two Internet sites proposed in the project. The Intern learned to be flexible and act effectively within the changing dynamics and politics of school district decision-making. This is a skill that will serve the Intern well in any future endeavors.

Organizational Change as a Result of the Study

This project has provided an opportunity for GCSSSD educators to experience first hand a sampling of the array of educational resources available on the Internet. The inservice provided instruction and joint exploration of the Internet as well as allowing time for individual experimentation, with resource people readily available to assist as

needed. It provided a safe venue through which the Internet could be explored and demystified as a result. The increase in positive responses on the post survey seem to support an increase in the degree of comfort as reported by individuals following the inservice.

The project has contributed to the professional development of educators in the organization as evidenced by the 64.3% increase of individuals who reported accessing the Internet for educational materials and lesson plans following the inservice program. The Internet is a vast resource to which more educators in the organization have been exposed as a result of the study. Extending the professional development opportunities through promoting the many professional journals and workshops on the Internet is the next step proposed by the Intern toward affecting organizational change. The project has introduced the Internet as a mechanism for professional development and it would benefit the organization to continue to promote the concept of professional development through the use of technology.

The data collected on the post survey can serve as a baseline to provide district administrators with information which can be utilized in planning staff development programs for the upcoming school year. Experts agree that 30% of a district's technology budget should be spent on professional development activities. The success of the training program executed this year in the project will continue to contribute to organizational change if the benefit of the hands-on experience is recognized and integrated into future technology inservice programs.

Recommendations for Further Study

The following recommendations are based on the findings of the study:

1. The concept of professional development through the use of technology should continue to be studied by the district.

2. The Internet sites need to be established to provide an on-site venue for professional development.
3. Educational web sites should be explored, evaluated, and categorized as a resource for district educators.
4. Professional journals and valuable educational web sites should be earmarked on the computers for easy access by individuals.
5. The EIRC Computer Lab should continue to be utilized by the district as a hands-on venue for technology inservicing.

REFERENCES

Ambler, J. and Jacobs, M.P. (1991). Telecommunications: Opening the Windows on the World. Part 1. Instructional Resource Guide, 2nd Edition. Florida Department of Education, 1-11.

Becker, H.J. (1990). How Computers are Used in United States Schools: Basic data from the 1989 I.E.A. Computers in Education Survey. Baltimore, MD.: Johns Hopkins University, 1-23.

Clemente, R. (1991). Effective Computer Inservice: Factors for Success. Computing Teacher 19, 28-29.

Cuban, L. (1986). Teachers and Machines. New York: Columbia University.

D'Ignazio, F. (1990). Integrating the Work Environment of the 1990's into Today's Classrooms. T.H.E. Journal, 95-96.

Dwyer, D.C., Ringstaff, C., and Sandholtz, J.H. (1991). Changes in Research Beliefs and Practices in Technology-rich Classrooms. Educational Leadership, 45-52.

FARNET, (1994). Building Consensus/Building Models: A Networking Strategy for Change. Federation of American Research Networks (FARNET), Consortium for School Networking.

Friedman, E.A., and McGrath, B. (1998). The Internet Isn't a Threat to Students...It's a Tool for Teachers. Education Week on the Web, 1-4.

Forrester, G. (1992). Teacher Workstation Project Report. Florida Department of Education.

Gay, L.R. (1996). Educational Research: Competencies for Analysis and Application. Upper Saddle River, NJ: Merrill.

Honey, M. (1993). Telecommunications and K-12 Educators: Findings from a National Study. New York: Center for Technology in Education.

Johnson, D. (1998). The Less Simple Answer to Evaluating Technology's Impact. The School Administrator, 12-18.

Kleinsmith, S.L. (1997). Technology in the Schools, So What? The School Administrator, 8-11.

Kolderie, T. (1990). How Structured Change Can Speed the Introduction of Technology. Restructuring for learning with Technology. Center for Technology in Education. Bank Street College of Education, 91-103.

McKenzie, J. (1998). Technology's Webs. The School Administrator, 6-9.

Microsoft Press Computer Dictionary. (1997). Redmond, Washington: Microsoft Press.

Neiss, M.L. (1990). Preparing Computer-using Educators in a New Decade. The Computing Teacher, 10-15.

Newman, F. M. (1991). Linking Restructuring to Authentic Student Achievement. Phi Delta Kappan, 458-463.

