

1995

An electronic storage and access system for special education legislation

Courtney Siler Frantz

College of William & Mary - School of Education

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**An Electronic Storage and Access System
for Special Education Legislation**

A Dissertation
Presented To
The Faculty of the School of Education
The College of William and Mary in Virginia

In Partial Fulfillment
Of the Requirements for the Degree
Doctor of Education

by
Courtney Siler Frantz
October 1995

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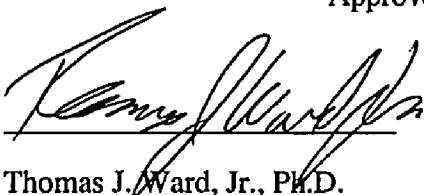
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**An Electronic Storage and Access System
for Special Education Legislation**

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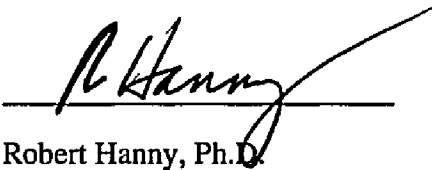
Courtney Siler Frantz

Approved October 1995 by

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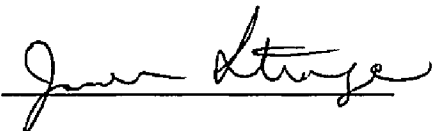
Thomas J. Ward, Jr., Ph.D.

(Chair of Dissertation Committee)

A handwritten signature in cursive script, appearing to read "R. Hanny", written over a horizontal line.

Robert Hanny, Ph.D.

Committee Member

A handwritten signature in cursive script, appearing to read "James Stronge", written over a horizontal line.

James H. Stronge, Ph.D.

Committee Member

Dedication

This dissertation is dedicated to the people who have encouraged me to maintain a sense of balance in my life. At one end of the scale was my desire to be a role model for my children, demonstrating that one's educational aspirations are worth the sacrifice of time and money. The counterbalanced has been my responsibilities as a mom. It was my family's love, laughter, and encouragement that made this dissertation possible. To you I say, "WE did it!"

For my children, Cameron and Chevan, my parents, Evan and Mary Siler, and my best friend, Stamos, who provided not only critical academic consultation, but emotional support to all of us.

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Acknowledgments

I would like to acknowledge the members of my committee who have provided not only an academic evaluation of the work, but forced me to struggle. Each member of my committee helped to fine tune this dissertation into something we all are proud to have our names attached.

A special thanks to Dr. Tom Ward for his continued use of the term, "dissertating." It has been his wisdom to allow me to learn a most valuable lesson of professionalism that research must override our personal feelings. Through "dissertating," I learned instead to develop the more critical skill of detachment in order for the facts themselves to support one's claim of innovation.

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An Electronic Storage and Access System for Special Education Legislation

Abstract

In the field of education, instructional leaders must know the regulations governing the assessment, curriculum, and instruction of all students. An area of special concern is the regulations governing programs for students with disabilities. Although the average population of students with disabilities may represent less than 10% of the total student body, the school administrator is responsible for maintaining access to the most current regulations, for accurately interpreting, and effectively implementing federal and state mandates to ensure that the due process rights of the students with disabilities are upheld. Yet the laws and regulations governing special education programs are continually changing. Having immediate and accurate access to the most current regulations are critical problems for administrators of special education programs.

One means of providing the regulations is the computer. With the use of hypertext-based software, computers are presently and successfully being used in business and medicine for training and reference storage. Therefore, *SpeciaLink* was developed to serve as a prototypical system for the delivery of the regulations governing special education programs.

To evaluate *SpeciaLink*, an experiment was conducted to test the effectiveness and efficiency of manipulating and extracting the stored regulations. A controlled experiment involving the use of hypertext programming was conducted in Virginia school districts. The research project used a random sample of secondary

school administrators from 15 school districts. The sample frame participants were given a survey to identify their knowledge of the *Virginia Regulations Governing Special Education Programs for Children with Disabilities*, 1994. For a trial period of two months, the experimental group was given the software, *SpeciaLink*, that allowed them to electronically access the regulations. After the trial, the entire sample frame was re-surveyed.

Following the pilot program, statistical interpretation of the results revealed that a hypertext-based system is an effective and efficient tool for manipulating and extracting information from the regulations governing special education programs. Because the hypertext-based software promises to be so useful in special education, future research should examine the possibilities of expanding the use of electronically storing local mandates and court litigation that pertain to special education programming.

Courtney Siler Frantz

Department of Education

The College of William and Mary in Virginia

CHAPTER 1

The Problem

Overview

Although the power to create public education systems lies within state constitutional rights, the federal government (through grants) has historically exhibited an active interest in education. One area in which the federal government has taken a more direct role is the education of youth with disabilities (Sage & Burrillo, 1986; Turnbull, 1990).

In the mid 1800's, the federal role of protecting adults with disabilities began with the creation of special schools for the mentally ill, blind, and deaf. No further federal activity occurred until the World Wars, when the federal government began to provide vocational rehabilitation programs for disabled veterans and other disabled citizens. It was not until the 1970's that Congress addressed the education of children with disabilities. In the past twenty years, Congress established specific programs to assist states in initiating, expanding, and improving programs for education of youth with disabilities (Kirk & Gallagher, 1983; Wang, 1987). These programs were developed through two major acts, the Education of the Handicapped Act of 1975 (EHA) and amended the Individuals with Disabilities Education Act of 1990 (IDEA).

Policy and Management in Special Education

Guidelines for Funding Special Education Programs

Along with increased financial support, Congress developed specific guidelines for states that apply for grants. EHA and IDEA provide federal funds to states for the development and/or continuation of programs serving youth with disabilities. States, in turn, support the programs of school districts that agree to comply with the regulations required for implementation of special education programs. The educational agencies must accept the responsibility for the identification, evaluation, placement, provision, implementation, and management of educational and related services for youth with disabilities in the most appropriate, least restrictive environments (Regulations Governing Special Education Programs for Handicapped Children and Youth in Virginia, 1994).

LEA's administrative designee. In Virginia, to facilitate the day-to-day operations that implement the regulations, local education agencies (LEA) appoint a special education administrator. In turn, the special education administrator may appoint a designee to implement services for students within each school. This designee is often either the building-level principal or assistant principal. To comply with the responsibilities of the law, principals must clearly understand and be able to interpret through implementation the federal and state mandates. They must also ensure that the due process rights of students with disabilities are upheld and they meet the unique educational needs of each student as specified by law (Hoy, 1994; Katsiyannis, 1994; Payzant & Gardner, 1994; Stainback & Stainback, 1990).

Competencies required of principals who serve as special education building administrators. Principals must be knowledgeable regarding services for students in all categories of disabilities. The expected knowledge and competencies required of special education building administrator are diverse, dynamic in nature, and expanding (Chopra, 1994; Hill, 1993; Sage & Burrillo, 1994; Tourgee & DeClue, 1992)

Nationally, studies have been conducted to determine the administrative competencies that may be differentiated from the core skills taught in education administration courses. (Brennan & Brennan, 1988; Sirotnik & Kimball, 1994). Identification of core competencies has been conducted in Virginia by Carver (1992) and Hyatt (1987). One of the most important competency is the ability to interpret federal and state laws governing students with disabilities (Carver, 1992; Valesky & Hirth, 1992).

Additionally, researchers believe that the principal's attitude affects the spirit of the implementation of the law and the school climate in which the special education program functions (Burrello et al., 1988; Farley, 1992). Dozier-Dazz and Kise (1984) reported that when the principal views disabled persons in an accepting positive manner, he or she perceives and encounters fewer problems in implementing the law. The principal with a positive attitude toward students or persons with disabilities is better able to describe and support his or her own rationale for various special education programs within the building (Junkala & Mooney, 1986). Furthermore, the principal's attitude toward students with disabilities has been proven to affect students' levels of comfort and potential

academic achievement (Goodman, 1985; Junkala & Mooney, 1986; Van Horn, 1989).

Moreover, the principal failing to abide by the most current mandates and policies regarding the rights of students with disabilities is at risk of facing the legal consequences. Not only does the principal risk the consequences of not fulfilling the expectations of the role itself, but the principal who does not abide by the regulations governing special education programs may be considered negligent and could be taken to civil court. Likewise, the superintendent who hired the principal and even the members of the local school board could be taken to court because of their employee's misconduct in issues regarding the educational programming of students with disabilities.

Multiple Supreme Court and Court of Appeals cases have clearly emphasized the expected role of the principal in administering special education programs. The courts have found errors in administration of special education programs specifically regarding the evaluation process, Individualized Education Plan (IEP) design and implementation, the placement, procedural safeguards, the teacher training, and discipline issues concerning students with disabilities, etc. Additionally, each year the Federal Office of Civil Rights (OCR) and the Federal Office of Special Education Programs (OSEP) have completed hundreds of investigations into complaints made on behalf of students with disabilities. OCR and OSEP have found school districts to be out-of-compliance with the regulations governing special education programming.

For example, the courts and OCR have decided cases relating to mislabeling of students through an improper assessment procedure as cited in the Cohocton,

Wyoming Central School District decision (OCR, 1993a), the Templeton, California Unified School District decision (OCR, 1993b), the decision involving Ventura, California Unified School District (OCR, 1993c) and the court case listed as Murphy v. Timberlane Regional School Dist., 1993. Some schools have been investigated or cited by the courts for failure to maintain a student in the mainstream class with supplemental aids and services (Barnett v. Fairfax County School Bd., 1989; Carey on Behalf of Carey v. Maine School Administration Dist. No. 17, 1990; French v. Omaha Public School, 1991; Mavis v. Solbo, 1994; Oberti v. Board of Educ. of Borough of Clementon School District, 1993; Sacramento City United School Dist. Bd. of Educ. v. Rachel H. By and Through Holland, 1994).

The principal has the responsibility for ensuring that students are properly evaluated to determine if eligible for services. Additionally, the principal has additional responsibilities for the development and implementation of the Individualized Education Plan (IEP) that guides the services for the student. For example, the principal must ensure that the IEP meetings include the following participants: a qualified teacher to provide or supervise the provision of special education, a person who served on the eligibility team, the student's teacher, the parents, and the student, if appropriate. When these members are not present, the school is out-of-compliance with the regulations. As in the case of Brimmer v. Traverse City Area Public Schools WD, Mich. (1994), the school district was out-of-compliance because the regular education teachers were not present at the IEP meeting and were expected to have educational responsibilities in implementation of the plan. In 1992 two OCR investigations cited errors in compliance when the

IEP committee did not consist of the required membership. The OCR cited the Girard, Pennsylvania School District for failure to have a member on the IEP committee who was knowledgeable about the student's disability (OCR, 1993d). The courts (Fagan v. District of Columbia, 1993) and the OCR has addressed the issue of parent participation (OCR, 1993e).

Additionally, the IEP must be written with objectives that can be achieved reasonably within a specified time (Ash v. Lake Oswego School Dist., 1992). In 1991 the OCR cited Evanston-Skokie Community Consolidated School District No. 65 for inadequately written objectives (OCR, 1991a). Often the courts have charged districts as out-of-compliance and awarded students extended school services (Union School Dist. v. Smith, 1994). The courts have addressed the importance of a Behavioral Management Plan in the IEP's for students with emotional and/or attention deficit disabilities (Cremeans v. Fairland Local School District Bd. of Edu., 1993). In some cases the courts and the OCR have found errors of omission of related services or supplemental aides from the IEP's, as in the OCR 1990 decision in a Mineral County, West Virginia case (OCR , 1990). In Hall v. Shawnee Mission School District, (1994) case, the courts established that the educational objectives may not be considered trivial. Instead, the objectives must be considered as "likely to produce progress." Most recently, the courts through their decisions have emphasized their role in assessing educational achievement not only procedural safeguards. Lack of educational progress, specifically the achievement of passing marks, has been viewed by the courts as an important factor in determining educational benefits (Lyons by Alexander v. Smith, 1993).

Once the IEP has been signed by the correct parties, changes cannot be made without following the procedural safeguards. In 1993 the OSEP reported the letter and findings indicating that a school board was out-of-compliance because the school board changed the IEP (OSEP, 1993). Moreover, the school is responsible for the IEP implementation. In 1989 the OCR cited Angleton, Texas Independent School District as out-of-compliance when a therapist missed therapy sessions with a student (OCR, 1989). In 1992 the OSEP cited the school district in Campbell County, Virginia to be out-of-compliance when the physical education department did not implement the prescribed IEP (OSEP, 1992).

Other school districts have been cited for not following the procedural safeguards when making a change in placement in decisions involving Newport News, Virginia Public Schools (OCR, 1991b). The courts have heard similar cases involving procedural safeguards and the responsibility of the principal to uphold them. (Evans v. Independent School Dist. No 25 of Adair County OK, 1991; Weil v. Board of Elementary and Secondary Education, 1990) or timely notification of termination of placement (Mrs. C. v. Wheaton, 1991). In 1991 the Decatur, Michigan Public School District was cited by OSEP as out-of-compliance for excluding a student with disabilities from a field trip without reevaluating him to determine that his disability should exclude him from the trip (OSEP, 1991b).

Moreover, after the IEP has been written, the student must be placed in the particular special education program indicated by the IEP. If the time line for placement within a program is not met, the school district can be taken to court as in the Delaware County Intermediate Unit No. 25 v. Martin K. (1993) decision.

Programs must also be designed to comply with IEP's and must follow strict guidelines. In 1994 the courts found a school district to be out-of-compliance when the disabled student was not being educated with peers who had the same disability Union School Dist. v. Smith, (1994).

Additionally, the principal must take a direct involvement in the individualized education plan to ensure that an appropriate and affective climate is created and maintained. In New Hampshire a school administrator was found in error by the courts when an emotionally disabled student with ADHD was repeatedly sent to the principal's office for inappropriate and disruptive conduct in the classroom (Engele v. Independent School Dist. No. 91, 1994) The student was found to be disciplined for behaviors that were beyond his control due to his disabling conditions. In a president setting, the Supreme Court case of Smith v. Robinson (1984) the courts supported the parents who claimed that their child's access to due process procedures was not upheld by the building administrator. Based on the Smith v. Robinson case, claims can be made directly to the courts under EHA or under Section 1983 of the Civil Rights Act. Damages may also be claimed and reimbursement made to students who were not protected by the building level administrator (Burlington School Committee v. Department of Education, 1985).

Another area that has received the Supreme Court's attention is the use of disciplinary procedures with disabled students. Brennan and Brennan (1988) assert that the principal's disciplinary actions regarding the student with disabilities, especially the students with emotional disturbances, necessitate strict adherence to the law.

Specifically, procedural due process, the "stay-put" rule, and the suspension/expulsion guidelines are examples of the components of EHA and IDEA that have come under scrutiny by the court system. The procedural due process for implementing rights is as crucial as the right itself. The Fourteenth Amendment to the Federal Constitution provides that no state shall deprive a person of his life, liberty, or property without due process of law. Procedural due process must be afforded to individuals by administrative agencies, such as public schools, when the potential loss of a fundamental right is at stake. The Fourteenth Amendment protects students with disabilities from being denied an education without the opportunity of exercising the right to protest what happens to them (Dixon v. Alabama State Board of Education, 1961; Goss v. Lopez, 1975). Pending administrative and judicial proceedings, the student is to remain in the present educational placement, which is known as the "stay-put" provision. Significant litigation, primarily related to disciplinary removals, has resulted in law suits being brought by the student involved or by his or her parents (Honig v. Doe, 1988). The Supreme Court decision in Honig v. Doe specifically delineated the proper role of administrators in the procedures for the suspension and expulsion of students with disabilities (Ellis & Geller, 1993; Valesky & Hirth, 1992). Multiple decisions are held each year by the courts, the OCR, and the OSEP concerning the "Stay-Put" Rule (Clyde K. v. Puyallup School Dist., No. 3, 1994; OSEP, 1994)

Not only has the justice system supported claims that have resulted from the direct actions of building level administrators, but courts have also supported claims that resulted from indirect errors in hiring and training. In Collins v.

School Board (1985), Hopkins v. Spring Independent School District (1986), DeFalco v. Deer Lake School District (1987), Barbin v. State (1987), DeRosa v. City of New York (1987), and Union School Dist., v. Smith (1994), awards were granted for students who were physically or emotionally injured due to the lack of trained supervision.

Additionally, the OCR and the OSEP have found schools to be out-of-compliance due to architectural barriers in the school that restricted placement of students with disabilities into areas open to their non-disabled peers. For example in Akron, Ohio City Schools in 1993, the spring concert was held in a basement. A band student who was physically disabled could not participate in the concert (OCR, 1993). In 1989 a lunch room was found not accessible in East Granby, Connecticut (OCR, 1989b). A library was found not accessible in East Windsor, Connecticut in 1992 (OSEP, 1992b). That same year in Windsor, the playground was cited as not accessible (OSEP, 1992c).

Courts have filed contempt citations when they have found clear and convincing proof that an administrator had not been reasonably diligent and energetic in attempting to accomplish what the legal decree had ordered for the provision of services to youth with disabilities. "Special education malpractice" is the term that covers misconduct by school personnel. Under the EHA and IDEA Acts, claims for remedies with financial obligations and "constitutional torts" are remedied through common law tort actions (Collins v. School Board, 1985; Barbin v. State, 1985). In the next decade, it is predicted that issues such as curriculum and methodology will be particularly vulnerable to legal challenges in the next century (Cetron & Gayle, 1990).

As indicated through a sampling of the issues regarding special education, school districts are held legally responsible for an improperly administrated program. In addition, not only must the principal be knowledgeable of the regulations governing special education program to ensure the students' right to a free and appropriate education, but the principal must be able to analyze policies and rules to determine whether present mandates facilitate or inhibit inclusion and integration of special students (Wheelock, 1992). New policies and rules may need to be developed. Unfortunately, many principals are not always prepared with the knowledge, attitudes or skills to deal with the current and future interests of special education students and their families (NPBEA, 1993; Sirotnik & Kimball, 1994).

Special Education Training for Principals

To ensure that principals possess the most current knowledge necessary for completing the tasks of managing special education programs in public school settings, state Departments of Education (SEA) and local school districts (LEA) are legally required to provide training. Training is to be continuous and reflect the ever-evolving role of educators and administrators. The first area of training involves the state-approved pre-service training of building-level administrators.

In a 1986 report of the Governor's Commission on Excellence in Education, recommendations were made for restructuring school principal training programs that are offered in Virginia by institutions of higher education. Emphasis was placed on site-management, evaluation of instruction and personnel, and educational leadership. As of July 1992, eleven schools of higher education had presented program profiles in line with the Commission's recommendations.

Although all the principal preparation programs focus on key instructional issues such as curriculum, instruction, evaluation and collaborative problem-solving, they are not as comprehensive in the area of special education administration (personal communication, Dr. Patricia Abrams, Associate Specialist for Special Education, VDOE, August 9, 1992)

In several studies, the pre-service or in-service principal training programs have been found to be insufficient (Sarason & Doris, 1992; Weinstein, 1989). When polled, the principals stated that they felt their knowledge regarding federal and state laws, regulations, and policies to be an area of weakness in their own professional development. Moreover, the respondents stated that their knowledge of the regulations often was not sufficient for them to apply to daily decision-making situations regarding special education programming. They would have to seek the advice of the central office special education administrators (Hirth & Valesky, 1992; Sirotnik & Kimball, 1994).

Hirth and Valesky (1992) noted that the principals' level of knowledge is not sufficient to guarantee that mistakes in implementation of procedural safeguards and/or the provision of educational services will not occur. Without adequate legal knowledge, principals cannot assume leadership roles in special education programming and service delivery (Carver, 1992; Farley, 1992; Hirth & Valesky & Hirth, 1992; Tourgee, 1995).

Carver noted similar findings in Virginia that support the nation-wide study of Hirth and Valesky. Carver surveyed building level administrators' perceptions of core special education competencies deemed necessary for the effective administration of special education programs. The competencies surveyed

included understanding federal and state administrative issues, awareness of current special education research and technology, identifying special education instructional program strengths/needs, coordinating special and general education curricula, establishing effective communication between regular and special education personnel, modifying the general curriculum, and evaluating school programs. Out of the seven competencies, the principals ranked an understanding of the federal and state regulations as the most significant competency.

Yet the respondents in Carver's study considered their own level of legal knowledge, relative to other competencies, to be moderately low. The vast majority of principals had no teaching or administrative experience in special education. Carver's research also indicated that principals were making subjective judgments in matters pertaining to special education programs without verifying the decisions relative to the law. By making unsubstantiated decisions, the principles were taking risks. Moreover, some respondents even questioned the assumptions upon which they have previously operated the special education programs.

If principals appear to be inadequately prepared to administer special education programs, then in-service training would naturally be considered an avenue for staff development. Weinstein (1989) reviewed the effectiveness of various staff development training programs for administrators. His research was not limited to any particular format of training or delivery agency.

Weinstein reported that administrators who had been offered in-service training (either through the state's Department of Education or local school divisions) remain ineffective by not taking full responsibility as instructional

leaders for their schools' special education programs. Weinstein concluded that principals were either unsure or unaware of basic guidelines for student placement and curriculum, neither were they sure of the exit process from special education programs. Weinstein's research supports the statement made by Valesky and Hirth that, "Principals' knowledge of special education law is not sufficient to ensure that mistakes in implementation of procedural safeguards and/or provision of educational services will not occur" (p. 136).

Shortage of Qualified Support Staff

Additional problems exist in Virginia and nationally. There is a critical shortage of qualified special education teaching personnel (Barsch, 1992; Cross & Billingsley, 1989, 1994; Frary, 1987; Platt & Olson, 1990). Forecasters have predicted that special education teacher shortages will reach a "crisis proportion" in the coming years (see Report to Congress, "A Free Appropriate Education: But Who Will Provide It?" by the American Speech-Language-Hearing Association et al., 1989). Cross and Billingsley (1994) reported that "whereas the supply of (special education) teacher graduates declined over a recent 3-year period, the need for fully certified special educators increased by 30 percent" (p. 411).

Adding to the shortage, attrition is somewhat higher among special educators than general educators (Boe, 1991; Cross, 1987; National Center for Education Statistics, 1991). Because of the shortage, unqualified teachers are hired to fill vacancies when certified teachers leave or do not apply for the positions (Bodkins, Billingsley, & Cross, 1992; Campbell, Gersten, Kolar, & Jimenez, 1992).

With a decrease in the number of available certified teachers and an increase in the number of special education students, principals will often rely on central

office special education staff for direct support and consultation (Tyler, 1987). Yet McLaughlin, Smith-Davis, and Burke (1988) reported a lack of certified qualified supervisors/coordinators of special education programs nationally. The net effect is that principals must rely more on their own expert knowledge. The shortage of qualified teachers places a greater demand on the leadership of principals.

Need for Additional Staff Development Programs

Even if the existing administrative training programs provide principals the opportunity to acquire a fundamental legal knowledge through a case study approach to the law and court decisions, the regulations and judicial decisions are continuously changing and amendments are being written to existing laws.

Some of the problems faced by principals are: (a) principals work in educational settings within which "professional knowledge" does not match the changing characteristics of the situation of practice, (b) principals cannot always apply standard techniques to predict problems, and (c) the requirements of the IDEA frequently assume that administrators demonstrate consistent mastery of comprehensive special education competencies (Bonds & Lindsey, 1982; Schon, 1983).

Principals need supplemental and varied training techniques that will give them the legal knowledge necessary to effectively administer and provide leadership for special education programs in their buildings. One area to include in any staff development program is instruction in effective access to the law (how to locate specific sections within the law and to how interpret the original documents themselves). Critical to mastering this objective is the resource itself and how suitable the material has been arranged to meet the principals' needs.

Clearly, building level administrators need an information storage and retrieval system that provides knowledge related to specific laws and program regulations. This system has to be accessible, accurate, and adaptable (Billingsley, 1988, 1989; Carver, 1992; Farley, 1992; Laycock & Frantz, 1992). Exploring alternative systems of storing legal references/resources that provide an on-going individualized training program for building level administrators has not been researched.

New Technology in Training

In the fields of medicine and education, students and professionals use electronic retrieval systems to acquire new information or review information previously studied. One reason for the success of electronic retrieval systems is that electronic systems can be easily modified to add new information or to change existing information. Electronic systems have been successful with various areas of staff development, providing individualized learning tools that are user friendly and portable.

Need for New Technology in Training

Hilda Taba (1965) noted that the twentieth century knowledge explosion caused many facts to be obsolete by the time students had mastered them. Rather than burden the memory with volumes of descriptive knowledge, Taba felt that teachers should instead help students develop organizing conceptual schemes.

Taba believed concepts should be presented through learning sequences that would gradually move students from what is already known to more abstract and complex ideas. They would be involved in interpreting relationships between concepts and making inferences or generalizations. Taba felt that graphic examples (content with visual organizational schema) were critical to cognitive organizational schema. In the field of teaching, Taba believed that material must be organized in two levels: the content level and the level that emphasizes the learner's unique cognitive skills for processing. Eggen and Kauchak (1988) recognized the importance of focusing the student's attention and developing a structure within which information can be displayed, while at the same time creating a flexible environment for uniqueness in learning styles.

Twenty years later, technology researchers have been able to support Taba's views on graphic organizational structures for learning and teaching. Coupling the historic views on behavioral and cognitive psychology theories related to teaching, researchers advocate the use of computer-based instruction (CBI). Researchers believe that CBI provides a graphic structure for organizing information. On the basis of preliminary research by their colleagues in the computer science field (Gagne & Glaser, 1987; Kirk & Gustafson, 1986), Hannafin and Rieber (1989) began to test the theory that a relationship could exist between basic learning processes and the instructional design powers of computers to present, manipulate, and manage material for instructional purposes.

Predominately, the behavioral theories that support the educational approach underlying CBI are the theories of reinforcement (Skinner, 1968) and Gropper's theory of stimulus-response associations (1983). Additionally, CBI design is influenced by cognitive psychology theories. One influencing theory is the theory of knowledge representation of schemata, which are organized networks of prior knowledge (Norman, 1982). Norman identified a learning process in which individuals develop and refine schemata, a system for connecting isolated facts. Reder's (1982) research complimented the Norman studies by identifying an additional learning skill, which is the ability to retrieve facts using already stored memory to enhance, extend, or modify new information by making effective links.

Hannafin and Rieber believed that computer software could be designed and programmed to mimic the human pattern of organizing and retrieving information. Yet additional studies are needed as the computer hardware field becomes more powerful, allowing for sophisticated software to be developed.

Electronic Retrieval Systems

Recently, one electronic retrieval system, a hypertext-based system, has received favorable recommendations from researchers because of its ease as a development tool, interactions with the user, and general user friendliness (Anderson, 1990; Marchionini, 1988).

Hypertext-based software has provided the technological merger between an integrated teaching model, discussed by Taba, and a need to harness the explosion of information in any given field. Hypertext basic system design is best described as a storage of multiple file boxes or stacks representing sections of the original document.

One key feature of the system is the browsing, which allows the user to "read" or access the information in a linear fashion or a nonlinear fashion. Whereas documents are traditionally read beginning with the first page and proceeding sequentially to the next page until the end of the document, the browsing feature allows the user to access the document in the following manner: to enter the document at any specified point, to exit the document rapidly; to mark a point in the document which the user may desire to immediately return, to move sequentially through the document, or to move in a non-linear manner through the document either by a word-find feature or by programmed links made within the document.

Another key feature of all hypertext based software is the link. The link is programmed by the designer writing programming scripts to tell the computer to connect two specific passages of a document. Multiple links may be designed to form a web connecting similar pieces of information.

Using a hypertext-based software enables the teacher to display, through computer screens, specific information in isolation, using animation and speech to increase a student's on-task behavior. Working much like transparencies, hypertext's "stack," or series of screens, allows one to build on the previous transparency screen. The software provides cross referencing so a reader can jump from one part of the data base to another, going beyond the structure of the text. Text authoring allows teachers to control the software and adapt content to individual student's interests (Greenes, 1986).

Hypertext-based software was first used in the field of medicine. The medical field selected hypertext for an electronic retrieval system because students are required to learn volumes of information that will continue to require updating. Faculties in several medical schools wanted their students to become lifelong learners. The learners would be required to process new information, relate the new information to previous knowledge, and make decisions based on this knowledge. Therefore, a development environment had to be selected which provided more student directed learning. Hypertext-based software was chosen by the Universities of Colorado, Florida, Michigan, and Pennsylvania Medical Schools. Additionally, professors modified the original development tool and designed an environment, ATLAS (Advanced Tools for Learning Anatomical Structures), that is used to teach various courses, clinical problem solving/diagnosis, and decision making (Greenes, 1986; Tessler, 1990; Zagari, 1989).

In addition, hypertext-based software, referred to as hypermedia, has been modified to store and deliver larger amounts of textual material, as well as sound

and graphic image material. Hypermedia-based software has also been used in teaching students with disabilities. Used as a development tool at Peabody College and the University of Kansas, hypermedia software was chosen as a useful environment because of its ability to individualize the lessons based on the learner's entry knowledge and learning style (Marchionini, 1988).

Technology brings to schools new ways to manipulate information. Hypertext- and hypermedia-based software may be the alternative resources that will serve as an ongoing training tool for administrators of special education programs. The capability of storing large volumes of information, changing the information stored instantaneously, adapting the information in content and format to the needs of the users, and providing text with graphics and sound to enhance the interest of the user are highlighted features of hypermedia's capability as an electronic storage and retrieval system.

Rationale for the Study

It has been determined that building administrators make many decisions every day that influence the educational programs of students with disabilities. Principals are required to know the laws protecting the students' educational rights and the procedural safeguards surrounding the implementation of these rights (Stainbeck & Stainbeck, 1990). Pre-service and in-service training programs are available. Yet principals have attested that many of the training programs do not sufficiently prepare them for a leadership role in special education. Principals have indicated that their knowledge of the laws and regulations has been inadequate (Golden, 1993).

Moreover, the courts have found that some principals neglected their administrative responsibilities for implementing the regulations (Ellis & Geller, 1993). Apparently, principals were making subjective decisions regarding special education programming without accurate knowledge of the regulations (Carver, 1992). Therefore, building-level principals must have a current, accurate, and rapidly accessible tool that outlines these regulations (Billingsley, 1989).

Electronic technology, specifically hypertext-based software has been used successfully to store and to retrieve documents. Moreover, hypertext-based software has been successfully used as a teaching tool. It appeared that hypertext-based software would be an applicable tool for the delivery of the special education regulations.

Therefore, the purpose of this study was to develop and to evaluate an electronic system used for storing, referencing, and manipulating special education regulations. This electronic system was designed to enable principals to access accurately and efficiently the special education regulations and to serve as an individualized on-going training tool.

SpeciaLink was the name given to the electronic tool used in this study. The tool contains the Virginia Regulations Governing Special Education Programs for Children with Disabilities, 1994. The title, *SpeciaLink*, was derived by the nature of the document represented and the linking capability of the system that is characteristic of hypertext-based applications.

Research Questions

Two distinct phases of the study were conceived. Each phase was centered on a particular research question that provided the structure of the study. Phase one involved the development or efficacy of the software, *SpeciaLink*. Phase two involved the evaluation or effectiveness of *SpeciaLink*.

Phase One: Development of *SpeciaLink*

Phase One was directed by the following major question:

- 1.0 Can a software package that electronically stores and retrieves a document containing the Virginia Regulations Governing Special Education Programs for Children with Disabilities (effective January 1, 1994) be developed?

In order to answer the research question several issues were researched. The issues are the following:

- 1.1 What are the needs of the intended users?
- 1.2 Do the intended users have the hardware to support an automated system?
- 1.3 Are the intended users computer literate?
- 1.4 What development environment will satisfy the designer's programming needs?
- 1.5 What are the requirements that *SpeciaLink* must satisfy?
- 1.6 What are the technical details of *SpeciaLink*?

Phase Two: Evaluation of *SpeciaLink*

Phase Two was directed by the following major question:

- 2.0 How effective was *SpeciaLink* in providing the regulations governing the special education programs in Virginia?

In order to answer the research question an experimental study was conducted. The study involved two groups, a control and experimental group, and focused on the following issues that are measured by the results of several surveys:

- 2.1 Did users in the experimental group access an electronic reference system as a resource for special education issues and programming?
- 2.2 How often did the users access the software?
- 2.3 During the decision-making process, when was *SpeciaLink* most often accessed by the users?
- 2.4 Did the intended users find *SpeciaLink* effective in providing the regulations?
(The measure of effectiveness will be described in Chapter Three)
- 2.5 As a result of using *SpeciaLink*, was there an improvement in the knowledge regarding the special education regulations ?

Operational Definitions

The following are definitions of key terms utilized in this study.

Access - As used in this study, the term refers to the ability to make use of and to approach.

Children with disabilities - As amended in the IDEA (1990), " the terms means children--(A) with mental retardation, hearing impairments including deafness, speech or language impairments, visual impairments, including blindness, serious emotional disturbances, orthopedic impairments, autism, traumatic brain injury , or other health impairments , or specific learning disabilities, and (B) children who by reason thereof need special education and related services" (P.:. 101-476 (IDEA), Section 101 (a) (1) (A), (B), p. 1103).

Competencies - The term in this study refers to the level and type of knowledge needed by building administrators regarding special education services necessary for the effective management and administration of educational services for children and youth with disabilities in a public school setting.

Hypertext and hypermedia - An electronic retrieval software development environment for computers that enables the user to move within a document through linking mechanisms.

Information - Any recorded knowledge that may be useful to some decision maker.

Knowledge - A familiarity, awareness, or understanding gained through experience or study.

Principal - An administrator of the building who oversees daily operations, instructional planning, staff development, and decision making, and who manages programs for individual groups (Hughes & Ubben, 1984).

Resource - For this study, the term "resource" refers to any legal document containing the laws and/or district policies and regulations related to special education or persons working for a school system with qualifications to administer special education programs or legal advice related to the laws governing special education.

Retrieval - Any mechanized processing of receiving recorded knowledge.

Special Education - The term as amended in the IDEA (1990) refers to "specially designed instruction, at no cost to the parent, to meet the unique needs of a handicapped child; instruction conducted in the classroom, in the home, in hospitals and institutions, in other settings, and instruction in physical education" (P. L. 101-476 (IDEA), Section 101(b)(A)(B), p.1103). The term also includes "speech pathology, or any other related services, if the service consists of specially designed instruction, at no cost to the parents, to meet the unique needs of a child with disabilities," and is considered "special education" rather than a "related service" under state standards. The term also includes vocational education if it consists of specially designed instruction, at no cost to the parents, to meet the unique needs of a child with disabilities (P. L. 94-142 (EHA), Reg. 300.14).

Special Education Administrator - The term refers to the local education administrator who has overall responsibility for administering special education programs within a school district.

Limitations of the Study

External Validity

Population validity. It is acknowledged that this study drew from an experimentally accessible group rather than a broad population. Due to the range restriction of the sample (Tidewater area of Virginia), the ability to generalize findings to a larger target population (e.g., all secondary school principals) is limited. However, external validity is less of a concern for target users within the same school divisions sampled.

Moreover, personal characteristics related to each subject must be considered during the collection of data. Certain personological variables may have interacted with treatment effects. Motivation, personal feelings, expertise in computer use, and/or comfort with the computer software are factors that may have affected the outcome of this research. There will be some subjects whose comfort level using the computer may have been directly related to their level of expertise with the computer. Therefore, some of the subjects may have been biased about using the computer. This may have possibly affected the subjective reviews of the software.

Subjects used in the study came from a preexisting group. Subjects who have already chosen to work at the secondary school level may already have preexisting knowledge needs that may have affected their experimentation with the software.

Sampling bias. The sample of principals agreeing to use the software were volunteers rather than a random sampling of the entire population. The possibility of sampling bias existed because the sample was made up of volunteers who have

been enthusiastic about the project; therefore, the results from the experiment may not be representative of the total population.

The entire population of school principals may not be as receptive to the use of new computer technology for daily administrative operations as the sample of volunteers. It is possible that the success of the prototype may be directly related to the experiment itself and that the prototype may not be as effective if used by the entire population. It is further acknowledged that the sample size was small, representing one region of the state and involving fewer than 50 potential software users.

Instrumentation limitations. The survey, *Compliance Issues in Special Education*, was designed as a pre- and post-testing evaluation of the study. The survey was not designed to be comprehensive instead it was designed to provide a sampling of the respondent's general knowledge regarding special education regulations. It is acknowledged that the results of the post-survey may not have been attributed to the use of the software, but to the fact that the pre-survey encouraged the respondents to find answers to the survey.

Due to the length of the intervention, the time between the pre- and post-surveys may not have been extensive enough to distinguish any change. The completion of the post- survey may only indicate that the subject did not have the need to look up a specific regulation during the experiment.

A phone survey was used for in order to obtain a 100 percent return on the post-survey. Phone contact had to be made to obtain the responses from four respondents. Phone survey responses may have represented different limitations than the responses to a mail survey.

Major Assumptions

The following comprise the major underlying assumptions contained in this study:

1. Currently or in the near future, all school building administrators will have access to computing systems.
2. The administration of special education programs and services has become increasingly a function of the building level administrator. Thus, the administrator/principal is charged with assuming a more responsible role in this area. One area of competency that indicates responsibility is a knowledge of the special education law.
3. The legal regulations related to special education programming are a permanent part of the educational mandates from the federal government that are tied to specific federal grants.

CHAPTER II

Review of Literature

Evolving Role of the Public School Principal

Administrative Role of the Principal

The role of the public school principal has evolved through the decades. This evolution has been archived since the 1920's through broad-based surveys to provide a collective synthesis of the expectations for that role (Doud, 1988).

Before the burst of immigrants to this country, the school systems were small enough in size that local school boards could easily manage the day-to-day administrative duties and the supervision of teachers. School boards would select a teacher to serve as the principal-teacher in each school site. The principal-teacher's primary task was to act as a senior or head teacher within the building. Daily responsibilities included teaching, disciplining students, maintaining records, and managing the school property (Lane, 1984). By the 1920's, the role of the principal was based on a definite body of concrete expectations. Education administration theorists clearly defined a very structured role for the principal and outlined the required training for the position (McCurdy, 1983).

By the late 1930's, the role was characterized in terms of the management expertise (Barnard, 1937; Gulick, 1937). Luther Gulick proposed that the role of the principal involved four major functions. These functions were planning, organizing, leading, and controlling. The function of planning meant setting goals. The function of organizing involved bringing together the necessary human, financial, and physical resources to accomplish the goals efficiently. The

leading aspect of the role referred to supervising the staff. While controlling designated the evaluation responsibilities of reviewing and regulating performance, providing feedback, and monitoring the process of obtaining the established goals (Gulick, 1937). Gulick's administrative goals continued to be emphasized by the educational theorists throughout the next decades (Campbell, et al., 1971; Gregg, 1957; Miklos, 1980).

After World War II, the number of buildings, students, and faculty increased. Additionally, the schools were expected to provide more services. Due to the changing demands of the schools, the role of the principal moved even further away from the classroom teaching realm to the administrative realm. (McCurdy, 1983).

Throughout the 1960's, the role of the principal began to change in design and content in response to a more complex, coordinated school system. Schooling became an enterprise headed by professionally trained individuals (Sergiovanni, 1987).

Yet by the 1970's, the belief in the structured role of the principal began to give way to the realities of the role as depicted by Mintzberg (1973). Mintzberg described a typical administrative day as one characterized by brevity, variety, and fragmentation. The activities were not only varied, but patternless, disconnected, and interspersed with trivial tasks. Mintzberg found that the open-ended nature of administrative work compelled the principal to perform a great number of tasks at an unrelenting pace. Such a pace would often lead the principal to superficially completing the various tasks.

Likewise, the educational programs presented in the school were also fragmented by an explosion of new concepts in instructional strategies, curricular materials, and general philosophy concerning the purpose of education. Concurrently, the public schools reported a nation-wide decline in the academic performance levels of the students.

Yet the public appeared to accept the open-ended nature of the role education and specifically the role of the principal. Educational historians believe that the acceptance of a more fluid role description was supported by two well-known educators who published books in the preceding decade. The books by Bloom (1964) and Coleman (1966) suggested that schools were neither in control nor responsible for any of the factors that may attribute to the decline in the student academic performance. Instead, a student's academic performance was related to the student's home environment and educational capability.

By the 1980's an era of educational reform began to surface in the public schools. The first wave of the reform was initiated by the public taxpayers. Citizens were concerned over the increasing property taxes needed to support the schools and the decreasing student achievement indicated in national test scores. Citizens sought reform in the student performance requirements, the quality of the instructional staff, and the accountability of administrators for both the student performance and the staff development (De Bevoise, 1984).

In meeting the new demands for educational reform, Blumberg (1987) and Sergiovanni (1991) have provided a current review of the role of the principal. The authors indicated that the responsibilities of the principalship could be clustered into many roles. Principals must be fiscal managers, professional

negotiators, personnel managers, instructional leaders, and community relations experts.

With new responsibilities added to the principal's functions, educational theorists believed that principal preparation programs must reflect the changes, as well. Prior to designing new curricular, researchers wanted to identify the current role/functions of the principal (Silver, 1983). Using the information from various surveys, the researchers formed a model of an "ideal" principal.

Correlations were drawn between the administrator's daily tasks and the level of student performance. Additionally, the research findings indicated that some schools were more effective in improving student performance than other schools. Using the results of the studies, leaders in education and government began to identify attributes of "Effective" schools. One attribute of an "Effective" school was the level of the student's performance on standardized achievement tests (Sergiovanni, 1987). Another attribute of an "Effective" school was an effective school leader (De Bevoise, 1984; Sirotnik & Kimball, 1993; Harris, 1987; Nottingham, 1983; Pankake & Burnett, 1990; Pellicer, 1988; Zirkel & Greenwood, 1987).

Many "Effective" schools were identified through the state-wide recognition programs. Comparison studies of the "Effective" schools and the leaders were written (Andrews & Soder, 1987; Bossert, Dwyer, & Rowan, 1983; De Bevoise, 1984; Glasman & Glasman, 1988; Harris, 1987; Heck, Larson, & Marcoulides, 1990; Lipsitz, 1984; Mortimore & Sammons, 1987; Niece, 1993; Nottingham, 1983).

Nottingham (1983) identified the issues that carried the first wave of educational reform. The study revealed that an effective principal oriented the school program around a set of goals. Those goals were widely endorsed by the community and school district. The principal measured his or her effectiveness in relation to those goals.

One of the goals often cited is improvement in student's academic performance. In Nottingham's review (1983) of "Effective" schools, he found that the principal's leadership role in the instruction of the school positively effected the student's performance. The functions of effective leadership could be delineated by achievements in four specific areas. They are setting goals and achieving the goals, using the power of the role of principalship to command the appropriate resources to make efficient and effective decisions, organizing and coordinating staff and resources to carry out decision and goals, and working through and with people to create an environment that supports the goals of the schools (Bossert, Dwyer, Rowan & Lee, 1982).

To confirm the findings of Nottingham (1983) and Bossert et al. (1982), Lipsitz (1984) studied successful middle schools. Lipsitz found that successful schools represented a climate with high morale. A sense of purpose existed. The people worked toward a unified goal of high academic standards for the students and valued their accomplishments.

Similar findings were reported by Harris (1987). Harris emphasized that an effective instructional leader sought to design a curriculum that supported the cognitive and the emotional growth of the students. Harris believed that the

building principal had the overall responsibility for creating a "total school environment that is positive for all students and conducive to both good discipline and an appropriate education" (p.46).

Smith and Andrews (1988) studied elementary and secondary school principals. They reported a list of key abilities that identified effective principals. The effective principal was able to set clear goals, to maintain high expectations of achieving those goals, to communicate the goals and expectations to the faculty and students, to place a priority on curriculum and instructional issues, to act as an instructional resource, and to demonstrate a visible presence.