Office of Technology and Assessment. (1988). Power On! New Tools for Technology and Learning. Washington: US Government Printing Office.

Potter, R.L., and Davis, M. (1991). Telecommunications: Opening the Windows on the World. Part II. Instructional Resource Guide, 2nd Edition. Florida Department of Education, 12-83.

Roberts, J.L. (1989). The Kingpin of Education. Teaching and Computers Special Supplement, 2.

Roblyer, M.D., Castine, W.H., and King, F.J. (1988). Assessing the Impact of Computer-based Instruction: A Review of Recent Research. New York: The Hawthorn Press.

Sheingold, K., and Hadley, M. (1990). Accomplished Teachers: Integrating Computers into Classroom Practice. Center for Technology in Education. Bank Street College of Education, 1-30.

Stakenas, R.G., Tishkin, D.P., and Resnick, M.M. (1992). Best Practices in Developing Teachers' Knowledge and Skills in Using Instructional Technology. Center for Policy Studies in Education, Florida State University, 1-99.

Stakenas, R.G., Ota, C., Resnick, M.M., and Tishken, D.P. (1990). A Knowledge Base for Using Advanced Instructional Technology. Center for Policy Studies in Education, Florida State University, 70.

Trotter, A. (1998). A Question of Effectiveness. Education Week on the Web TC98, 1-7.

Wirthlin Group. (1989). The Computer Report Card: How Teachers Grade Computers in the Classroom. A nationwide survey of precollegiate teachers. Topline Report. New York: Wirthlin.

Wood, J. and Barnes, D. (1991). Computer Anxiety in Florida Community College Students. Florida Technology In Education Quarterly 3, 75-83.

Appendix A
Survey

Name: _____

Part I: Please read each question and circle the number which reflects your answer to each question.

Use the key below:

(1) Yes

(2) No

(3) No Access

- | | | | | |
|-----|---|---|---|---|
| 1. | Do you have a computer at home? | 1 | 2 | 3 |
| 2. | Is your computer connected to the Internet? | 1 | 2 | 3 |
| 3. | Do you have access to a computer connected to the Internet? | 1 | 2 | 3 |
| 4. | Can you identify a Web Page when you see one? | 1 | 2 | 3 |
| 5. | Do you know what a search engine is? | 1 | 2 | 3 |
| 6. | Can you use a search engine to find most things you need on the Internet? | 1 | 2 | 3 |
| 7. | Do you have an e-mail address? | 1 | 2 | 3 |
| 8. | Are you able to send and receive e-mail? | 1 | 2 | 3 |
| 9. | Do you know how to download files from the Internet to a computer hard drive? | 1 | 2 | 3 |
| 10. | Could you mark a site you liked as a favorite site on the Internet? | 1 | 2 | 3 |
| 11. | Have you found lesson plans and educational materials on the Internet? | 1 | 2 | 3 |
| 12. | Have you incorporated any materials from the Internet into your preparations for class? | 1 | 2 | 3 |
| 13. | Have you visited any news groups on the Internet? | 1 | 2 | 3 |
| 14. | Have you read any professional journals on-line? | 1 | 2 | 3 |

(over)

Part II: Please read and complete the following questions/statements by circling one or more of the responses provided.

1. How comfortable do you feel using a variety of software on your school/home computer?
Very Comfortable Comfortable Somewhat Comfortable Uncomfortable
2. How comfortable do you feel using the word processing program on your school/home computer?
Very Comfortable Comfortable Somewhat Comfortable Uncomfortable
3. I presently have access to the Internet and would rate my comfort level as:
Very Comfortable Comfortable Somewhat Comfortable Uncomfortable
4. I presently access the Internet for the following reason(s):
Professional Growth Personal Growth Entertainment Information
5. How often do you presently access the Internet?
Daily 2-4 times weekly 1-2 times weekly 1-2 times monthly No Access
6. I presently _____ the Internet.
Have No Access To Choose Not To Access
7. I feel _____ when I think of attempting to access information from the Internet.
Very Comfortable Comfortable Somewhat Comfortable Uncomfortable

Biographical Data

Joan M. Geraci

Pitman, New Jersey

Graduate of Triton Regional High School, Runnemede, New Jersey

Associate in Science Degree
Camden County College

Bachelor of Arts in Elementary Education
Glassboro State College

Master of Arts in School Administration
Rowan University

Occupation: Compensatory Education Teacher
Gloucester County Special Services School District