By the 1990's, researchers identified changes in the daily tasks of the principal at all levels (elementary, middle, and secondary schools) that required a new set of professional attributes. Pankake and Burnett (1990) completed a review of the literature concerning professional attributes of "Effective" school leaders. They found that effective principals could concentrate on those things that can be changed; modeled espoused behavior, vision, and specific direction of the school goals; demonstrated an understanding of the importance of group effort; and monitored progress toward goals. Additionally, educational specialists identified unique characteristics and demands of the role of principal within the elementary schools and secondary schools. Mortimore and Sammons (1987) and Niece (1993) provided a highlight of their findings.

Mortimore and Sammons (1987) discussed the functions of the elementary school principal. Their study found that effective elementary schools set specific standards for the school program. The degree and effectiveness to which the standards were carried out were influenced by the principal. Some of the factors

were parental involvement, teacher-student communications, consistency of teachers' programs within a structured academic day, and establishing and maintaining a positive school climate.

Niece (1993) reported on a similar study that focused on the role of the secondary school principal in "Effective" schools. The schools selected for the study were chosen by the Secondary School Recognition Program in 1983 as the most effective secondary programs. Niece wanted to collect and categorized a list of instructional leadership descriptors. He found three major themes that often appeared as descriptors of the principals he studied.

First, effective instructional leaders were people oriented and interactive. Even though the daily tasks required many management decisions, the principal made a point not to remain in his office during the school day. The principal spent time each day interacting with the students and teachers, remaining visible and accessible. Second, principals from one site remained in close contact with principals from other sites. Formal and informal networks were established between the principals. The colleagues were often from different geographical areas that would stretch across the districts, the state, and the nation. The third theme was that principals had established a mentor relationship when they first began their job. The mentor relationship often lasted many years. Each new principal would benefit from the mentor's experience to help guide them in management and problem solving.

Other researchers have completed literature reviews and studies that focused on the daily tasks of the principal (Doud, 1988, Murphy, 1993; Raske, 1992; Stronge, 1988, 1990). Stronge (1988, 1990) in his research from 1981-1986,

found that as a group, elementary and secondary principals spent an average of nearly 55% of their time on management tasks alone. Doud (1988) found that the majority of the elementary and secondary principals in his study claimed that they spend at least 51 hours per week on school related activities. The time spent on various tasks could be represented by the following percents: 20% to 30% on supervision and evaluation of teachers, 17% on student management and discipline, and 11% on curriculum development. Since the study he had conducted in 1978, Doud noted that the figures represented an average of an additional 6 hours per week.

In a similar study on the time high school principals spend at work, Pellicer (1988) reported that the principals worked approximately 55 hours a week. After reviewing the results of the comparable study he had completed in 1977, Pellicer discovered that changes had not been made in the way principals allocated their time for daily tasks. The principals identified that the majority of the day was spent on school management, personnel, student activities, and program development. In summary, the principals surveyed believed that too much of their time was driven by the job demands rather than the educational goals.

Reisert (1992) studied the daily activities of elementary and secondary school principals in Indiana's public schools. Reisert noted that little differences could be found between the elementary and secondary school principals. Thirty-two percent of those surveyed felt that there was more paperwork generated by federal programs, regulations by state mandates, and local policies and procedures. The principals noted that this daily paperwork had increased in part due to the impact of the reports, the questionnaires, and the surveys generated by the public

agencies, the private agencies, the universities, and the professional organizations. The principals agreed that at least 40% of their day was spent completing paperwork. In addition, 34% of the principals reported that they lacked time to do their job more effectively (Reizert, 1992)

Also Reizert's research found that 29% of the principals reported that they were required to spend more time working on the problems generated by societal changes and societal ills, such as child abuse, latchkey children, single parent families who are unemployed, etc. Twenty-three percent of the principals surveyed were expected to do more each year in their role as principal, especially with special needs programs mandated by state. Additionally, with the increase in paperwork and the additional programs for students with disabilities, 20% of the principals surveyed reported that they were held more legally accountable for the individual actions of their students and staff (Reizert, 1992).

In the last series of questions, Reizert asked the principals what were the most difficult roles they had to assume as principal. The following percents represented the collected opinions of the respondents: 34% identified keeping informed and current of the regulations to make timely decisions, 30% stated being flexible and willing to compromise, and 36% focused on setting and maintaining a clear sense of purpose and direction as they kept the student first when making decisions (Reisert, 1992).

Murphy (1993) asked similar questions as Reisert. In his study, he asked the principals to express their concerns about the requirements of the position. The respondents believed the approach to better instruction was to spend time with

personnel and program planning issues. Yet the principals stated that too much of their time was spent on student behavior and district office issues.

As indicated by the research, the principal's role has dramatically increased over the last three decades. In reviewing the data on effective principals, researchers found that a difference existed between the effectiveness by which tasks are completed and students' achievements.

By the 1990's a second wave of educational reform surfaced. The reform has not necessarily been initiated by the community, but it is in response to the needs of the community. The following predication was made that "America's public schools and the educators in them would not survive the 1990's unless dramatic changes were made. The economic, the political, and the environmental imperatives influencing our society are changing. An extreme demographic shift in our society has defined who our students are and who they will be in the decade ahead" (Payzant & Gardner, 1994, p. 9).

Payzant and Gardner identified qualities of the future student population. They believe that the students will be more culturally diverse. The students will come from poorer single-parent homes that are not covered by health insurance. Payzant and Gardner suggest that new goals must be established to support the educational, social, and emotional needs of this diverse student population.

Student curriculum goals must be focused on developing skills in the areas of cooperative problem solving, communication, and the ability to make sensible political decisions to maintain our democratic system. Addressing the new educational goals involves a complete restructuring of the educational system beginning with the bottom of the educational bureaucracy (Gainey, 1994).

Additionally, researchers must study the way schools are administered and organized (Stronge, 1993).

"If schools are to meet the demands of today's changing society, then one of the key players in this process must be the principal" (Gainey, 1994, p. 29). The principal must be able to support a belief in a shared governance. The new role will be one that encourages a participatory management of the school by teachers and the community (Gainey, 1994; Rothberg & Pawlas, 1993).

The principal will be expected to develop strong collaborative and instructional skills. The principal must be able to collaborate with the community of teachers and parents to define and to communicate a mission or vision for the school's direction. The principal will be expected to delineate curriculum and to manage the instruction needed to carry out the mission (Krug, 1993; Rothberg & Pawlas, 1993; Sergiovanni, 1992) with primary emphasis on the students (Campbell, 1977; Harris, 1987; Sergiovanni, 1987, p. 6).

In a participatory management system of school governance, one of the new roles may be the role of problem seeker and solver (Gainey, 1994). The principal will need to use creative problem solving skills to gather the information or the resources and to adequately evaluate alternatives. Within a participatory school governance structure, the principal must be able to act as a team member by providing meaningful feedback to members as initiatives are discussed, to support decisions through implementation, and to offer constructive evaluation of the process and the effects of the group's decisions (Bradshaw & Kermit, 1994; Richardson & Lane, 1994).

Pellicer (1988) confirms the changing structure of school management in his research. In a comparison research on the principal's role between 1977 and 1987, Pellicer noticed a shift in perceptions of principals regarding their managerial role. In the first part of the decade, principals perceived good management techniques, leadership strategies, and curriculum/instruction to be links between the principal's role and effective school. The later part of the decade, the principals began to identify a shift toward collaboration skills and work within a management team.

Murphy (1994) believed that the principal's leadership role reflects the individual site versus a previous pre-service training philosophy. The role of the principal is to understand the inner workings of the school's history, norms, and values and to establish a vision or direction for the school. Working as a catalyst for change, the principal must be able to encourage a collaborative effort of the teacher and parent community to work together (Murphy, 1994).

Payzant and Gardner (1994) believed that the principal will also be responsible for the development of a school accountability plan. The principal must bring the community together to design plans that focus on the improvement of teaching and learning of all students. The principal must be responsible for holding each of the stakeholder groups (teachers, parents, and community) accountable for student outcome. Additionally, the principal must be able to recognize and work through resistance to reinforce the values and belief in the direction and goals of the school (Hoy, 1994).

As seen throughout the decades, the role of the principal changes to meet the demands of the society to be served. After reviewing research studies during the

most recent decade, Reisert (1992) found that external forces significantly modified the role of the principal. The present day administrator must be a political advocator while performing under more pressure and stress.

Some of the external forces are the student population at each school site, the political and legal decisions, the educational theorists, and the community that funds the schools. With varying demands on the role of principal, there is a need to increase the dynamism of the principal through training (Chopra, 1994; Mentell, 1993; Payzant & Gardner 1994). Training opportunities for principals represent the community's strong commitment to improving education. Participation in training opportunities represents the principal's desire for efficiency and effectiveness in performing the daily functions required of an effective leader (Chopra, 1994).

The role of principal is metamorphic, ever changing to meet the demands of an increasingly diverse student population. Not only will new curriculum and instruction strategies be developed, but the style of governance within the schools will be changing. In assuming an instructional leadership role, the principal's effectiveness as a leader will be evaluated through his or her ability to work collectively with the school community to accomplish specifically designed goals for the school as efficiently and effectively without losing site of the school's responsibilities to every student (Campbell, 1977; Harris, 1987; Sergiovanni, 1987; Payzant & Gardner, 1994).

Training Needs of the Principal

As the principal's role is evolving, the functions within that role are expanding. Yet many principals have not been provided with the training

necessary to help them become more effective in their new roles (Berkum, 1994; Rallis & Highsmith, 1986; Payzant & Gardner, 1994). Apparently pre-service programs need to be upgraded (Berkum, 1994).

Various national studies were conducted to identify the specific skills needed by the principal to assume a leadership role in the school (Anderson, 1989; Berkum, 1994; Heck, Larsen, and Marcoulides, 1990). In 1988, the Vermont Educational Leadership Task Force concluded from their research that pre-service training programs provided little relevance to what the participants encounter in initial administrative positions (Berkum, 1994). In the same year, Schmeider, McGrevin, and Townley (1993) completed a survey involving principals. The principals were asked to discuss their training needs in relation to their preparation programs. The principals' believed that their own preparatory program should have had a course that involved practical training. The same critique of present principal preparation programs has been presented by Murphy (1993).

Anderson (1989) indicated that university preparation programs do present knowledge about school administration. However, most programs did not help administrators to develop the necessary performance skills needed to transfer the knowledge acquired into their daily decision-making tasks. A connection between theory and practice must be established. If a theory cannot be transferred readily into the decision-making tasks, the effectiveness of the lessons is more difficult to evaluate and may not be applied (Heck, Larsen, & Marcoulides, 1990). Therefore, more practical training is needed (Krueger, 1993; Milstein, 1993).

In 1989, the National Policy Board for Educational Administration asked for a reform in professional development programs for principals (Murphy, 1993). The

support for reform came from the National Association of Secondary School Principals (NASSP) and the National Association of Elementary School Principals (NAESP).

NASSP believed that the changes in preparation programs are necessary due to an introduction of new technology, a failure of the preparation programs to adequately support the training needs of the principal, a need to review the present theory of education administration, and the additional external pressures for accountability. They have identified 12 generic leadership skills. In support of a reform in principal preparation programs, NAESP has also developed a set of 12 performance dimensions and strains. In 1990, the National Commission for the Principalship supported the national principal organizations by seeking a consolidation of the theoretical and practice components of the present training programs (Berkum, 1994).

Multiple articles were written and catalogued by ERIC's database. Stronge (1993) indicated that 110 articles between 1981-1985 and 268 articles between 1985-September 1990 concerned the principal's role. A variety of key training components or skills were explored. Most recently, a focus of the articles written concerning school reform has concentrated on the changes needed in the education administration preparation programs.

Current education administration theorists believe that the preparation programs should be designed to include the strategies needed to develop the policies and the procedures to address a diverse student population (Anderson, 1989; Anderson & Decker, 1993; Bridges & Hallinger, 1991; Milstein, 1993;

Murphy, 1993). Chopra (1994) addressed similar concerns over the diverse needs of the student population and subsequent role of the principal.

Chopra explained that the principal must be given skills in team building and trust building. The members of the staff should work as a team in school governance and goal setting. The team would assume accountability for two major goals. One goal is that the school adopts a philosophy of integrating a diverse population and creating a cohesive student body. The second goal is that a high standard of performance is achieved by all students. Such a philosophy has been labeled inclusion. Inclusion involves a team effort to improve the following services in the school: the teaching and learning activities, the assessment processes, the assumption of accountability for actions, the school governance, the process of integrating services for children, the professional development of the staff, the resource allocation strategy, the parent involvement, the public engagement in the school's program, and the ability to commit all actions into an integrated effort to ensure the successful outcome for all students (Chopra, 1994).

Other education administration theorists believe that the attention should be given to developing personal skills needed to facilitate a collaborative approach to the governance of inclusionary programs. The principal should be able to facilitate the decision making process (Mentell, 1993), to communicate effectively, to be open to divergent viewpoints (Daresh & Playko, 1989; Leithwood, 1993), to be an effective evaluator (Poston, 1992), to be supportive of the staff (Rutherford, 1985), and to be willing to learn (Senge, 1990).

Krueger (1993) stated that pre-service training programs must provide the skills that enable the principal to assume the role of a visionary, a facilitator, and

an evaluator. As a visionary the principal is able to project a plan for the future and establish specific target goals needed to obtain the goal. The principal must be able to facilitate the change process enabling members of the community, teachers and parents to take active roles in the problem-solving stages. As an evaluator, the principal must be able to evaluate the community's cooperative planning process, the decisions made by the building team, the commitment to carry out the mission, and the effects of any programs and proposals made by the team (Krueger, 1993).

Hoy (1994) stated that the principal must know law and ethics. To understand the legal issues requires knowledge of the legal context and content of various cases, an understanding of the logic behind the decision making of the courts, and the vocabulary associated with concepts.

As indicated by the brief sampling of proposals, researchers in education administration appear to be adding to the expectations of the principal's role rather than deleting from the expanded work load. Additional concern was expressed by Marshall and Gray (1992). They have expressed their concern about the lack of uniformity in the training and the selection of students for school administration programs. Marshall and Gray contend that the educators and the researchers have failed to establish a valid agreed-upon set of minimal qualifications for the school administration positions.

Murphy (1992) sited that a failure of the universities to agree of the preparation programs has resulted in programs that lack the rigor. Such programs are often haphazard in their recruitment practices. Murphy's review of dozens of research studies on the principal preparation programs concluded with the same

belief and concern as he indicated two years earlier when he highlighted the concerns of the National Commission for Excellence in Education Administration, 1987.

Berkum (1994) designed a model for the principal preparation programs. The design included the vital program of integrating the general knowledge concerning the education administration theories with simulations and field base experiences. Berkum placed the following topics under the category of general knowledge base: theory and practice in administration; legal, political, and ethical foundations of education, supervision and staff development; statistics, research, writing, and analysis; educational foundations, curriculum, and instruction; and fiscal responsibility.

Under the category of professional skills, Berkum had three major areas of concentration. Professional responses are personal, role-related, and action. Within the area of personal responses, Berkum indicated that a principal should represent an individual with high educational values. The individual could be characterized as one who is personally motivated, has a range of interests, and is sensitive. Under role-related responses, the principal should exhibit decisiveness, judgment, organizational ability, and the ability to analyze problems. The third category represented the traits that support the actions or decisions the principal makes. These qualities are leadership, oral communication, stress tolerance, and written communication. Using the base knowledge as a foundation for goal setting, governance, problem solving, team building, etc., the principal is taught how to integrate knowledge and performance.

It should be noted that in Berkum's curriculum outline, emphasis is not placed on one particular skill or role. Such a philosophy compliments the present concern by some education administration theorists "that a managerial role for the principal is antithetical to high-quality instructional leadership" (Stronge, 1993, p. 2).

Stronge (1993) demonstrated a concern in the present theorists' views that the managerial role must give way to the instructional leadership role. The principal's role must turn back to the original role of principal-teacher as defined in McCurdy's writings (1983).

Stronge's article (1993) reported that other theorists are concerned about a reliance on the single focused role of instructional leader. For example, Fredericks' and Brown's (1993) article complimented Stronge's views. Fredericks and Brown noted that the research on "Effective" schools supported the premise that no single style of management is appropriate or required to attain an "Effective" school. A school administrator must be able to handle situations as they occur by approaching each one on an individual basis.

Apparently, the university education administration programs need to assume a new philosophy of the role of the principal before designing the preparation programs. When delineating the various tasks completed by the principal, the tasks do not have to be catalogued under specified roles. Rather than isolating the role of the principal, the role should be seen as conduit for the philosophy of the school and the external pressures affecting that role. Therefore, training programs must be varied, individualized, and practical to be most effective.

Universities providing principal preparation programs have a responsibility to provide the opportunities of blending base-knowledge concerning education administration with simulations and field-base experiences. Blending the theory with the practical application experiences can encourage the development of additional professional skills required to carry out the multiple responsibilities of the role of principal (Berkum, 1994). A university-wide consensus on the philosophy of principal preparation programs is critical to the direction of education in general (Marshall & Gray, 1992; Murphy, 1993). Additionally, the direction must be supported and continually evaluated by educational administrative theorists (Thompson, 1992).

Issues Concerning the Administration of Special Education Programs

With the 'Effective' schools movement and the focus on meeting the academic and emotional needs of a more diversified student population, the principal's attention has been turned to the effective management of two important aspects of the school program. These aspects are the management of special education programs and discipline within the school, both of which affect the academic and emotional needs of the student population (Anderson & Decker, 1993; Tourgee & DeClue, 1992).

The roles and responsibilities of building-level administrators are defined by the following: passages of the laws, The Education of the Handicapped Act of 1975 (EHA) and The Individuals with Disabilities Education Act of 1990 (IDEA); federal, state, and local mandates; and current educational issues (Carver, 1992; Herbert & Miller, 1985; Mayer, 1992; Prillaman & Richardson, 1985).

The role of the principal has been clearly defined which enables the principal to effectively carry out the mandates required by the laws and regulations. Additionally, researchers have found that the principal's beliefs, experiences, and legal knowledge are significant factors to the success of special education management and instructional leadership (Burrello & al., 1988).

Management of special education programs. Burrello and Zadnik (1987) designed a model that delineated the principal's roles for site-based management of the special education programs. This model integrated the following variables or expectations for the role of the special education administrator: instructional climate, instructional organization, and student outcomes.

Within the instructional climate component of the model a variety of variables are known to impact on the educational services provided to students with disabilities. The variables include: the free movement within the plant facility, the opportunities for social and personal relationships, and the consistent and fair discipline of students. The instructional organization component of the model includes the following concerns: academic programs, including occupational and community-living programs; student placement, assignments, and evaluation; class structures; building level teacher-teams; emergency procedures for students with severe health impairments or physical impairments; and mainstreaming and inclusionary programs.

The student outcome component on the model focuses on the following student achievements: academic achievements, self esteem, responsibility, citizenship, ability to work in a team, work experiences, relationships, and skills in independent living. These objectives are a function of the administrator's ability to set goals; plan; monitor (prereferral and IEP process); schedule and allocate resources; select, evaluate, and develop staff; and model the philosophy of free and appropriate education when in conferences, talking to parents, and in one's routine behavior (Burrello, 1993).

To complement the work of Burrello, Tourgee (1995) has completed a "Best Practice" manual for principals. First, Tourgee has outlined characteristics of effective leaders that include the following skills: making good judgment decisions, taking decisive actions after carefully analyzing the problems, and demonstrating and communicating sensitivity to the concerns of special students. In addition, leaders in inclusionary or mainstreaming settings with special

education students must have a knowledge of special education programming and the laws that govern the operation of special education services.

Furthermore, Tourgee and DeClue (1992) identified a number of behaviors observed in principals who facilitate successfully integrated special education programs.

1. The principal clearly states his/her position about the education of students with disabilities. The values and beliefs of the faculty/staff are shared and a collective value's statement is generated by consensus.

2. The principal is visible, proactive, and committed to the stated values.

3. The principal's expectations are clear and he/she has a good written and verbal communication skills.

4. The principal provides ample time for preparation and planning.

5. The principal encourages parent involvement.

Additionally, the principal has a legal and a moral responsibility to provide appropriate education in the least restrictive setting for special education students. A least restrictive setting pertains to the classroom setting where the services will be delivered. The range of setting options begins first with the regular class (Chopra, 1994; Sirotnik & Kimball, 1994). The philosophy of servicing students with disabilities in the regular class rather than in a pull-out program has been labeled inclusion (Anderson & Decker, 1993; Rude & Anderson, 1992; Stainback & Stainback, 1984; Will, 1986).

It should be noted that inclusion differs from a philosophy labeled mainstreaming. Mainstreaming refers to integrating children who are disabled with their non-disabled peers for a portion of the day. Usually the integration

occurs when the regular education program does not have to be significantly modified to accommodate children with disabilities, such as nonacademic programs (McCarthy, 1994).

Inclusion represents a philosophy that all students can obtain higher standards of performance, including students with disabilities. Inclusion involves a team effort to improve the following services in the school: the teaching and learning activities, the assessment processes, the assumption of accountability for actions, the school governance, the process of integrating services for children, the professional development of the staff, the resource allocation strategy, the parent involvement, the public engagement in the school's program, and the ability to commit all the actions into an integrated effort to ensure the successful outcome for all students (Chopra, 1994).

Tourgee (1995) suggested specific ways in which the effective principal helps to establish a positive climate for inclusion and integration.

1. Allocate time in informal staff settings to interact with staff about educational values for students with disabilities.
2. State the consensus goals in a positive language that communicates a "one staff for all children" message.
4. Display the goals in the building and state them in written communication to the community on a regular basis.
5. Spread the special education classrooms throughout the main part of the building to increase the amount of possible socialization.
6. Include special education classes when doing informal classroom visits.

7. Daily seek out the more challenging students (disabled and non-disabled) and positively interact with them.
8. Attend eligibility meetings as often as possible.
9. Support regular education teachers who are mainstreaming and integrating students.
10. Include students with disabilities in recognition programs which celebrate the success of all students.
11. Incorporate special education teachers in decision making of the school.
12. Encourage teaming efforts between general and special education teachers.
13. Plan regular informal settings for staff to have dialogued about shared values
14. Provide special education teachers with scheduled consultation time to work with teachers during open periods.
15. Provide staff development activities that focus on collaboration skills and conflict resolution (Tourgee, 1995, p.4).

Prior to Tourgee's "Best Practice" list of suggestions for principals, Hord (1992) discussed the important role the principal had in integrating students with disabilities into every facet of the school life. Hord stressed the importance of creating an atmosphere and culture for change, of articulating the vision of inclusion, of planning and providing the resources needed to implement the program, of training and developing monitoring techniques to evaluate progress, and continuing to give assistance once the program is implemented.

Tompkins and Cooper (1993) supported Hord's assessment of the role of the principal in developing inclusionary programs. They stressed the importance of

planning for the effective use of building space, personnel, and other resources. The authors acknowledged that planning may involve various political interactions at the local, state, and federal levels.

The success of integration and mainstreaming of special education students relies heavily on the attitude of acceptance from the central and building administrators, faculty/staff, students and community. In the school setting, the principal sets the tone for acceptance by modeling a positive attitude. If the principal's words and actions communicate the value that all children can learn and that they learn best in a natural school setting, it is more likely that the students and staff will support the disabled students and the integrated activities. An atmosphere of acceptance will foster the development of student attitudes in which they learn that individual differences are meant, not to divide, but to enrich lives (Tourgee, 1995, p. 4).

Tourgee has identified some of the best practices the principal can implement to improve the acceptance of students with disabilities.

1. Conduct parent workshops to further educate them about disabled populations in the school.
2. Encourage participation of students with disabilities by arranging for transportation of extracurricular activities.
3. Place the disabled student in a helping role with non-disabled students.
4. Provide students with disabilities with opportunities to take on jobs of responsibility so they are viewed as contributors to the school community.
5. Ensure that students with disabilities have the same daily schedule as their non-disabled peers.

As seen in the expectations of Tourgee (1995) and Burrello (1993), the principal's attitude concerning the implementation of the laws and regulations governing special education programs is critical to the effective management of the programs themselves. The courts, as well, have viewed the role of the principal in implementing special education programs to be a critical aspect of education. An area of controversy that has received attention from the courts and involves the principal's attitude concerning the implementation of the laws is the placement setting for students with disabilities.

A controversy has begun between theories of educational service delivery models and the legal responsibilities that must be upheld by the schools (Smelter, Rasch, & Yu, 1994). The scope of the rights of students with disabilities and their placement continues to evolve as courts are called on to interpret various features of IDEA of 1990. For example in 1991, a New York City School District's Board of Education was found in error when the school system placed a student in a resource room program. The state's Commissioner of Education ruled that the resource room program was unduly restrictive for an eight-year-old learning disabled student because it required his removal from the regular classroom. Instead the district was ordered to provide consultant teacher services, even though such services were not presently available with the district. (Green v. Rome City School District, 1991)

In similar cases in California, the Third Circuit Court of Appeals ruled that school districts have an affirmative obligation to consider placing students with disabilities in regular education classes with supplementary aids and services before they explore other alternative placements. This decision of the courts was

supported by the 1991 decision of Oberti v. Board of Education of the Borough of Clementon School District (1991) and the 1994 decision of Sacramento City Unified School District v. Rachael (1994). In reviewing these decisions, the court applied a four-factor balancing test drawn from a combination of prior court decisions of least restrictive environments (LRE). The test must consider the educational benefits of such placement, the child's effect on the teacher and classmates in regular classes, the non-academic benefits of such placement, and the cost of the regular education placement.

An additional concern with inclusion is one over funding. Fiscal concerns over inclusion might result in a reduction in funds targeted for children with disabilities. Many state school finance systems will need to be revised for inclusion to be encouraged since the allocations may be tied to locations where services are provided (McCarthy, 1994).

Anderson and Decker (1993) noted that school districts may view inclusionary programs as an avenue for cost-saving program modifications. Yet the law states the creation of the annual budget has no effect of controlling the special education costs. Special education services may even require the transfer of funds from other programs or combining classes to reduce salaries of staff to fund special education (Dragen, 1994). Huestis (1993) suggested that funding systems should allow resources to be used to educate all students without impending ramifications or penalties.

The principal is often caught between political concerns over funding special education programs and philosophical disagreements over the benefits and

barriers to effective programming of such services. For examples, the following excerpts have been taken to explain the controversies:

McCarthy (1994) explained the following position of the National Association of State Boards of Education (NASBE). NASBE published a report in 1992, supporting full inclusion. Furthermore, NASBE stipulated that the portion of students labeled for special services and the hours of service the students are given must be relatively uniform for all schools within a district, reflecting the ratio for society in general.

In contrast, the Learning Disabilities Association of America has taken a stand against full inclusion for all children with disabilities and reiterated its support for a continuum of placement options (LDA Newsbrief, 1993). In contrast, the Council for Exceptional Children has adopted a policy advocating inclusion of children with disabilities in neighborhood schools (CEC Policy Statement, 1993). Among the leaders in the field of special education, controversy exists between the theorists who advocate full-inclusion for all students and the theorists who advocate a continue of services to be offered (Algozzine, Maheady, Sacca, O'Shea, & O' Shea, 1990; Reynolds, 1988, 1989, 1991).

In support of the CEC Policy Statement, the American Federation of Teachers (AFT) has also expressed a skeptical view of full inclusion (Richardson, 1994). Richardson claimed that AFT has called for a moratorium on the placement of children with disabilities in regular class room while educators review how to make such placement work.

The National Education Association (NEA) has taken a more moderate stance and has advocated "appropriate inclusion" (Hoff, 1994). Hoff reported that NEA believes that students with disabilities should be taught in regular classes, only if, teachers are prepared to assist them. Schools must train teachers and allow them additional time to plan for teaching disabled students. NEA has taken the position that the administration should reduce class size when classes include children with disabilities.

The National Association of State School Boards of Education (1993) in writing their report, Winners All: A Call for Inclusive Schools, recognized the importance of leadership at the building level if the notion of inclusive schools is to succeed. Specifically, Rude and Anderson (1992) stated that most of the barriers to effective inclusion have been attributed to administration disinterest and lack of administrative support for the process.

Katsiyannis (1994) agreed with Rude and Anderson. The school principal is ultimately responsible for ensuring the appropriate education of all students, including the students with disabilities. The principal must provide the leadership in ensuring compliance of the law (Brennan and Brennan, 1988).

The principal's attitude affects the spirit of the implementation of the law and the school climate in which the special education program functions (Burrello et al., 1988; Farley, 1992). Dozier-Dazz and Kise (1984) reported that when the principal views disabled persons in an accepting positive manner, he or she perceives fewer problems in implementing the law. Additionally, the principal with a positive attitude toward students or persons with disabilities is better able to describe his or her own rationale for various special education programs within the building (Junkala & Mooney, 1986). Furthermore, the principal's attitude toward students with disabilities has been proven to affect students' levels of comfort and potential academic achievement (Goodman, 1985; Junkala & Mooney, 1986; Van Horn, 1989).

Moreover, studies have found that students are affected indirectly by the principal's attitude towards the disabled. A significant relationship has been found to exist between a principal's attitude and teachers' attitudes toward students with

disabilities. A positive or negative attitude of a principal will be reflected in his faculty's attitude (Burrello et al., 1988; Farley, 1992).

Hyatt (1987) studied elementary school principals' perceptions regarding their own attitudes and competencies toward special education programming. She found that a relationship exists between their preparation and their experiences in administering special education programs. Valesky and Hirth (1992) in their state-wide research revealed a "good deal of separateness, disjointedness, and inefficiency in services to students with disabilities due to the lack of clarity of federal and state regulations regarding building administration of special education programs" (p. 3).

If principals appear to be inadequately prepared to administer special education programs, then, in-service training would naturally be considered an avenue for staff development. Weinstein (1989) reviewed the effectiveness of various staff-development training programs for administrators. His research was not limited to any particular format of training or delivery agent.

Weinstein reported that administrators who had been offered in-service training (either through the states' departments of education or local school divisions) remained ineffective by not taking full responsibility as instructional leaders for their schools' special education programs. Weinstein concluded that principals were unsure or unaware of basic guidelines for student placement, curriculum, and the exit process from special education programs. Hirth and Valesky (1992) research supported Weinstein's research. Hirth and Valesky stated that "Principals' knowledge of special education law is not sufficient to ensure that

mistakes in implementation of procedural safeguards and/or provision of educational services will not occur" (p. 136).

Carver (1992) found similar findings in Virginia to support the nation-wide study of Hirth and Valesky. Carver surveyed building level administrators' perceptions of core special education competencies deemed necessary for effective administration of special education programs. The study revealed that out of the seven major competencies, understanding federal and state administrative regulations was ranked the most significant competency. Yet the respondents considered their own level of legal knowledge relative to other competencies to be moderately low. The vast majority of the principals had no teaching or administrative experience in special education in their present setting nor had they taken college credits in special education.

Moreover, Carver's research indicated that the principals were making subjective judgments in matters pertaining to special education programs that were not supported by the regulations. In making subjective judgment the principals were taking risks. Some principals indicated that at times they had questioned the assumptions upon which they had operated their special education programs or previous decisions regarding the process of special education management.

Similar research had been conducted five years earlier. Dwyer (1985) had surveyed many building-level administrators and found that the majority of the principals were not able to assume a leadership role for special education programs. More recently, the research by Anderson and Decker (1994) indicated identical concerns over the principal's training. They stated that in many cases the

principal may not be aware of his or her responsibilities with the special education mandates. Yet an additional problem was found by Weinstein (1989). His research revealed that there were no mandates, few state certification requirements, and few established university-training programs that trained principals adequately to assume the leadership roles for special education. Many principals are not aware of the procedural safeguards governing referral for services, placement procedures, programming, annual education plans, and staff development programs for teachers working with disabled students (Anderson & Decker, 1994).

Without the knowledge concerning special education programs, many principals have made decisions that have resulted in legal consequences. As seen in the case of Helbig v. City of New York (1993), a principal was held responsible when an error was found in reporting standardized test scores of a learning disabled student. In two prior decisions the OCR found in favor of the student instead of the principal and school board because of inadequate evaluation and placement procedures for students with Attention Deficit and Hyperactive Disorder (ADHD) in the cases involving Gross (MI) Township School (OCR, 1991) and in Ventura (CA) Unified School District (OCR, 1991).

In a decision by OCR the Rosely Union Free School District in New York (OCR, 1993) was found out-of-compliance when the school system labeled a student emotionally disturbed. OCR had found the eligibility process inadequate, because the school psychologist failed to support the emotionally disturbed label by not observing the student in the educational setting and only using one

examination for the eligibility decisions. The principal had failed to supervise the eligibility process.

Additionally, the principal must take a direct involvement in the individualized education plan to ensure that an appropriate and affective climate is created and maintained. In New Hampshire, a school administrator was found in error by the OCR when an emotionally disabled student with ADHD was repeatedly sent to the principal's office for inappropriate and disruptive conduct in the classroom. He was found to be disciplined for behaviors that were beyond his control due to his disabling conditions. Moreover, the district failed to formalize a plan for addressing this misconduct. Therefore, the removal of the student from the classroom denied him an equal opportunity to participate in and benefit from the school district's education program and in violation of the regulations in Prince George's County, Maryland Public School (OCR, 1991). It is a cooperative and positive atmosphere within the school that can enhance the decisions concerning program options (Anderson & Decker, 1994; Hord, 1992; Slavin & Steven, 1991; Wang & Birch, 1984).

Multiple cases arise each year related to program accessibility and the responsibilities the principal has for the physical facility. For example in 1993 in Edwardsburg, Michigan, the public school district was taken to court, because the school did not have accessible entrance, restrooms, labs, etc. that were usable with disabled persons(OCR, 1993). In an Akron City, Ohio school, a child was denied access to the music room, because it was in the basement. The child was receiving private instruction in music, but the spring concert was held in the music

room where the student could not take his wheelchair. The courts found that the building was not assessable (OCR, 1994).

In another similar court case, the principal was held legally responsible for being alert and proactive for students with special needs. The OCR investigated a complaint that a principal allowed a special education teacher to place her students at a separate table in the cafeteria. The district's policy of allowing special education teachers to decide whether their students would eat lunch with non-disabled students failed to consider the individual needs of the disabled students to be integrated at lunch to the maximum extent possible. in the Stafford County Public School, Virginia (OCR,1990).

Wheelock (1992) indicated that leaders must influence change by analyzing policies and rules to determine whether present mandates facilitate or inhibit inclusion and integration of special students. New policies and rules may need to be developed. Unfortunately, many principals are not always prepared with the knowledge, attitudes or skills to deal with the current and future interests of special education students and their families (NPBEA, 1993; Sirotnik & Kimball, 1994).

Sirotnik and Kimball pointed out that not only are principals not prepared, there appeared to be no clear direction from the experts for the renewal of preparation programs. Sirotnik and Kimball stated that the National Policy Board for Educational Administration (NPBEA) (1993) outlined 21 performance domains for principal training programs. Not one of the domains outlined by NPBEA contained substantive or specific treatment of special education concepts, issues, or practices. In a further search of the reports of NPBEA between (1988-

1992), Sirotnik and Kimball could not locate any content explicitly related to issues and concerns in special education.

The Council of Administrators of Special Education (1993) reported that special education issues and concerns should be included in pre-service and in-service programs for principal certification. If preparation programs will be using the most current textbooks on education administration, Sirotnik and Kimball reported the most currently used textbooks on education administration included very few references to special education. Only five out of the 26 texts reviewed provided a complete discussion of special education issues and concepts. The researchers found 11 out of the 17 books written specifically on special education administration dealt with the role of the building principal in the special education program. Therefore, university preparation programs must supplement textbooks with current articles that address the expanding role of the principal for special education administration.

The research of Sarason and Doris (1992) documented the statement that a limited number of preparation programs existed for principals who are building administrators of special education programs. They noted that those existing programs had systematically separated regular and special education administrative training. Conversely, principals relied on central office special education for direct support and consultation, rather than directly involving the building principal in special education programming.

"The time is ripe to reexamine the changing role of the administrator" (Hill, 1993, p. 16). The principal faces new challenges each day that may expand the

role of the principalship. To prepare the principal to make intelligent and legally correct decisions, inservice training must be offered on a regular basis.

Disciplining students with disabilities. "The American public has ranked school discipline as the most pressing problem facing education for the past 15 years" (Golden, 1993, p. 12). Discipline concerns have been emphasized in the "Effective" schools research. Researchers explained that students require an orderly and safe school environment that allows for productive instruction. "The principal has long been recognized as responsible for maintaining order and developing a positive climate for learning in their building. However, the use of disciplinary procedures excluding students with disabilities requires special care and consideration" (Golden, 1993, p. 12).

Brennan and Brennan (1988) assert that the principal's disciplinary actions regarding the student with disabilities, especially the students with emotional disturbances, necessitate strict adherence to the law. To support the goal of strict adherence to the law, Leibfried (1984) strongly maintained that principals' legal knowledge must be current. His research has shown that the law and regulations continually change. Some of these changes or additions may represent changes in the legal document itself, or changes in the language/or concepts of the law. Golden (1993) concurs with Leibfried and further states that the principal must also be aware of the litigation history and court decisions concerning special education.

A key component of the law is the regulation governing exclusion and due process. A student cannot be removed from a setting or excluded from a setting for longer than a specified time. Exclusionary discipline specifically relates to

short term suspension that represents either in-school or out-of-school suspension. The regulations specify that a student cannot be excluded for more than 10 days consecutively or in a series without a causality hearing or due process hearing. The student has a right to an education that can not be deprived due to the disciplinary action (Ellis & Geller, 1993).

The two landmark cases concerning suspension heard during 1975 established the tone for subsequent disciplinary cases. As cited in the article "Disciplining Handicapped Students: An Administrator's Dilemma" by Ellis and Geller (1993), the Supreme Court in the Wood v. Strickland (1975) stated the education is a right of property and liberty. Therefore, an individual can only be deprived of these rights through due process of law. A student who is to be expelled is temporarily being deprived of his/her rights and must be accorded due process.

In Goss v. Lopez (1975) the judge clarified the decision made in Wood v. Strickland hearing. The decision covered the following major points:

1. Suspension is a legitimate educational tool.
2. Suspensions may not exceed 10 days and expulsions are defined as more than 10 days.
3. Suspended students are entitled to protection under the Due Process Clause of the U.S. Constitutions, and that due process requires either an informal or a formal hearing.
4. Due process accorded suspensions involve informal hearings. An informal hearing involves: giving an oral or written notice of the hearing, informing the student of the charges, giving the student an explanation of the evidence that the authorities have, and allowing the student to present his or her side of the story.

5. Due process of a formal nature, but not required of suspensions of 10 days or fewer, includes: an opportunity to secure counsel; the right to call, confront, and cross examine witnesses; and the right to have the case heard by an impartial hearing officer.

6. In cases where the suspended individual poses a threat to persons, property, or the education of others, the person may be immediately removed, but a necessary notice and informal hearing should follow as soon as practicable (Ellis & Geller, 1993).

The next case that presents a landmark decision of expulsion involving special education students was Stuart v. Nappi (1978) and later confirmed in Sherry v. New York State Education Department (1979). In this case the court stated that the following issues must be considered when using expulsion as a disciplinary action:

1. Inappropriate placement may be a cause of a student's misbehavior.
2. Students are to remain in their current placements while the court cases are pending.
3. Expulsion is a change of placement, and only the students IEP Team may initiate such a change.
4. Suspension is not to be considered a change of placement.
5. Schools have a range of options in appropriately placing students with handicaps (Ellis & Geller, 1993).

The following year another case added to the dimension of disciplinary actions the principal must consider. The case was Doe v. Koger (1979). The judge ruled that a school's acceptance of funds for special education activates the regulation

that prohibits the school from expelling students whose disability caused them to be disruptive. The school must consider a more restrictive, appropriate environment. Slenkovich (1984) has reviewed the subsequent court case that discussed a misconduct-behavior link to a disability. In S-1 v. Turlington (1981). In this case, the judge stated that before a handicapped student can be expelled, a trained and knowledgeable group of persons must determine whether the student's misconduct bears a relationship to his or her handicapping condition. Furthermore, the judge recognized that expulsion is a change in educational placement; therefore, the student must be protected by procedural safeguards and educational services during expulsion. The decision by the courts was subsequently confirmed in the Kaelin v. Grubbs case (1982).

The most recent court case to appear before the Supreme Court was Honig v. Doe (1988) in which the court ruled that a removal of a student for more than 10 days can be accomplished when the district and the parents can agree on an interim placement pending a review of the student's current placement. An informal agreement can be made until a formal agreement can be reached. Additionally, school officials can seek court relief for a change in a student's placement over parent objections by showing that keeping the youngster in the present placement poses a threat of injury to the student or others (Ellis & Geller, 1993).

Understanding the laws and the litigation concerning disciplinary practices regarding students with disabilities are critical responsibilities. The principal must be aware of the "delicate balance" the courts have provided. The pivotal point of the disciplinary issue involves the principal's decision concerning the

behavior-handicapped linkage (Center & McKittrick, 1987; Ellis & Geller, 1993). Moreover, the principal must be able to make appropriate decisions based on personal knowledge of the student. As an effective leader, the principal must provide in-service training to ensure the teachers will design and implement behavior management plans that include positive reinforcement techniques to encourage desired behavior and to reduce unacceptable behaviors.

Hill's (1993) research provides insight into special education and discipline issues. Her professional paper, "The Realities of Principals," helps to summarize the concerns regarding the principal's role in special education programming. Hill's studies showed that the principal spent nearly one third of the total daily work routine on conflict and special education issues. Conflict or special education issues alone consumed more time than both public relations or supervision. Hill found that the training the principals received was invalid for two thirds of their responsibilities. Moreover, one third of the training needed to complete their daily responsibilities were not even addressed in their college preparation programs.

The legal and ethical responsibilities of the principal who administers special education programs are diverse. Yet these responsibilities are regulated by the laws governing such programs. Critical to the effective leadership of these programs is the attitude of the principal toward special education services and the students they serve. The principal's attitudes set the "tone" of the climate of the building regarding the inclusion of students with disabilities. Additionally, the principal's attitude affects the staff development training provided the staff.

Conversely, a principal's own training affects the way he or she feels about special education.

Studies reveal that training has not adequately prepared principals to demonstrate leadership effectively and to advocate for special education programs for the students served within those programs or for the staff who service those students. One area where in-service training has been inadequate and that must be addressed is legal knowledge and implementation. "The time is ripe to reexamine the changing role of the administrator" (Hill, 1993, p. 16) and the training required to carry out that role.

Computers and School Administrators

Technology, specifically the technology of microcomputers, is augmenting the educational leadership of school administrators and has been supported by researchers since the 1980's (Herman, 1988; Mojokowski, 1986; Rees, 1987; Sharman & Cothorn; 1986; Walters, 1985). Computer technology is viewed as an opportunity for educational administrators to "blend school effectiveness, leadership, and management development into a program for revitalization" (Mojokowski, 1986, p. 45).

Chen (1989) foresees the potential power of information that can be marshaled by the computer. Today's computers have the capacity to store, organize, and analyze information to create multifaceted management information systems to support school administrators' decision-making. Yet Herman (1988) maintains that the availability of information as currently stored and retrieved by school administrators has outstretched its utility. At best, Herman states, such information represents an important resource base for decision-making and action.

At worst, it represents a disorganized and overwhelming set of unknown messages. Although the outcome is unclear, Chen (1989) and Herman (1988) agree with Mojokowski, stating that computers can have a profound impact on school administration as principals begin to use them for instructional purposes and for assisting in the administrative function of managing information and data.

To harness information as a resource for decision making, administrators must begin to use computers for more than automating routine tasks. Administrators have the opportunity to ask "what if" questions and apply the computer in simulations to answer these questions. Ideally, data or information that is easily assessable should allow for a greater number of alternatives to be considered in the decision-making process (Pogrow, 1985). Yet the power of the computer's storage and retrieval systems is virtually untapped by school administrators because of their lack of training and/or appropriate software.

Tetenbaum & Mulkeen (1986) believed that school superintendents should encourage their school administrators to attend a variety of computer training workshops. Workshops to train administrators to use computer-assisted software that expedites routine tasks are important because these programs allow the administrator's time to problem solve using the computer. When an administrator feels comfortable using the computer, he or she will foster a positive attitude toward computer use in the school and will encourage the staff to become computer literate.

Almost ten years earlier, Mintzberg (1973) had made similar remarks. Mintzberg believed that an administrator must be competent using a computer for basic operations. Mintzberg felt that a trained administrator could become

reasonably competent with computer software and could manipulate the software to suit his or her own programmatic needs. More fundamentally, perhaps, the administrator must acquire a positive attitude toward change in general and gain a greater confidence in utilizing the information. Mintzberg believed that a principal's level of competence directly influences his or her ability to be better consumers of computer technology.

Traditionally, state Departments of Education have provided workshops for administrators in software application. Often, the training programs have been conducted by the commercial software designers. Additional training workshops have been conducted based on surveys of administrators' needs and future demands for information.

Nationally, and in Canada, researchers in education administration completed studies focusing on the administrative uses of computers (Beck & Spicer, 1988; McLean, 1986; Walters, 1985). As early as 1980, one nation-wide survey established that approximately 31,000 microcomputers were in the nations' public schools (Beck & Spicer, 1988). Specific findings of the survey concluded those school administrators not only had personal microcomputers at their schools, but were using them for varied administrative tasks involving data bases and word processing.

In Canada, Rees' (1987) report documents research that was carried out on a sample of Ontario secondary school principals in May 1986 to investigate the ways in which educational administrators, as planners, can use the computer. Through questionnaires, data were obtained to describe the current situation as well as a preference for future usage of computers. On the basis of a return rate of

37 percent (N=205), 52 percent of those returning the survey were using IBM personal computers and 33 percent were using IBM compatible computers. Rees concluded that available hardware dictates software selection and training accordingly.

Additionally, Rees (1987) showed that the usage of computers centered mainly on word processing, data storage, and data collection. Word processing was used to create and link reports and to implement electronic mailing systems. Also various statements pertaining to school structure and philosophy were stored in computers. These statements served as alternatives that were weighted when problems had to be solved, based on district and schools' policies, goals, and objectives.

The research by Rees (1987) stated that administrators were using computers to store and retrieve data to complete a whole range of tasks. Among these tasks were the following:

1. to design students' schedules;
2. to register students;
3. to calculate statistics on students, classes, and grades;
4. to monitor discipline, attendance, and attrition problems;
5. to describe student services;
6. to program and service assessments of students;
7. to develop and score test items and batteries;
8. to monitor and service various students' and teachers' requests;
9. to take inventory, purchase, supply, and control equipment;
10. to allocate and monitor equipment and room use;

11. to make a school budget;
12. to design and maintain the school calendars;
13. to carry-out school-based assessments;
14. to catalogue and checkout material from the library;
15. to complete cafeteria accounting;
16. to store typesetting standards for various newsletters.

Rees' report upholds other studies concerning various uses of computers for data storage and retrieval (Cheever, 1986; Evans & Bennett, 1986; and Gatley, 1986). Also Rees supported similar findings related to factors, both internal and external to the organization that thwarted the diffusion of technology into an organization (Barbour, 1987).

Rees found that most administrators could offer a variety of reasons why they did not use technology to help them with their daily tasks. Some administrators said they did not have enough time to implement technology, while others claimed they either did not have enough support from their school system or else there was insufficient capital to sustain the technology. Some administrators admitted that it was their fear of the unknown that kept them from using technology to help them in their work. Those individuals indicating constraints to their computer use for administrative tasks postulated that appropriate and timely training programs, if in place, would outweigh their fears and increase their computer usage. The administrators surveyed believed that an increase in computer usage in daily tasks would help to eliminate the stress involved in their roles as educational administrators.

In the United States, a nation-wide study by Leithwood (1987) reported findings similar to Rees (1987) regarding computer usage. Leithwood's research found that computer training can increase computer skills and innovative application.

Leithwood [based on a 57% (N=110) return from 44 school districts representing 193 schools] found that over 80% of elementary, middle, and secondary school administrators were using computers for word processing and students' scheduling, bus routes, and grades. Over 50% of the administrators were using computers for attendance and budgeting. The respondents believed that computer usage would increase and would continue to be helpful in their daily administrative functions. Twenty-one percent of the elementary principals, 61% of middle school principals, and 75% of secondary school administrators stated that computers were very important in performing their daily administrative tasks.

Leithwood's research complimented reports from several state-wide surveys (Beck & Spicer, 1988; McLean, 1986; Walters, 1985). In 1982, Beck completed two separate surveys in Texas. The first survey involved elementary school principals [based on 55% return (N=219)], and a second survey [based on a 61% return (N=1,191)] summarized Texas' secondary school administrators' use of computers. The return rate identified the present users of computers, among whom 60% indicated that microcomputers were used exclusively in their schools. Beck stated that the most popular administrative use of computers among Texan school administrators was student scheduling, followed by reporting of grades and attendance. Yet only one principal out of five reported a level of computer literacy

of sufficient magnitude as to make the principal a decision-maker or prime mover regarding computer use on his or her campus.

In 1985 Walters completed (although he did not publish) a dissertation that surveyed secondary school administrators' computer usage. Basing his report on a return rate of 82% (N=238), Walters found that of the Pennsylvania secondary school administrators responding to the survey, 95% were using microcomputers and 77% were using computers for administrative use. None reported a fear of using the computer. Twenty-four percent had been using a computer for administrative purposes for over six years, 24% had been using the computer for 4-6 years, and 42% had been using the computer for 3 years or less.

McLean (1986) reported that Oklahoma secondary school principals were using microcomputers to complete daily administrative tasks [based on a 66% of return (N=625)]. McLean learned that increased education and increased knowledge of the microcomputer tended to result in increased administrative usage. As did other studies, McLean noted that those who identified themselves as users were completing such tasks as: scheduling, word processing, and recording student attendance with computers. McLean wrote that computers were enhancing the users' access to information through their storage and retrieval capabilities.

Specifically, in his 1986 study, McLean's research supported the previous writing of Pogrow (1985a). In 1985, Pogrow stated that computers in school offices reduced the amount of paperwork between 20% to 70%. In 1986, Pogrow amended his earlier study to report that the computer possessed the ability to reduce normal paperwork by 50% to 90% (1986b).

Three most recent studies in Virginia support the findings of other states. Walters (1985) surveyed secondary school principals and found that 98% of the principals responding to the survey had been using computers for administrative functions (N=238). Greater than half of the principals had been using the computers for at least four years. Over 50% of the principals were using computers attached to mainframes in the central offices, providing a direct link to support staff.

In 1986, Sharman and Cothorn (N=1,125) surveyed elementary school principals. Similar to the Walter's study, the majority of the principals surveyed were using microcomputers. Seventy-four percent of the sample survey indicated that using computers for administrative jobs reduced their work load by at least 30%. Thereby, increasing productivity that freed time to provide instructional leadership for the staff. Sharman and Cothorn cited that a growing dependence on computers coupled with an ease in training obstacles were positioning computers for a rapid future growth in school administration.

In 1989, Lee Armistead followed up the Sharman and Cothorn (1986) research. Their study provided information regarding computers as an administrative tool by secondary school administrators in Virginia [(N=238) return rate of 82%]. Armistead found that over 90% of those surveyed were using computers for administrative tasks. Armistead stated that 42% of the sample using microcomputers for administrative purposes had been using computers three years or less. Another 32% had been using microcomputers from four to six years.

Armistead's survey indicated that administrators' levels of comfort using computers were very high as indicated on a Likert-like scale. Sixty-five percent of

administrators surveyed felt that computers improved the quality and accuracy of administrative work. Forty-four percent of administrators reported that computer made them free from routine paperwork, thus allowing more time to devote to other tasks. The findings of Armistead, Sharman, and Cothorn indicate that Virginia public school administrators felt comfortable using the computer for administrative tasks.

Broadening the statement that computers are being used for information storage, Steve Frankel interjected that educational administrators are realizing the full potential of microcomputers. In a 1987 NASSP Bulletin, Frankel stated that administrators had realized the potential of microcomputers to efficiently and effectively manage many resources in addition to information, one of which is time. Supporting Frankel, Barbour (1987) commented that the ability of computers to save time in administrative tasks outweighed any fear engendered by new technology.

Research supports the statement that administrators require daily access to information when making decisions. Information can be better managed, accessed, creatively configured, and comprehensively retained by the users with the use of computers (Estes & Watkins, 1983).

Summary of the Review of Literature Regarding Principals' Use of Computers. Nationally, and specifically in Virginia, microcomputers are serving as efficient, effective tools for administrators in education. Computers provide information that may be used by principals as a resource for making administrative decisions. Information can be easily accessed, better managed, and more creatively configured to the needs of the users. Principals who use

computers themselves have the opportunity of becoming leaders in their schools and encourage the use of computers as a learning tool within their instructional environment. Yet the use of various hardware is not only limited by the principal's experience, but also maybe inadequate software to support specific operational or functions of the administrator.

Hypertext-Based Software Systems: Application to Training

Design of hypertext-based software. While the idea of a non-linear form of writing can be traced back centuries, the first model of an electronic-based system that could link various blocks of text appeared in an article in the Atlantic Monthly by Bush entitled "As We May Think" (Bush, 1945). By 1945, Bush had realized that an era of information was approaching. He commented: "The summation of human experience is being expanded at a prodigious rate, [but] the means we use for threading through the consequent maze to the momentarily important item is the same as was used in the days of square-rigged ships" (Bush, 1945, p. 106).

Bush wrote of a "memex," a conceptual machine that could store vast amounts of information, in which a user had the ability to create information "trails," links of related text and illustrations using a microfilm based system. When the units were linked, one unit could be recalled at the touch of a button after the other previous unit had been viewed (Bush, 1945). This trail could then be stored and used for future reference. Bush believed that using this associative method of information gathering was not only practical in its own right, but was closer to the way the mind ordered information (Bush, 1945).

In 1963, Englebart augmented Bush's work by proposing a system that included the human user as an essential element in system design. Englebart's system combined symbol manipulation and mental structuring. Using these principles, a prototype computer was designed by William English as an on-line tool for use by Stanford Research Institute. The first mouse was included in the workstation. Files for the research group were combined hierarchically. A view filter was used to select information from the database that was displayed on a screen (Jonassen, 1991).

Nelson (1981) picked up on Bush's ideas in his book Literary Machines and coined the term "hypertext" or "non-sequential writing" because the system beyond the normal text. His ideas revolved around a system called "Xanadu" in which a user could create a "hypertext," a document consisting of "links" or "nodes" A link is simply a connection between parts of text or other material. The link is programmed by the software designer. Links are made by individuals as pathways for the reader's exploration; thus, they are part of the actual document, part of the writing. A node is simply a discrete unit of text, graphics, sound, or whatever. Within each node, there are links to other nodes. This is the basic structure of a hypertext. Nelson envisioned an entire "docuverse" of interconnected, networked hypertext, a system that would inevitably replace print publishing (Nelson, 1981).

Nelson believed that a person's background, experiences, knowledge, and methods of interacting with information made the structure of knowledge in a linear-text counterproductive. Nelson thought that individual users should have the flexibility to shape their own learning experiences. He designed a system

where the text could be manipulated at any point in the document. The user could read the document through buttons that connected similar information in a nonlinear text (Conklin, 1987; Halasz, 1988; Spiro & Jehng, 1990).

Leggett, Schnase, and Kacmar (1990) described hypertext in terms of four basic components: information elements (the text and graphical components), abstractions (an object that allows elements to be structured or related), the anchors (the source of destination of a link), and the links (the connectors among anchors).

Based on the studies by Nelson, hypertext-software was designed and piloted in a small market during 1983 and by 1985 tested nationally. The program itself continues to be modified to meet the needs of its users. The most recent update was marketed in 1991 with media used for Macintosh computers such as HyperCard, HyperStudio, Digital Chisel, and HyperCard Add-ons such as HyperGasp and PEAK. All the new software has been highlighted in a variety of technology journals (Holzberg, 1994).

The term "Hypertext" has come to refer to a group of computer programs in which one can move through the available data in other than a linear fashion. Landow (1992) has defined hypertext as units of words linked electronically by multiple paths or chains in an open-ended, perpetually unfinished text. The text has no beginning or end, as in a standard computer file or book. The user can enter, move about, and exit the database from a variety of points. Allowing the user to choose his or her own access point and to search a document makes the searching highly personalized. The reader navigates the text by choosing predetermined linkages that have been designated by the author. By choosing

one's own access point and being able to search a document which may contain extemporaneous information in order to find specific information that maybe useful for a particular situation makes a highly personalized search result (Staninger, 1994). In electronic documents, linking information is much richer when users generate instantly their own information links (Spiro & Jehng, 1990).

Words can be highlighted through buttoning (making a word or icon selectable through mouse click) techniques. Implicit links to dictionaries or other works can be referenced through the hypermedia system (Conklin, 1987). Links give explicit relationship between word providing more detail, clarifying words or phrases. Additionally, the linking feature is desirable in locating or retrieving something quite specific. When moving within a text, one can also use an electronic bookmark to "mark" the screen so that the same information can be found later. The flexibility of hypermedia systems encourages users to change and remold information to reflect more closely their own cognitive structures (Halasz, 1988; Jones, 1987; Rezabek & Regan, 1989).

"Hyperdocument" is a term used to represent a program using a hypertext-based software system that transfers actual text of documents. Freedom from the constraints of the printed format, software designers can represent massive quantities of information in a variety of media that are easily edited and updated. A hypermedia style of programming would add sound, animation, or video strips to the document. Users can browse a document either by following the plan of the author or by creating their own paths through the information. With accompanying software capabilities, users can annotate, edit, and restructure the

body of knowledge to reflect more closely their own ideas, interests, and needs (Gay, Trumbull, & Mazur, 1991; Kommers, 1993; Weber, 1992).

Hypertext: An instructional media. Although hypertext-based software systems were originally discussed forty years ago, both advances in hardware and software, as well as improvement in human user interfaces, have created conditions where the hypertext-systems are technically possible. The key advantage of hypertext-based software systems is that it provides access to information in ways that are more direct and more immediate than paper-based systems. (Park & Hannafin, 1993). Bonner (1988) discussed the advantages of an open learning environment that is offered by the more fluid media. A fluid media requires the learner to constantly make decisions and evaluate his or her own knowledge base and information requirements. Hypertext and hypermedia-based software systems have allowed users to "build" their own information reservoir by adding to previously indexed information and making personal notes to specific areas of existing documents.

The use of hypertext, hypermedia, and hyperdocument has rapidly expanded to many areas, including education (Tolhurst, 1995). Hypertext-systems have generated interest from educational communities at all levels of instruction.

Marchionini used hypertext-based software with his college students (1987, 1988 a, 1988 b). Using the information from his studies, Marchionini stated that a hypertext-developing environment provides significant potential in educational settings. Hypertext-systems offer a high level of user-control over the learning process. Also Marchionini believed that the tool itself has the potential to alter the roles of teachers, learners, and the interaction between them (Marchionini,

1988a). Teachers can identify the learning style of students by designing material that appeals to the auditory, visual, and kinesthetic senses of their students and is based on the multisensory nature of humans (Little, 1991).

Marchionini (1988) reported that hypertext and hypermedia-systems are useful in the area of curriculum modification. As instructional media the potential of hypertext designed software is appealing to teachers because of the ability to quickly modify content, to change the layout of the material on the page. Hypermedia software is an interactive system that may increase the students' motivations to continue to use the software. The instructional media places emphasis in user involvement in the system itself, giving the user, as well as the software designer, opportunities to individualize material through a variety of media approaches such as visual, auditory, and graphical (Erickson, 1995).

At the same time, the instructional media can be designed to monitor and to evaluate the learners' responses to questions that can be graded, stored, and manipulated using the computer. Also the hypertext-based software provides the software designer with a user-centered interactive environment.

Hypertext and hypermedia potentially offer the opportunity to alter roles of teachers and learners by modifying crucial interactions between them. The student learns at one's own pace and determines the depth and breath of a specialized area to pursue, offering a "customized education" (Erickson, 1995).

The way individual learners/users access information can be mapped, saved, and replayed. Thus teachers can trace the learning sequence of individual users. Using this information, teachers can modify the content to appeal to the learning styles of the students. If students appear to access a particular area more often

than other sections, this material may be more difficult to understand and additional screens or aides must be designed to convey the information. Teachers have a greater flexibility in importing and moving information to support diverse learning needs (Galbreath, 1992).

Using hypertext or hypermedia to transfer information has been less costly than printing documents. Hypertext or hypermedia-based software can provide more information because of the ability to compress the data. Moreover, the data can be easily transmitted via Internet (Erickson, 1995).

Lennon and Maurer (1994) discussed the use of hypermedia to replace overhead projector transparency presentations during lectures. The authors described a system which integrates technologies, tying together distance learning, computer conferencing, and assertive learning with the use of hypermedia-based systems.

Most of the initial studies using hypermedia have been completed on college campuses because of researchers' access to subjects and their ability to control the setting. In areas of higher education, hypermedia-based software has proven successful in graduate medical programs and undergraduate science programs. Beck and Spicer (1988), Duhrkoph (1988) and Wooley-McKay, (1988) document the use of hypermedia-based software in Stanford's and Cornell's Medical School. Flynn (1987) evaluated hypertext-based software systems designed to assist second-year medical students in weaving their way through information overloads. In Flynn's project, hypertext-based systems were selected over other software. Hypertext-based software systems were found to be more appropriate for storing and retrieving images.

Banks, McLinden, and Carlos (1988) have successfully used a hypertext-based software as an expert system for medical knowledge at the Decision Systems Laboratory. The study concluded that hypertext-language was a user-friendly language for the designer and the user. Current research involving storage and retrieval software systems evolved from the application of hypertext-based software in the medical field (Flynn, 1987; Kearsley, 1988; Marchionini, 1988; Trotter, 1989). By using simulations through hypertext-based software, medical students have been able to learn new approaches to internal medicine without working with autopsies. Professionals have used hypermedia-enhanced graphics to simulate the systems of the body. Users could access additional information concerning the "patient" and are asked to make decisions regarding medicines or operating procedures. Feedback as to health of the "patient" is given to the user. The degree of difficulty of the simulations can be moderated by the user. Hypertext-based software can encourage professionals to access information before making decisions. Accessing information through the use of a computer is comparable to seeking information from colleagues (Timpka, 1989).

In Timpka's research (1989), doctors were provided with hypertext-based software that supported various medical techniques and applications. The study found doctors accessed the software 84% of the time the system was made available. The software was most often accessed when the full text database was given highest priority for the introduction of new medical applications (Timpka, 1989).

After the initial success with the hypertext-based software application in higher education, researchers began exploring the use of the hypertext-based

software with subjects representing other age groups. Students in the elementary and high school settings have participated in research studies involving hypermedia-based software (Marchionini, 1988).

Underwood (1988) described the success of Hypertalk, a hypertext-based system, with primary and middle school students whose primary language is not English and/or who are language delayed. Hypertalk had been tested for classroom use in teaching students with speech delays, language delays, learning disabilities, and visual limitations. The success of Hypertalk lies in its multimedia approach to teaching content, since it keys learning to a user's own speed of language acquisition. For many language students, appealing to all the senses of sound, vision, graphics (movement), and touch improved not only the initial learning time, but also increases the retention of the material.

While working with other students with disabilities, researchers at Peabody College and the University of Kansas chose hypermedia-based software as a useful development tool. The tool was selected because of its ability to individualize the lessons based on the learner's entry knowledge and learning style (Marchionini, 1988). Peabody College has received several federal grants for applied technology research in the area of developing and testing hypertext-based software for reading and math programs students with disabilities.

MacArthur and Haynes (1995) discussed a software system called Student Assistant for Learning from Text (SALT). SALT uses hypermedia-versions of textbooks designed to help students with learning disabilities, as well as other low-achieving students to compensate for their reading difficulties. In an experimental study without teacher instruction, students in high school were

placed into two groups. One group used the software and another group used the printed version of the textbook. At the end of the experiment, students were given a test on the material they had studied. The students using SALT received significantly higher comprehension scores. Moreover, the students reported that SALT had been a successful resource (MacArthur & Haynes, 1995).

HyperCard, a hypermedia software program, has been used in Town School in San Francisco, California to structure an electronic card catalog. The students design a card for each book they read. The cards provided a graphic representation of the story. Other class members could access the software to aid in selecting new books to read. In Southfield, Michigan students used hypertext-based software to write reports on various animals in the world and used links to connect maps of the countries where the animals live. In Mill Valley Elementary School in Erie, Pennsylvania, third graders study the human body using HyperCard stacks to identify body systems. Students in Maryland have used HyperCard to collect a pictorial database of various native fish and environmental protection issues. Hypermedia-based software has made learning more relevant to students, has emphasized a higher-order thinking skills, has been feasible to use with multiple curriculums, and has motivated students to become more actively involved in their own learning (Eiser, 1994).

Hypermedia-based software has been used with training adults. In a comparative study, Bell (1987) measured hypertext-based data systems used in project management training systems with the National Aeronautics and Space Administration. Bell stated that the hypertext-based systems presented a more successful scheme of indexing document structures. The hypertext-based software

could be used without additional teacher instruction. A decrease in teacher-directed instruction appealed to the adults' needs for flexible training (Bell, 1987).

Also, interactive instruction is used in the business administration programs. Various business interactions are simulated. In the simulations, the user is asked to access the stock market and make quick responses to various changes in the market. In other simulations, the user is asked to gather information he or she needs to make decisions for the "companies" to adjust to the market trends (McHenry & Franklin, 1986).

McHenry and Franklin (1986) reported on a study related to the use of hypertext-based programming as an avenue for collaborative decision-making. The report highlighted the creative use and maintenance of a large database storage and retrieval system using HyperCard. The end users of the software were directly involved in designing and testing the software. The involvement of end users, stakeholders, enhanced the eventual applicability and employment of the software.

Researchers indicate that hypertext-based software has improved the learning-time required to acquire new knowledge and to increase the user's retention of the material learned. Likewise, researchers report that hypertext and hypermedia-designing tools can efficiently and effectively adapt any printed document into a technologically rich resource tool (Park & Hannafin, 1993).

Hypertext-based software can be traced back to the 1940's. Most recently, hypertext-based technology has been used in an explosive number of applications. In summary, researchers have found that hypertext-based designed software has significant potential application as an instructional media.

Additionally, researchers indicated that hypertext-based software has improved the user's knowledge acquisition. Four major design features represent a designing advantage over the printed-format of any document and appeal to individualized learning needs. These features are (a) the efficient and accurate information retrieval capabilities, (b) the user-orientation and flexibility capabilities, (c) the collaborative nature required in the designing process, and (d) the built-in behavioral-design component that emphasizes user-friendly interfaces in a variety of learner modalities.

Equally important is the ability of hypertext-based software to enhance information storage and retrieval needs. Information retrieval is central to the role of an administrator. In the capacity of managing, an administrator is faced with many decisions. Each of these decisions requires information to be gathered, processed, and eventually stored as references for future decisions. Researchers indicate that hypertext-based software can be used as an efficient and effective storage and retrieval resource.

Summary of Literature Review

The literature reviewed indicates a changing role of the building-level school administrator. The role is changing, in part, because of the changes in the population of students being served. The student populations are not only increasing, but represent a more diversified student body. An increase in student population often correlates to an increase in the number of students who require special education services.

The educational services and procedural safeguards guaranteed to students with disabilities are protected by the legal mandates from the federal government

and regulated by the state Departments of Education. Working within the legal constraints of the regulations, the building-level principal is given the responsibility of administering the educational services to disabled students.

To prepare the principal to assume the role as administrator of the special programs, principals must be knowledgeable in the laws and regulations governing special education programs. Therefore, principals are legally mandated to attend training sessions.

Training in the regulations is often on-going due to additions and modifications made to the laws and subsequent regulations. Even with the required training and the printed-format of the regulations, researchers have found that some building-level administrators are not confident that they know special education laws and regulations well enough to guarantee that they will not make mistakes in providing educational services and safeguards (Valesky & Hirth, 1992; Carver, 1992).

Training sessions for principals are mandated, but the quality, intensity, or number of sessions are not specified. The literature concerning adults' learning needs identify that adults are willing to attend and will benefit from training that is relevant to their own practical needs. Therefore, the design of the training programs must be varied due to the varied audience they are designed to serve. A successful resource used in training has been the use of computers, specifically the use of hypertext-based software applications because of the successfully identified applications for use with adult learners (Holzberg, 1994; Landow, 1992).

Hypertext-based software has successfully been used to efficiently store and retrieve large quantities of information. Additionally, studies have shown that hypertext-based software is an effective teaching tool because it is a user-friendly resource. The hypertext software can be designed so the user can manipulate the material according to one's individualized learning style, time constraints, and knowledge needs without direct instruction from outside personnel (Gay, Trumbull, & Mazur, 1991; Kommers, 1993; Weber, 1992). Additionally, hypertext-based software appeals to the software designer because of the easy programmable format.

CHAPTER III

Methodology

Introduction

This chapter addresses the methods and procedures used in the present study. The following research areas are included: a) Phase One, b) Phase Two, and c) Assurances.

The present study was conducted to establish the efficacy and evaluate the effectiveness of an electronic system for storing and retrieving documents related to the regulations governing special education programs in Virginia.

Two distinct phases of the study were conceived. Each phase was centered on a particular research question that provided the structure of the study. Phase one involved the development of the software, *SpeciaLink*. Phase two involved the evaluation of *SpeciaLink*.

Phase One

Development of *SpeciaLink*

Phase One was directed by the following major question:

- 1.0 Can a software package that electronically stores and retrieves a document containing the Virginia Regulations Governing Special Education Programs for Children with Disabilities (effective January 1, 1994) be developed?

To answer this question the traditional software engineering cycle for developing software was followed (Brookshear, 1991). This cycle consists of analysis, design, implementation, and testing.

Analysis

In this early stage of software development, a specific need is recognized as a potential computer application. Next, the decision is made that an automated system should be developed. Once the decision is made to develop an automated system, it follows the process of identifying the needs of the intended users of the system. One of the formal results of the analysis stage is a set of requirements that the new system must satisfy. These requirements are stated in terms of the application rather than in terms of the technical terminology of the data processing community. After the system requirements are identified, they are converted into more technical system specification.

The review of the literature indicates that a principal's knowledge of special education law is not sufficient to ensure that mistakes in implementation of procedural safeguards and/or the provision of educational services will not occur. The present resource materials and training programs have not been adequate to fill the gap between training and a legal knowledge-base required by a principal to effectively administer special education programs.

In other fields, one successful training tool has been the use of electronic technology. Specifically, the use of hypertext-based software has shown a promising effect in increasing the knowledge-base of its users. Additionally, the hypertext-based software has been successfully used in storage and retrieval of large volumes of data. The design applications are user-friendly for the programmer, as well as, for the intended user.

Therefore, the decision was made for the development of an automated system. This section describes the steps followed during the analysis stage of *SpecialLink* for answering these specific questions:

1.1 What are the needs of the intended users?

A review of literature revealed the needs of the intended users.

1.2 Do the intended users have the hardware to support an automated system?

Prior to any work involving the environment within which the document would appear, it was essential to determine the computer hardware available to the principals who were the building-level administrators of special education programs. A survey was conducted to gather information on the available hardware of the intended users. The survey included the following questions:

- Was there access to a computer, and where it was located?
- Was the computer an IBM compatible or a Macintosh?
- Was the memory capability at least 640 kilobytes?
- Was the computer used in any daily administrative operations?

1.3 Are the intended users computer literate?

To answer this question a survey was conducted using a sample of the intended users?

The creation and validation of the survey will be presented in Chapter. The survey contained the following questions:

- Do you currently use a computer?
- How comfortable are you in using the computer for daily operations as an administrator?
- Do you select new software?

- Do you advise others in using the computer for administrative or instructional tasks?
- In the future, do you feel that computers will play an integral part of administrators' leadership roles in education?

1.4 What development environment will satisfy the designer's programming needs?

To answer this question a market survey, which is further discussed in Chapter 4, was completed to determine the best hypertext development tool. The term 'best' refers to the tool that can accommodate the hardware needs of the intended users and satisfy the programming needs of the developer.

1.5 What are the user-requirements that *SpeciaLink* must satisfy?

To answer this question a series of peer reviews of various *SpeciaLink* prototypes was conducted. Reviewers' suggestions were analyzed and implemented accordingly to suggestions by software design researchers. Each panel review provided modification suggestions for the next prototype.

Design

In this stage the technical details of the automated system are developed. In particular, it is here that the system was broken into manageable units called modules. Each module constituted a small part of the overall system.

Additionally, specific design guidelines were needed to ensure that the software would be user-friendly. Schwier and Misanchuk (1993) in their book, Interactive Multimedia Instruction, indicate that the purpose of interactive instruction is not to dazzle, to impress, or to delight, but to communicate. The basic principles in design

are simplicity, consistency, clarity, and the aesthetic considerations of balance and unity. These principals served as guidelines when designing the software.

1.6 What are the technical details of *SpeciaLink*?

This stage is closely associated with the previous stage. Specific user-requirements provided the framework for selecting the programming primitives and writing the appropriate scripts that accommodated all the requirements.

Implementation

This stage involved the actual writing of *SpeciaLink*. The writing process used the specifications developed during the design stage. The writing was divided into implementing the screen layout, typing the content, programming the electronic linking, and writing the tutorial.

Testing

This stage is closely associated with the previous, since each module of *SpeciaLink* was tested as implemented. This section describes the steps followed during the testing stage of *SpeciaLink*.

An Alpha test was conducted by the software developer. Alpha testing refers to an in-house testing. It is used to make final corrections of the software before it is used by the intended audience. Peer reviews were used in the testing phase. The satisfaction of three main issues was used to determine if the software successfully passed the Alpha testing.

- Was the content valid, therefore, agreeing with the original document?
- Was the software robust?
- Was the software user-friendly?

Phase Two

Effectiveness of *SpecialLink*

Phase Two focused on the following major question:

2.0 How effective was *SpecialLink* in providing the regulations governing the special education programs in Virginia?

The research question was answered by satisfying the following issues:

2.1 Did users in the experimental group access an electronic reference system as a resource for special education issues and programming?

A survey was design to gather information relative to this question. The survey, *SpecialLink Review*, was used to collect the users' opinions concerning the software's effectiveness.

2.2 How often did the users access the software?

A question relative to this issue was included in the survey, *SpecialLink Review*.

2.3 During the decision-making process, when was *SpecialLink* most often accessed by the users?

A question relative to this issue was included in the survey, *SpecialLink Review*.

2.4 Did the intended users find *SpecialLink* effective in providing the regulations?

Several questions related to this issue were included in the survey, *SpecialLink Review*.

2.5 As a result of using *SpecialLink*, was there an improvement in the knowledge regarding the special education regulations?

This issue was evaluated through an experimental study involving the testing of *SpeciaLink* over a two-month period. This testing phase was known as the Beta testing. Beta testing refers to the evaluation by the intended users. The measurement of the improvement in knowledge was evaluated through two surveys, the *SpeciaLink Review* and the *Compliance Issues in Special Education*. The survey findings have been categorized into two distinct categories, the subjective and objective measurements of effectiveness. The collected findings of the *SpeciaLink Review* survey provided data that formed the subjective measurement. The collected findings of the *Compliance Issues in Special Education* surveys provided data that formed the objective measurement. The design of the experimental study included the following considerations: selection of the sample, experimental versus control group membership, survey design and implementation, and gathering and data treatment procedures.

Selection of the Sample

It was determined by the designer that the research site must meet the following demands: the location of the site was within driving distance of the software designer, the sample consisted of principals who are administrators of special education programs in their school building, and the intended users of the software had access to a computer and were "somewhat" comfortable using the computer.

The research site for piloting the prototype software focused on public school divisions in the Tidewater area of Virginia. It was determined that this sample was manageable and representative of the population of potential users. Each school division in the Tidewater area was contacted through a written proposal

that outlined the project, tied the project to the current objectives of the school division, and delineated the expected commitment in terms of time and resources by each participating school division and the parties carrying out the experiment. Fourteen of the fifteen school districts contacted agreed to participate. One school district declined because the objective of the proposal did not meet the current objectives of their district. All the secondary schools in each school district participated in the study.

The accessible sample consisted of 50 school administrators of special education programs who were either assistant principals or principals. In some schools the administrators of special education programs included both principal and assistant principal. A list of the administrators was compiled using the *1993 Virginia School Directory*. This list was finalized in September, 1993 by contacting by phone each participating school division's Directors of Secondary Education. The list of building-level administrators in charge of special education programs was gathered. Phone calls were made randomly until one-half of the sample voluntarily agreed to participate in the experimental group. It should be noted that with every phone call made, the administrator agreed to participate without hesitation. Each respondent was given a code number at the beginning of the research. The codes represented school districts and individual schools. The codes were used to ensure that all survey responses were returned. The codes were also used to derive school population data to ensure that a representative sample was selected.

Demographic information was collected on participating principals' schools that included the total student population and the total number of students

receiving special education services. This information was received from the Virginia Department of Education, Monitoring and Grants Division and represents the December 1 count of children receiving special education services in the state as of 1993

The demographic data has been divided into three parts: 1) a classification of the respondents from both the control and experimental groups as either principals or assistant principals in charge of special education programs; 2) a review of the special education population served by each school; and 3) a review of the experimental group's current level of computer skills.

Classification of respondents. Forty-seven building administrators in charge of special education programs took part in the study. Of the 26 respondents in the experimental group, 13 were principals and 13 were assistant principals. In the control group of 21, 13 were principals and eight were assistant principals. This represented a total of 26 principals and 21 assistant principals. Respondents from both groups were considered appropriate for purposes of this study.

Special education student population. To further develop the demographics information, the Associate Specialist for Grant's Administration of the Virginia Department of Education, Paul Raskoph, was contacted. Raskoph was able to provide individual school's population data that reflect the number of students served under the special education program as of the December 1, 1993 count for each school's Annual Plan and Grant reimbursement program.

In Virginia, the Department of Education places schools into three groups that are representative of the following sizes of the student body: small (under 500 student body), medium (500-1000 student body), and large (over 1,000 student

body). Schools were placed within these categories by multiplying the size of the special education population times ten which was based on the U.S. Office of Education's report that indicates on an average special education populations represent approximately 10 percent of the total school population (Sage & Burrello, 1986). These figures demonstrated that there was not a statistical difference between the control and experimental groups regarding size of special education population (see Figure 2).

Table 1

Demographics Representing Numbers and Percentages of Disabled Student
Populations for Control and Experimental Schools

	SMALL X<50		MEDIUM 51<X<100		LARGE 101<X	
	#	%	#	%	#	%
Control	4	19%	8	38%	9	43%
Experimental	4	16%	10	38%	12	46%
Total/Average	8	17%	18	38%	21	45%

Experimental versus Control Groups

The experimental group was obtained by randomly calling the list of principals. They were asked if they would be interested in participating in testing the software. During the telephone interview, a detailed explanation of the project was given along with a clear statement explaining the expected commitment from the participants. The first 25 principals who were called agreed to participate in the experimental group. The principals not called served as the control group. Two principals asked that their assistant principals also participate.

Instrumentation

Three surveys served as instrumentation tools for the Beta Testing. These surveys are titled *Compliance Issues in Special Education*, *Administrators' Use of Computers Survey*, and *SpeciaLink Review*.

Development of Surveys. The surveys were developed to address the issues in Phase Two. Collectively, they served as tools to evaluate the effectiveness of *SpeciaLink*.

Initial development. The surveys were developed through a series of steps. The first step centered on the design of the surveys themselves. With the advice of three supervisors from the Virginia Department of Education representing special education issues, The *Compliance Issues in Special Education* scenario information and format was established. The *Administrators' Use of Computers Survey* was cooperatively designed with the advice of a computer science professor who had knowledge of computer research variables that may affect the attitudes and usage of computers. This survey provided the

demographic information concerning the experimental group. The *SpecialLink Review* was designed to collect data concerning the subjective views of the *SpecialLink* users. This survey was designed through the advice of a professor of education.

Panel review procedures. After the surveys were written, they were given to a panel of reviewers. The panel consisted of the following members: three building level principals who were administrators of special education programs, two professors of special education, one professor of computer science, and two representatives from the Virginia Department of Education. Modifications were made based on suggestions from the panel. The panel members were asked to review the surveys for a second time to unanimously agree upon their content validity. The surveys were designed to be as non-threatening as possible in both wording and content. A letter accompanied the surveys identifying the surveys' direct link to the experimentation with the software.

Pilot testing. Upon completion of the final draft of the three surveys, an additional pilot test was conducted with a review panel consisting of the following members: one school principal, one assistant principal who was an administrator of special education programs and the school disciplinarian, one supervisor of special education programs from the Virginia Department of Education, two professors of education, and one professor of computer science. The members were asked to read the surveys and by using a "yes" or "no" response to indicate if the surveys met the following criteria: a) content was valid, b) surveys were easily understood, and, c) surveys were relatively easy to complete. The pilot test

indicated six "yes" and zero "no" responses for each of the three criteria. In summary, the respondents felt the surveys met all criteria.

Summary of final survey designs. The three surveys were finalized in the following format:

Compliance Issues in Special Education. *Compliance Issues in Special Education* was designed in a pamphlet format. The first page of the four-page survey contained a letter to the administrator. The letter introduced the *SpeciaLink* experimental study by providing a brief review of the literature research that supported the experiment. Also, the letter revealed general background information of the sample and described how the sample would be used in the experiment (see Appendix B for survey).

Respondents were told the length of time it would take to complete the survey and the due date for the return of the survey. The respondents were informed in the first letter that a subsequent survey would follow the experimental use of the software. Phone numbers were given for any additional questions concerning the survey, and a stamped self-addressed envelope was provided.

The survey consisted of 14 scenarios in which an administrator made a decision concerning a special education issue. Four scenarios involved legal issues that had not been changed with the amendments to EHA. Five scenarios were selected that dealt directly with legal issues that had been changed with the amendments to EHA by IDEA. Five other scenarios involved issues that are not specifically clear in either Act and that have been answered instead by the courts through litigation.

The respondent was asked to determine if the administrator in the scenarios had made a correct decision, based on the Virginia Regulations Governing Special Education Programs for Children with Disabilities. The respondent could respond by indicating either "in compliance" or "in violation" of the regulations. The answers to the scenarios were grouped into a category called Issues. Principals were asked to identify the specific violation the scenarios represented. The answers to the violation questions were grouped into a category called Specificity. The findings from these two groups were reported as two variables that would be considerations in determining the effectiveness of *SpeciaLink*.

The hypothetical scenarios selected were based on legal areas that have previously been identified by the Compliance Department (Virginian Department of Education) or taken as position statements of the Virginia Department of Education. The scenarios were taken directly from manuals prepared by the Virginia Department of Education for state-wide principals' training programs in 1989-1990 and 1990-1992. The scenarios had been taped with Dr. Judy Barnheiser, administrator in charge of compliance monitoring for the State Department. Permission to use the material was granted by the Administrator of Adolescence Services for Special Education of the Virginia Department of Education, who was the administrator of the state-wide training programs.

Administrator's Use of Computers Survey. *Administrator's Use of Computers Survey* consisted of a letter explaining the connection of the survey and the *SpeciaLink Project*. This survey was intended to be completed by building level administrators of special education programs. Phone numbers were given for

respondents who may have had additional questions. A due date was given along with a self-addressed stamped envelope for return.

The survey consisted of a single page with twelve questions. The questions sought information that would indicate the following information about the respondents' usage of the computer: Did the respondent use the computer? Did the respondent use a computer for daily operations of the school? Which software options did the respondent currently use? Did the respondent select new software for their office? Did the respondent advise teachers and other administrators on their own usage of the computer for administrative or instructional tasks? What is the respondent's opinion on the future use of computers by public school administrators? The respondents had a finite choice of response options that consisted of "very," "somewhat," or "not" for some questions and "never," "sometimes," or "often" for some questions (see Appendix B for survey).

The *Administrator's Use of Computers Survey* targeted the experimental group only. The survey could have been returned any time throughout the experimental phase of the study. A self-addressed stamped envelope was included. The results of the computer survey were used to establish subjects' present interests and use of computers. The data collected from this survey served as a control of the extraneous variables that might have affected the use of the software by the subjects. The information served as demographic data. (see Appendix B for survey)

SpeciaLink Review. *SpeciaLink Review* was designed to measure the effectiveness and efficiency of the software, *SpeciaLink*. Six questions with finite responses helped to gather information related to the following concerns: the

approximate number of times the software was used; when the software was accessed (before or after a decision had been made); how the design of *SpecialLink* accounts for the personal attributes of the user; the effectiveness of the software; and the respondents' opinions about the likelihood of other administrators of special education programs using the software (see Appendix B for survey). Additionally, the respondents were given the opportunity to evaluate and suggest software modifications.

Gathering and data treatment procedures

Gathering. The survey, *Compliance Issues in Special Education*, served as a pre-and post-survey evaluation of the principals' current levels of knowledge regarding special education law. At the beginning of the experiment, secondary school principals who were in both the control and experimental groups were mailed the *Compliance Issues in Special Education* survey and a letter explaining the project. A stamped self-addressed envelope was included. This letter was mailed mid-February of 1994 with a designated due date for the end of February. A total of 47 surveys was mailed. Those not returning the survey within the specified two week period were called to ensure they had received the survey and to encourage the members to return the survey. A breakdown of the survey return rate will be discussed in Chapter 4, The Results. Respondents were assured of the confidentiality of responses. Participants were identified by code number only throughout the experiment. The correspondence accompanying each survey is included in Appendix A. All surveys used in this project are included in Appendix B.

During Phase Two of the *SpeciaLink Project*, the experimental group received the following information in a packet mailed on March 1, 1994: a letter that explained the project and expectations of participants, the prototype software, *SpeciaLink*, a manual for the software, the survey, *Administrators' Use of Computers Survey* and two self-addressed envelopes, one for the survey and the other for the software. The *Administrators' Use of Computers Survey* was to be returned any time throughout the experimental phase. The software was to be returned at the end of two months.

During March and April, when the experimental group had access to the software, each subject in the group was asked to use and incorporate the software in their daily administrative decisions concerning special education issues. After the experimental phase, a post-survey was conducted with the sample, using the *Compliance Issues in Special Education*. A letter was included with the mailing that explained the *SpeciaLink Project*. Furthermore, the respondents in the control group were asked to use the written version of Virginia's Regulations Governing Special Education Programs for Children with Disabilities when identifying the violation. The respondents in the experimental group were asked to use *SpeciaLink*.

As a check for members in the experimental group, a letter was included in the final packet that thanked them for their participation and reminded them of the three surveys that composed the evaluation packet. Indication was made on each personalized letter which surveys had already been turned in and which surveys were still out as of that mailing date. Stamped self-addressed envelopes were included.

The experimental group also completed a survey, *SpeciaLink Review*, which gave them the opportunity to evaluate *SpeciaLink* regarding their actual use of the software.

Data analysis procedures. The data derived from the *Compliance Issues in Special Education* surveys was analyzed by comparing the responses to the Issues and Specificity. The first mailing of the *Compliance Issues in Special Education* was considered the pre-survey. The second mailing of the *Compliance Issues in Special Education* came at the end of the two-month experiment. The data from the pre- and post-surveys was analyzed using two Repeated measures ANOVA's with Group (experimental and control) and Time (pre- and post-survey) as the independent variables and Issues and Specificity score as the dependent variables.

The data from the *Administrator's Use of Computers Survey* and the *SpeciaLink Review* survey were reported by creating frequency distributions for each question in the survey. Additionally, the qualitative information regarding the suggestions for software modifications was consolidated by categories and tabulated.

Assurances

The control and experimental groups were given assurances that their responses would be treated confidentially. The results reported were in summary form ensuring that the identity of individual respondents or school districts was not known. School system superintendents were aware of these assurances of confidentiality.

The research design was considered ethical since it will provide results that can be interpreted meaningfully through empirical interpretation. Additionally, the research design was ethical in terms of its use of human subjects. Methodological procedures were in line with acceptable research practices as determined by the Human Subjects Review Committee for the School of Education, The College of William and Mary.

CHAPTER IV

Results

This chapter presents the analyses of the research data for the study and is organized as follows: a) Overview of the study, b) Findings of Phase One, and c) Findings of Phase Two. A summary of the findings concludes the chapter.

Overview of Study

The current study was conducted to determine the following: 1) the efficacy of an electronic reference system for documenting special education regulations and 2) the effectiveness of the software, *SpeciaLink*. The framework of the study centered on two phases. These phases were the development phase and the effectiveness phase. Each phase was structured by a research question. The answer to each research question was determined by several issues. In the discussion below, the issues will directly follow each research question.

Phase One: The Development Phase

1.0 Can a software package that electronically stores and retrieves a document containing the Virginia Regulations Governing Special Education Programs for Children with Disabilities (effective January 1, 1994) be developed?

1.1 What are the needs of the intended users?

As stated in the literature review, research has found that principals needed an accurate, readily accessible version of the regulations. Although access to the printed format of the regulations was available, principals indicated that their knowledge concerning special education regulations was inadequate. Therefore, principals needed additional training in the laws governing special education.

Also, the literature review indicated that adult learners had basic learning needs. Adults wanted to be more actively involved in their own learning. They liked to explore new material in various ways. Moreover, adults liked to question, to manipulate, and to modify the materials to suit their own learning styles.

The research regarding adult training needs indicated that principals had very little time to spend outside the school in training workshops. Not only was the principal's time limited, but many schools had restrictions on attending conferences. The restrictions related to conference cost, location of the conference, and relationship of the conference to the overall school program.

The literature review indicated that training is mandatory and critical to the role of administrator for special education programs. Acknowledging that principals had limited training time and specific knowledge needs, training programs must be designed to efficiently and effectively accommodate learners. Additionally, adult learners wanted pragmatic training that related to their specific knowledge needs. For example, some principals may not need training in particular area of the regulations because of previous experience. Other principals may be inexperienced in working with disabled students and require more training. Training programs must also fit the adult learner's desire for less direct-teacher instruction.

The literature review contained studies that discussed the use of electronic technology for educational instruction. The research studies indicated that the use of electronic technology has been a successful tool for teaching new skills. Additionally, the studies supported the belief that adults also have preferences for the design of various software. Adults do not want to be dependent on outside guidance to operate any software programs. Adults prefer software that operate in an intuitive nature. Therefore, adults prefer a user-friendly tutorial that provides them the answers to basic questions. Additionally, the literature indicated that adults desire material that is incrementally presented and built on previous knowledge.

In summary, the intended users had knowledge needs and software design needs that were considered when designing *SpeciaLink*.

1.2 Do the intended users have the hardware to support an automated system?

Prior to any work involving the development environment used to program the software, it was essential to determine the computer hardware available to the principals. In the fall of 1992, a telephone survey was conducted targeting 52 secondary schools in the Tidewater area of Virginia. Due to the nature of the study, the researcher selected the Tidewater area schools because of their accessibility in case installation problems arose with the software that would require immediate direct contact by the researcher. The response to the survey represented a 100% return. The survey was designed to gain information about the following questions:

- Was there access to a computer, and where it was located?
- Was the computer an IBM compatible or a Macintosh?

- Was the memory capability at least 640 kilobytes?
- Was the computer used in any daily administrative operations?

Results of the host hardware study are found in Table 2.

Table 2

Host Hardware Survey

Questions	Computer: IBM or compatible	Computer: Macintosh	Daily use	640K
Respondents	100%	6% (in addition to IBM)	100%	100%

Fifty-one principals had IBM or IBM clone personal computers at their disposal with three principals having both IBM and Macintosh. It was determined that *SpeciaLink* should be developed for IBM compatible machines. After checking with the purchasing and technology support departments of each school district and confirming with the survey respondents, it was determined that all the computers in the targeted survey had the memory capacity necessary to run hypertext-based software programs. The survey respondents all claimed they were using the computer on a daily basis.

1.3 Are the intended users computer literate?

The *Administrator's Use of Computers Survey*, mailed February of 1994, was used to collect information on the computer literacy level of the intended users. For this experiment, to be literate means that a user has the basic skills to turn

on/off a computer and to access a particular software that either is in the harddrive or on disk. To participate in this study the user was required to be able to turn on and off the computer, to open a floppy disk, and to install the software from a floppy disk. It was the intent of the *Administrator's Use of Computers Survey* to provide an overview of the computer skills of the users, indicating that a profile could be designed showing computer skills that could possibly influence the use and, therefore, the evaluation of the software tested in this study. The data collected is presented on a question-by-question basis and has been referred to as individual tables throughout the body of this chapter. All members of the experimental group received the survey (N=26) and 100% returned it. As a group, 100% of the respondents currently use computers (see Table 3) and are comfortable using the computer (see Table 4).

Table 3

Do You Currently Use a Computer ?

Responses	Yes	No
Percentages	100%	0%

Table 4

How Comfortable are You in Using the Computer for Any of Your Daily Operations as an Administrator?

Responses	very	somewhat	not
Percentages	36%	57%	7%

The respondents were asked if they were comfortable when using the following general operations a computer provides, such as (1) word processing, (2) data entry, (3) spreadsheets, and (4) locating data bases. Answering this series of questions did not imply that the respondents were using these operations on a daily basis. The operations and the respondents' responses have been summarized in Table 5 and will be discussed individually. Each of these operations represent similar skills that may be employed when activating various software programs.

Table 5

When Completing Basic Computer Operations, How Comfortable are You with the Following Operations?

Responses	very	somewhat	not
Word processing	70%	27%	3%
Data entry	31%	38%	31%
Spreadsheet entry	8%	58%	34%
Locating data bases	12%	52%	36%

Word processing operations allows a user to complete basic writing processes. At the beginning of the two-month trial use of *SpeciaLink*, the user's skill level to complete this operation indicated that the experimental group felt very comfortable in using the computer for this basic function. For data entry operations, the respondents were almost evenly divided. Yet for the category of spreadsheet entry and analysis the respondents were not as comfortable using this operation. The final computer skill of locating data bases was an operation the majority of the respondents felt somewhat comfortable in using. In summary, the findings revealed that the experimental group felt very comfortable when using the computer for word processing and only somewhat comfortable with the additional operations. In ordering the computer functions, greatest comfort to least comfort, the administrators rating was as follows: word processing, date entry, locating data bases, and designing spreadsheets.

The next series of questions sought information regarding the sample's interest in reviewing and later purchasing new software. This question sought information that related to the users' levels of interest in accessing the computer for pleasure and work related tasks (see Table 6). The majority of the respondents indicated that they selected new software for their personal use and administrative use. The study did acknowledge that each individual building site or school division may have different regulations governing the purchase and use of software in their schools.

Table 6

How Often Do You Select New Software for Your Personal Use or School Use?

Responses	never	sometimes	often
Personal use	23%	46%	31%
School use	31%	50%	19%

In conjunction with selecting software, administrators were asked if they gave advice to their teaching staff or other administrators on computer related issues. The majority of the respondents did indicate that they "sometimes" gave advise. Results are presented in Table 7.

Table 7

Do You Advise Teachers or Other Administrators in Using Computers for Various Instructional or Administrative Tasks ?

Responses	never	sometimes	often
Percentages	27%	58%	15%

The final question in the survey was stated in the following manner: In the future do you feel that computers will play an integral part of administrators' leadership roles in education? The data (see Table 8) indicate that 88% of the users felt that computers will play an integral part in administrators' leadership roles in the future.

Table 8

In the Future Do You Feel That Computers Will Play an Integral Part of Administrators' Leadership Roles in Education?

Responses	yes	no
Percentages	88%	12%

The interpretation of the results of the *Administrator's Use of Computers Survey* will be presented in Chapter 5 in relation to the findings from the demographics research and the experimental phase testing the software.

1.4 What development environment will satisfy the designer's programming needs?

On the basis of the information from the host hardware study, it was determined that the development environment must be compatible with IBM hardware. Using Internet, a computer network with various forums, a subscription was established to the hypertext forum. In the hypertext forum, an inquiry was made concerning various hypertext-based software developing environments that fit the following requirements:

- The software must be user friendly in terms of programming capability
- It must be capable of running within limited memory (less than 640 K main memory).
- It must be priced reasonably.

- It must have simple graphics capability (so the hypertext-based software can run with as many as possible personal computers).
- It must have free run-time license. (So *Specialink* can be distributed without major cost).

Comments were requested from any person who recently had any personal experiences that were positive or negative with the various commercial forms of hypertext-based software. For a month this inquiry was asked through Internet. Based on the responses gathered from the hypertext forum, the following hypertext/hypermedia developing tools were evaluated:

- ToolBook[®] from Asymetrix Corporation
- HyperPad[®] by Brightbill Roberts
- Black Magic[®] by Ntergaid, Inc.
- Helpauthor[®] by Microsoft;
- Hyperdoc[®] by Hyperdoc, Inc.

HyperPad met all the above criteria; thus, it was selected to be the development tool.

1.5 What are the requirements that *Specialink* must satisfy?

The review of literature revealed that a software package, such as *Specialink*, needed to satisfy the following requirements: must focus the attention of the user, must develop and maintain interest, must promote the deep processing and engagement of the user when exploring the regulations, and must insure that the features facilitate navigation through the document.

The results from the peer reviews indicated that the intended users wanted a software that is user-friendly, presented the regulations in a simple manner, had search capability, and accommodated incremental learning.

1.6 What are the technical details of *SpeciaLink*?

Since this stage was closely associated with the previous stage, the specific user-requirements provided the framework for selecting the programming primitives and writing the appropriate scripts that accommodated all the requirements. The following issues were satisfied: implementation of the screen layout, typing of the content, programming of the electronic linking, and writing of the tutorial.

Implementation of the Screen Layout

For this study, the word screen refers to the information viewed on the screen of a computer. The size of the screen was dictated by the hardware. Actual screen sizes allowed for the space of the text to be the maximum space possible. Each screen was programmed with two forms of information, the background and foreground. *SpeciaLink's* background screen served as a template, defining where information was placed and what each screen would look like. Simple black and white colors were used in the event the intended users' computers did not have colored screens. Additionally, the foreground of each screen was in black and white.

The background for this particular prototype was designed with buttons that could be controlled by the user to access information from the document. Buttons are objects that respond to user input by executing some pre-defined action. Each

button was placed either on the background or the foreground of each screen. The user could access these buttons on demand by moving the cursor to the button and clicking the mouse or by using the directional keys and pressing ENTER/RETURN on the keyboard. The buttons were a stationary, consistent part of the background and appeared at the bottom of each screen. The user could not alter the program that directed the action of the buttons, make modifications to the buttons, or physically move the buttons to other positions on the screen. The location of the buttons was an important feature of the software because it gave the user a sense of control over the medium itself. The purpose of each button was described in the software's on-line tutorial and written manual that accompanied each disk (see Appendix E). These buttons are the Menu, Quit, <, >, Find, Previous, Notes, and Print buttons.

The buttons allowed the user to return to the main menu of a subsection, Part, and/or *SpecialLink* menu by activating the button, MENU. The user could leave any screen and return immediately to the exit screen or introductory page, then leave the program and return to the operating system by activating the QUIT button. While on a particular screen, the user could move forward to each sequential screen of document information by using the button identified by a directional arrow, move forward using the greater than sign (>) and move backwards in reverse sequential order in the document or screen by using the less than sign (<).

The following additional buttons, placed on the background screen, utilized specific capabilities of the development tool. The PREVIOUS button when activated moves the user from the current page to the page previously accessed.

This particular feature was useful when the user had accessed additional information in a nonlinear form of "jumping" from one page to another. This movement was controlled by the linking feature of the development tool.

A button entitled FIND triggered a powerful and advantageous feature of *SpeciaLink*. This selection allowed the user to type a word and the software would immediately locate the first occurrence of the specified word. Each subsequent occurrence of the word within the document was also found if the user entered a carriage return (ENTER/RETURN key on the keyboard) while the word is highlighted. Thus the user could continue through the document until the reference that contains the specified word was shown on the screen.

A useful feature of *SpeciaLink* was that the user could add to the volume of information of the software without augmenting the original document. The NOTES feature button allowed the user to add additional references that pertained to his or her own school district or building site. While in the NOTES feature, the user could generate additional pages for his or her own notes. Each page was scrollable. "Scrollable" refers to the ability to place more text into screen than can be viewed at once, thereby adding information that exceeds the size of the screen. The user could access the information that was on a particular page, but which is not currently on the screen by maneuvering up and down the scrolling bar at the right hand side of the screen. The notes could be written using the keyboard much like a word process program. Movement from one page to another is done by selecting the greater than sign (>) or less than sign (<).

The PRINT button feature will allow users to print the information viewed on any screen using their own printers. For this initial version of *SpeciaLink*, this

feature was not programmed due to the variety of printers in use, but it may be added in the future.

Typing of the Content

In August of 1993, the Virginia Department of Education, Compliance Division was contacted and asked to send a copy of the most up-to-date regulations governing special education programs for the state. The *SpeciaLink* developer was made aware of possible changes that may occur before the corrected version of the regulations would be sent to the State School Board. A copy of the regulations was sent on disk in ASCII format along with the printed document. The ASCII format had to be transferred into a format that would be recognizable by HyperPad.

When typing the content, the regulations were divided into modules that reflected the logical divisions in Virginia's Regulations Governing Special Education Program for Children with Disabilities, effective as of January 1, 1994. The regulations were divided into the following two modules: definitions and responsibilities. The definitions module explained the terms used in the regulations. The responsibilities module featured five main parts. They were the following: the responsibilities of the state Department of Education, the responsibilities of the local education associations, the funding responsibilities, the responsibilities of other agencies, and the responsibility for compliance with the amended version of the Rehabilitation Act of 1973.

Each screen of the software corresponded to pages from the regulations. The electronic documentation of the regulations was done without any additions or deletions to the printed version. A menu was developed that corresponded to the

Table of Contents of the printed format of the regulations. Additional menus were created to help the user navigate within various subsections of the regulations. The menus had been programmed to link the title of the section with the specific screen or page within the electronic document, allowing for easy, non-sequential navigation.

For the initial prototype the process of transferring the ASCII format of the document into a recognizable study took two months. During the transferring process each page of the printed version of the document was divided into logical chunks or increments of the particular regulations.

The information was categorized into topics. The topics are further broken down into meaningful units that could be placed on a single screen. When a section of the regulations went beyond the single screen, the word "continued" was placed at the end of the screen indicating that the material continued to the next screen. A scrolling technique was also designed that allowed the user to move the screen upward and downward to configure to his or her learning needs.

Menus were written and additional buttons were added within the text to provide a linking option for navigating within the regulations. Each screen was reviewed repetitively for accuracy using the written copy of the law. The process of transcribing the information helped to ensure that the intended user could navigate anywhere within the document without losing perspective of and know what section of the document they were reading.

SpeciaLink was ready to be evaluated for a final review in October 1993. At that point, the Virginia Department of Education was contacted to verify that the regulations had remained consistent with the August mailing. The software

developer was told that the regulations had been through the peer review and state-wide public forms. Significant changes had been made. It was anticipated that in the October meeting of the Virginia State Board of Education, the changes to the regulations would be approved. By the end of November, the Board completed the regulations and sent them to the state legislative bodies for approval. A copy of the modifications was mailed to the software developer in December before the document was sent to the state school districts for distribution. It was not anticipated that the schools would receive their copies until February, 1994.

When the new printed format of the document was received by the software developer, it represented almost a 20% change in text. The developer took less than two days to manually make the changes. During this time the FIND feature of software was proven to be of great help.

Programming of the Electronic Linking

Each screen contained buttons that linked specific key words in the document to the definitions and to related topics in the regulations. For the prototype, 40% of the screens had buttons in order to give the user the sense of the transitional feature of linking and browsing the document in the nonlinear sequence. For example, a user could access all the information on a particular topic, such as: the expectations of the state regarding a special category of children, the local education association's obligations to serve a particular child in special education, the safeguards given that child, the expectations for staffing that class, and the funding for that category. The linking aspect eliminated the traditional page by

page movement throughout a document. The screen buttons could be accessed according to the user's need for additional information.

Writing of the Tutorial

An on-line tutorial was designed. The user could access the tutorial anytime the software was in use. A button labeled tutorial was placed on the introductory screen. The tutorial consisted of screens that introduced the function of each navigational button. The user could practice navigating within the tutorial by activating the buttons.

Testing the Software

In January 1994, *SpeciaLink* went through a series of tests by the developer to ensure that all the design features were working. The series of tests have been labeled Alpha testing. The testing focused on the following assurances: content validity, i.e. agreement with the original document; software robustness; and user-friendliness.

The testing stage revealed the following results:

- Accuracy of the software verified that the electronic format matched the printed format of the regulations in verbatim
- Cross-manual verification was ensured the on-line tutorial and printed manual contained complete and accurate instructions (see Appendix E);
- Security procedures were tested to ensure that the document could not be modified by the user to ensure accuracy of the Regulations
- A user-friendly installation procedure existed

- An efficient entry to the document, movement within the text, and exiting the document in a user-friendly manner existed
- The readability of each screen was consistent
- Navigation mechanism verification was ensured that each button was linked properly

After the Alpha testing by the developer, the same issues were presented to a sample of the potential software users. This evaluation process was labeled the "Peer Review." The Peer Review testing process involved two presentations and demonstrations.

The presentations were made at the annual Virginia Council for Exceptional Children Convention held in Roanoke in February, 1994 and the National Council for Exceptional Children's Convention held in Denver, Colorado in April, 1994. Both presentations were designed for 90 minutes. The presentations included the background research that initiated the particular study and overheads that represented actual screens from *SpecialLink*. The first set of screens represented the tutorial and identified all the buttons used in the background. The second set of overheads represented various screens of the electronic document. The overheads highlighted the linking capability of the system. After the presentation, colleagues were invited to explore the software by using the computer. Reviewers were told that *SpecialLink* represented a prototype, and due to its experimental nature, it was important to have peers offer a critical review and to make suggestions for modifying the software.

Additionally, the conference participants were encouraged to complete a Workshop Evaluation form that provided written comments concerning each

presentation. A Workshop Evaluation Summary was mailed to each presenter by the Council for Exceptional Children. The results of the Peer Reviews found that *SpeciaLink* met the following criterion's standards: content validity, i.e. agreement with the original document; software robustness; and user-friendliness.

Summary of Phase One. By successfully answering questions that were raised in each of the issues in Phase One, it was determined that a software package that electronically stores and retrieves a document containing the Virginia Regulations Governing Special Education Programs for Children with Disabilities can be developed.

Phase Two: Evaluation of *SpeciaLink*

2.0 How effective was *SpeciaLink* in providing the regulations governing the special education programs in Virginia?

The second research question investigated the efficiency and effectiveness of the software, *SpeciaLink*. The evaluation was carried out by means of an experimental study. In this phase, a sample consisting of secondary school building administrators of special education programs in the Tidewater area of Virginia was randomly placed in either the control or the experimental group. A survey was created in order to establish a baseline indicating the respondents' general knowledge of special education regulations. The survey, *Compliance Issues in Special Education*, was designed in the format of case scenarios. The survey was mailed twice within four months during the spring of 1994. Respondents were asked to decide if the administrator in the scenario had made the correct decision regarding special education programming based on the

regulations by answering either a "yes," that indicated the decision was correct, or a "no" that the decision was not correct. Additionally, respondents were asked to specify the specific regulation that had guided their judgment in each scenario (see Chapter 3, Instrumentation and Appendix B for copy of the survey). The survey was mailed to 50 secondary school building administrators of special education programs. Twenty-six surveys went to the experimental group and 24 surveys went to the control group during this phase.

The software, *SpeciaLink* was mailed to the experimental group for use for a period of two months. The software users were asked to access *SpeciaLink* during their daily operations as administrators of the special education programs within their school.

Simultaneously with the software mailings, each member of the experimental group was asked to complete the survey, *Administrator's Use of Computer*, mailed February, 1994. The survey was used to gather information concerning his or her current usage of computers (see Chapter 3, Instrumentation and Appendix B for copy of the survey).

At the end of the two-month experimental period, the software users were asked to complete the *SpeciaLink Review Survey* mailed in April, 1994 (see Chapter 3, Instrumentation and Appendix B for copy of the survey). Additionally, all members of the sample were mailed for the second time the survey, *Compliance Issues in Special Education* second mailing in April, 1994. The second mailing occurred four months after the first mailing. Accompanying the post-survey was a letter to the members of the control group that encouraged the respondents to use the printed version of the regulations when responding to the

legal specifications of each scenario. While a letter to the experimental group, encouraged the software users to access the electronic version of the regulations, *SpeciaLink*.

The responses from all of the surveys was statistically analyzed. The analysis provided the necessary data needed to answer the second research question regarding the effectiveness of *SpeciaLink*. Prior to examining the issues in Phase Two, a discussion has been presented concerning the return_rate of each of the surveys.

Return rate. With the pre-survey or first mailing of the *Compliance Issues in Special Education*, mailed January 1994, the experimental group had a 100% return rate (N=26), which consisted of one school being represented by both principal and assistant principal. The control group had a return of 21 surveys, which represented a return rate of 87.5 percent. In actuality, the return rate of the control group represented 100 percent of the possible administrators participating due to a school system consolidation of two secondary schools in the fall and a death of one of the principals whose replacement became a principal already participating in the control group. Since these two events came after the original mailings, rather than increasing the number of the control group participants, it was determined that the original membership in both groups should remain constant throughout the remainder of the experiment because time was one of the controls for the experimental phase of this study. The overall return rate of usable surveys for all available respondents was 100% (N=47). Similarly, with the post-survey or second mailing of the *Compliance Issues in Special Education*, mailed the end of April, 1994, the overall return rate of usable surveys was 100% (N=47).

The two additional surveys mailed in April 1994, *SpeciaLink Review* and the *Administrator's Use of Computers Survey* had a return rate of 100% usable surveys (N=26), respectively. Nine of the *SpeciaLink Review* Surveys were collected using a phone survey-format in which each question was read to the respondent and his or her responses were recorded on the survey form.

2.1 Did users in the experimental group access an electronic reference system as a resource for special education issues and programming?

A question on the survey, *SpeciaLink Review*, was used to collect the information on software access. Twenty-six disks containing *SpeciaLink* were mailed to members in the experimental group. Twenty-two (85%) of the respondents used the resource for the two-month period and returned the *SpeciaLink Review* survey which summarized their use of the software.

The remaining four respondents were called in order to collect information regarding their use of the software. The four respondents, representing (15%) of the experimental group, did not use the software. One of the respondents misread the tutorial information and assumed that the system was only designed for a mouse, not keyboards (yet this information was on the label of the software and on the first page of the written manual that accompanied the disk). One principal was not allowed to load software onto the hard drive (since his superintendent restricts modifying the school's equipment by adding to the hard drive). Instead, the principal took the software home to test it on his own personal computer. Another principal said he did not have the time to use the software. And the last principal was mailed the software three times and never received it (the software was never returned to the sender even though there was a return address, the

principal's address had been verified, and correct postage was attached). A decision not to continue mailing the software to this particular principal was made because of the time constraints of the experiment itself. For those not accessing *SpeciaLink*, information was taken by phone to complete the survey.

Within the body of the findings, non-users will not be accounted for in the percentages. The data represents opinions of the users of the software. Therefore, the Tables will reflect the opinions of the 85% who used and returned the software.

2.2 How often did the users access the software?

Table 9 reflects the software access dimension.

Table 9

Approximately How Often Did You Use *SpeciaLink* in Special Education Management Decisions?

Responses	very often	often	somewhat	not often
Percentages	0	52%	48%	

2.3 During the decision-making process, when was *SpeciaLink* most often accessed by the users?

SpeciaLink Review survey was designed to seek information from the respondents as to what phase in the decision-making process *SpeciaLink* was the most helpful. A phase for this study represented a distinct stage of development between the time the electronic information was accessed to aid in making a decision regarding special education and the culmination of the action. Therefore, the term "prior" refers to accessing *SpeciaLink* before an issue is presented or before a decision is taken. The term "during" refers to accessing the software as soon as a special education issue is presented and the administrator is considering options for a decision. The term "after" refers to accessing the electronic resource following a decision to verify the corresponding regulations and the culminating action.

In reviewing the data, 87% of the respondents were able to summarize their use of the electronic resource tool. The majority of the software users accessed *SpeciaLink* while making decisions regarding special education programming. Data is highlighted in Table 10.

Table 10

In Making Special Education Decisions, When Was *SpeciaLink* Most Helpful?

Responses	prior	during	after	(Left blank)
Percentages	20%	63%	4%	13%

2.4 Did the intended users find *SpeciaLink* effective in providing the regulations?

The experimental group was asked to evaluate the software's effectiveness in providing the regulations in an accurate, precise, and user-friendly design. Tables 11, 12, and 13 represent the data.

Table 11

How Effective Was *SpeciaLink* in Providing Accurate and Precise Information?

Responses	very effective	effective	somewhat	not effective
Percentages	9%	57%	30%	4%

To further evaluate of the effectiveness of *SpeciaLink* users were asked their opinion of the screen and content design of the tool, as well as characteristics that may influence the suitability of the software media used. In this query, four questions were asked concerning the design of the software. The respondents indicated that *SpeciaLink* could be used by people with a wide variety of skills and learning styles. Therefore, the software was user-friendly.

Table 12

Does the Design of *SpeciaLink* Account for the Personal Attributes of Users?

Questions	very accountable	accountable	somewhat accountable	not accountable
Computer skill	18%	78%	4%	0%
Experience and skill using law	17%	83%		

Table 13

Does the Design of *SpeciaLink* Account for the Personal Needs of the User?

Questions	very accountable	accountable	somewhat accountable	not accountable
Vocabulary of menus and tutorial	18%	82%		
Reporting the law	14%	59%	27%	

The results of the *SpeciaLink Review* survey indicated that the following criterion standards were met: content validity, i.e. agreement with the original document; software robustness; and user-friendliness.

In order to present a long-range prediction of the possibility of making computerized legal documents accessible to building administrators, the users were asked whether they thought that *SpeciaLink* in its present form would likely be used by their colleagues. Eighty-six percent of the software users believed that it is likely their colleagues would use *SpeciaLink* (see Table 14).

Table 14

What is the Likelihood *SpeciaLink* Would be Used by Other Administrators of Special Education Programs?

Responses	very likely	likely	somewhat likely	not likely
Percentages	36%	41%	9%	14%

Respondents were given the opportunity to give additional comments through an open-ended question that asked for specific suggestions the user would make in modifying the *SpeciaLink* program for other administrators of special education programs. A summary of the written comments received from the respondents concerning their critique of the design was categorized under the following two headings: current design issues and a wish list for improvement (see Appendix D). The "design issues" category represents the comments concerning *SpeciaLink*. The "wish list" for improvements category represents suggestions for additional studies.

The comments concerning the design reflected a positive view of the development tool. The suggestions for the "wish list" category included the expansion of the software to include other pertinent documents such as federal law and relevant district court cases. As indicated in the review of literature, federal law and court cases are considered critical areas of knowledge needed by the administrators. These areas are further discussed in Chapter 5, The Summary, Discussion, and Implications.

2.5 As a result of using *SpeciaLink*, was there an improvement in the knowledge regarding the special education regulations ?

The improvement in knowledge was measured via a subjective and an objective dimension. The subjective dimension was derived by analyzing the opinions of the software users regarding their improvements in knowledge of the regulations. An objective dimension of the sample's changes in knowledge over a four-month period was measured by the findings from the pre-and post-surveys, *Compliance Issues in Special Education*. The results of these two dimensions are presented below:

Subjective Measurement

After using the software, the experimental group was asked if *SpeciaLink* helped to improve their knowledge regarding the regulations. Sixty-nine percent of the experimental group felt that their skills had improved. Four percent did not believe that their knowledge had improved. Therefore, 96% believed that their knowledge of the regulations had improved after using *SpeciaLink* (see Table 15).

Table 15

Due to Your Involvement in This Research Project Using *SpeciaLink*, How Do You Rate Your Present Comfort and Skills in the Legal Knowledge Concerning Special Education?

Responses	greatly improved	improved	somewhat improved	not improved
Percentages	0%	69%	27%	4%

Objective Dimension

An objective measurement was achieved by analyzing the differences between the findings on the pre- and post-surveys using the *Compliance Issues in Special Education*, survey, administered both to the control and the experimental groups. Knowledge of special education regulations was associated with data in two distinct areas, Issues and Specificity. In the Issues section, the respondent had to state whether the actions taken by administrators were in compliance with the regulations. In the area of Specificity, the user had to cite the legal reference addressed in the particular scenarios.

The focus of the objective dimension centered on the following question: Was there an improvement in the knowledge related to the special education regulations as a result of using the software? The results of the knowledge question, referred to as the Beta testing, were analyzed by comparing the difference in performance of the two groups (control and experimental) over time. The analysis consisted of two Repeated measured ANOVAs with Group (experimental and control) and Time (pre and post) as the independent variables and Issues and Specificity scores as the dependent variables. Table 16 provides the means and standard deviations for these analyses. The table is presented as Issues then Specificity. The summary of Specificity is elaborated with a table that presents a breakdown of the percentage of right, wrong, and unanswered questions for the Pre and Post Treatment. Further exploration of individual user's responses can be found in Appendix C.

Table 16

Beta Testing: Summary of Objective EvaluationISSUES

GROUP maximum = 14.0	PRE-Treatment		POST-Treatment	
	\bar{X}	S	\bar{X}	S
CONTROL	11.286	2.373	10.571	2.537
EXPERIMENTAL	11.615	2.558	13.154	1.511

SPECIFICITY

GROUP maximum = 14.0	PRE-Treatment		POST-Treatment	
	\bar{X}	S	\bar{X}	S
CONTROL	2.000	2.976	2.905	3.275
EXPERIMENTAL	0.000	0.000	8.808	5.602

NOTE: \bar{X} refers to the MEAN of the sample scores. S refers to the standard deviation.

GROUP	PRE - Treatment			POST - Treatment		
	% right	% wrong	% no attempt	% right	% wrong	% no attempt
CONTROL (n=21)	11%	12%	77%	21%	13%	65%
EXPERIMENTAL (N=26)	0%	0%	100%	58%	2%	40%

The analysis for Issues indicated significant effects for Group ($F(1, 45) = 7.33, p < .01$), Time ($F(1, 45) = 52.88, p < .001$), and the Group by Time interaction ($F(1, 45) = 28.73, p < .001$). A graphical presentation of the interaction is presented in Figure 1. Follow-up analysis indicated that the interaction was caused by increased scores of the experimental group while the control group remained the same. The analysis showed the groups to be equivalent at the pre-survey, but unequal at the post-survey.

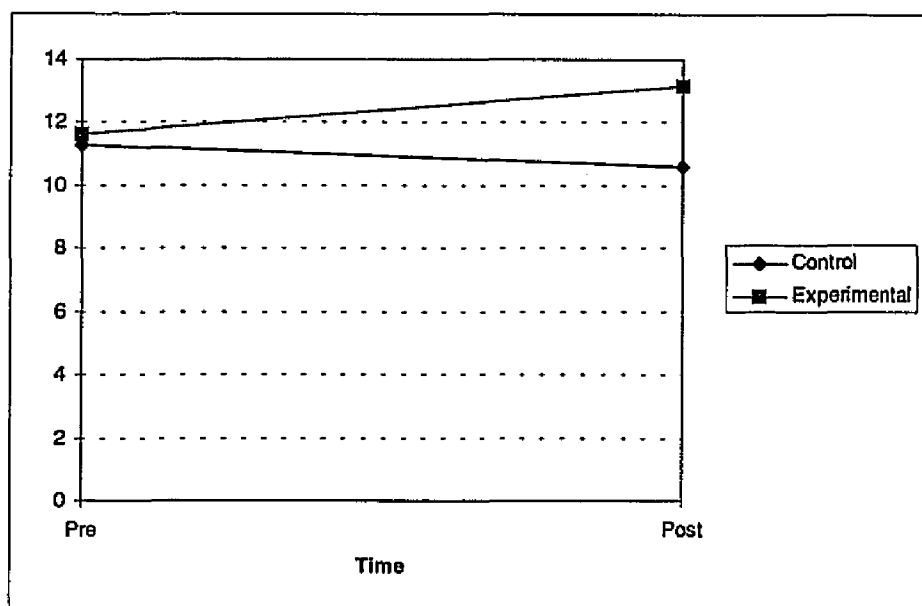


Figure 1. A 2 x 2 ANOVA for Issues

The analysis for Specificity indicated significant effects for Group ($F(1, 45) = 6.96, p < .05$) and the Group by Time interaction ($F(1, 45) = 29.48, p < .01$). A graphical presentation of the interaction is presented in Figure 2. Follow-up analysis indicated that the interaction was caused by vastly increased scores of the experimental group from the pre- to post- surveys while the control group grew only slightly. The analysis also showed the groups to be nonequivalent at the pre-survey and the post-survey. The experimental group scored significantly lower than the control group at the pre-survey and significantly higher at the post-survey (see Figure 2).

The nonequivalency between the experimental and control group for Specificity can be reviewed in Table 16 as a group and in Appendix B as

individual respondents. For the control group, the Pre-treatment survey responses indicated that 76% were left blank. Twenty-four percent of the responses were made by 8 of the 21 respondents. Closer analysis, revealed that the 8 respondents correctly gave the regulations for 45% of the questions, gave wrong responses in 45% of the questions, and did not respond to 10% of the questions.

In the Post-treatment survey, the control group increased by 9% the number of correctly identified regulations. Yet, 60% of respondents in the Post-treatment were wrong more often than right in their responses. In comparison the experimental group not only increased the number of people attempting to answer the Specificity questions, but of those who answered the questions their responses were correct 95% of the time with only 9% wrong responses.

To further evaluate the effectiveness of the software, a post-hoc analysis was completed using the members of the experimental group. The non-user group represented the 15% of the sample who reported they did not use the software. The user group represented those members who used the software. The analysis consisted of a single-factor ANOVA. The comparison consisted of the two groups (users and non-users of the software) as the independent variable and Issues and Specificity scores as the dependent variables. In the area of Issues, there was not a significant difference between the users and non-users. The single-factor ANOVA was Group ($F(1, 24) = 1.0684, p < .05$). Even though the actual raw data reveal that three out of the four non-users showed no improvement in their knowledge regarding the Issues. For the section of Specificity, a significant difference was found between the users and non-users of the software ($F(1, 24) = 10.83836, p < .05$) over the same period of time.

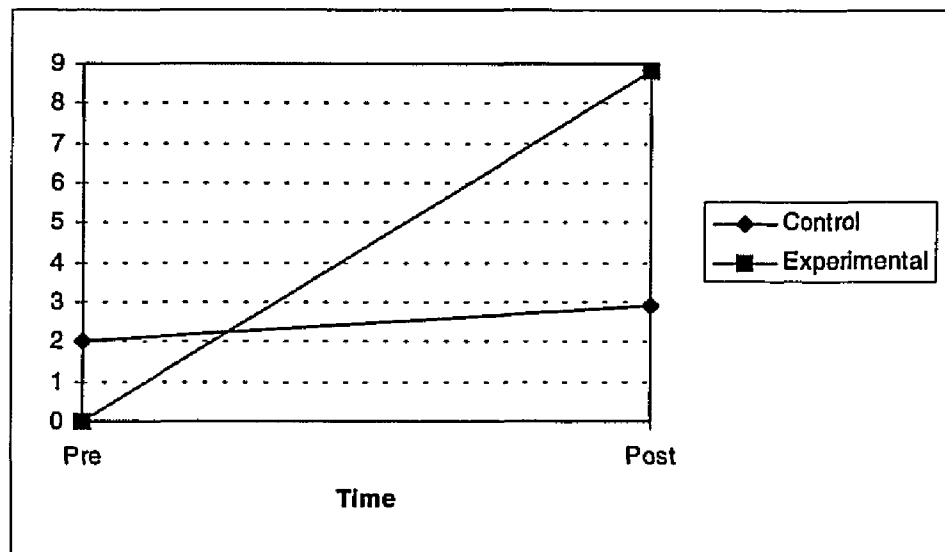


Figure 2. 2 x 2 ANOVA for Specificity

Summary of Findings of Phase Two. In response to the research questions regarding the effectiveness of an electronically stored document containing the Virginia Regulations Governing Special Education Programs for Youth with Disabilities, *SpecialLink* was proven to be effective tool for storage, retrieval, and training.

Summary of the Findings

The review of literature indicated that one of the responsibilities of a principal is administering programs for students with disabilities. To provide the principal with the most current and accurate resource to the regulations governing special education programs, a computer software program was designed. A prototype of the software, *SpeciaLink*, was reviewed by panels of peers and potential software users and met the predetermined qualifications established during the initial phase of the study. Passing the Alpha testing, or in-house testing, ensured that the software adequately represented the original document, was robust, and met with the user friendliness requirements of display and retrieval.

Following the establishment of the efficacy of *SpeciaLink*, the software was evaluated by a sample of secondary school building administrators of special education programs. The sample was randomly divided into an experimental and control group. The selected control and experimental groups completed a survey that focused on their knowledge of the special education regulations. For a two-month period, the experimental group was provided with the software *SpeciaLink*. They were asked to access the software during their daily administrative responsibilities involving special education issues.

Demographic information on the experimental group's school size and special education population was gathered including information concerning the members' present use of computers, as well as, their opinions concerning the software. It was determined that the principals were comfortable in using their computers during their daily administrative tasks. The principals were selecting

their own software for school and personal use. The majority of the principals were advising either their faculty or fellow administrators in the use of computers for instructional or administrative tasks. Eighty-eight percent of the administrators believed that computers will play an integral part of administrators' leadership roles in the future.

After the two-month experimental period, software users were asked to evaluate the effectiveness of *SpeciaLink* by completing the *SpeciaLink Review* survey. The results of the surveys indicated that the majority of the experimental group used *SpeciaLink*. Most often, they used the software while making decisions regarding special education issues. The users indicated the software met the following standards: content validity, i.e. agreement with the original document; software robustness; and user-friendliness. Concerning the future use of *SpeciaLink* by other administrators, the majority of the users believed that their colleagues were likely to use the software, which in their opinion had improved their own knowledge concerning the regulations.

The effectiveness of *SpeciaLink* was also evaluated to determine if the software users made an improvement in their knowledge of the regulations as a result of using *SpeciaLink*. With the *Compliance Issues in Special Education Survey* as a pre- and post-measure of effectiveness, an analysis was made with a series of 2 x 2 factorial ANOVAs with Group (experimental and control) and Time (pre and post) as the independent variables and Issues and Specificity scores as the dependent variables. A significant effect was found between those who used the software and those who were not given the software. The experimental group showed an improvement in knowledge over the control group. Furthermore,

the experimental group could also specify the legal regulations with more accuracy than their counterpart administrators.

Additionally, a single factor ANOVA was used to analyze the differences between users and non-users within the experimental group. The non-users represented 15% of the total sample. For the Issues section there was not a significant difference. Yet for the Specificity section, a significant difference was found between the users of the software and those who did not use the provided electronic tool, *SpeciaLink*.

In summary, *SpeciaLink* is an efficient and effective reference tool for documenting the regulations regarding special education programming.

CHAPTER V

Summary, Discussion, and Implications

This chapter provides a summary and discussion of the major findings of the study. Implications for future research are also provided.

Summary of Results

In Virginia, the Regulations Governing Special Education Programs for Children with Disabilities specify that in order to facilitate day-to-day operations, local education agencies (LEA) must appoint a special education administrator. In turn, the special education administrator may appoint a designee to implement services for students within each school. This designee is most often either the building level principal or assistant principal.

To comply with the responsibilities of the law, principals must have a clear understanding and knowledge of the law, must be able to interpret federal and state mandates, must assure that due process rights of students with disabilities are upheld, and must meet the unique educational needs of each student as specified by law (Burrello, 1993; Sirotnik & Kimball, 1993; Stainback & Stainback, 1990). Yet research indicates that principals are weak in the knowledge of the law and regulations for special education (Carver, 1992). Without adequate legal knowledge, principals are not prepared to assume leadership roles in special education programming and service delivery (Carver, 1992; Farley, 1992; Hirth & Valesky, 1992). However, research has found that even though principals indicate a weakness regarding the regulations, daily the principals are making

decisions regarding special education. In so doing, principals can place themselves their school districts at risk of facing the legal consequences for misinterpretation or lack of administrative control over special education programs.

To protect themselves, their school divisions, and the educational rights of their students, principals must have an efficient resource tool that guides their decisions regarding special education services. This resource tool has to be accurate, accessible, and adaptable (Billingsley, 1988, 1989; Carver, 1992; Farley, 1992; Laycock & Frantz, 1992). Exploration of resources other than traditional printed-format of the regulations has not been conducted until this study. Additionally, the principals' need a tool that provides on-going training in any modifications made to the regulations

The purpose of this study was to establish the efficacy and evaluate the effectiveness of an electronic system used for storing, referencing, and manipulating special education regulations. This electronic format will enable principals to access special education regulations accurately and quickly, and will serve as an individualized on-going training module.

The study involved two distinctive phases identified by the following research questions:

Phase One: Can a software package that electronically stores and retrieves the Virginia Regulations Governing Special Education Programs for Children with Disabilities (effective January 1, 1994) be developed?

SpeciaLink met with all the preliminary design expectations and passed the Alpha testing that included four peer reviews. The reviewers believed the

development tool, HyperPad, demonstrated the design flexibility required for this study. Using the hypertext structure of HyperPad, a variety of basic screen designs were considered. The final background screen design met the approval of the reviewers. The reviewers indicated that software met the following pre-established standards: content validity, software robustness, and user-friendliness.

Phase Two: How effective was *SpeciaLink* in providing the regulations governing the special education programs in Virginia?

Phase two involved a two-month experimental study. The individuals involved in the study were secondary school building administrators of special education programs in the Tidewater area of Virginia. The sample was selected to represent potential users of the software. A pre-test-post-test control-group design with random assignment of subjects into control or experimental groups formed the methodology of the study. After a two-month experimental period in which members of the experimental group had access to the software, measures of the effectiveness of the software were collected. The findings from the pre- and post-survey, *Compliance Issues in Special Education*, formed the objective dimension of the study. Additionally, software users were asked their opinions of the software and its effectiveness in increasing their knowledge-base concerning the regulations. This became the subjective measurement of *SpeciaLink's* effectiveness.

In summary, the study determined that 85% of the experimental group used the software in their administrative tasks regarding special education programming. The majority of the users accessed the software while they were in the process of making a decision regarding special education issues.

Users also had the opportunity to evaluate the software's screen design and user- friendliness. Ninety-six percent of the users believed the design provided an effective reference tool for the regulations and met their personal needs. One hundred percent of those who used *SpeciaLink* rated the software as a user-friendly tool. Also, it was perceived that use of the software improved the principals' knowledge regarding the regulations.

The objective measurement of the effectiveness of *SpeciaLink* focused on changes in two aspects of knowledge using a 2 X 2 Repeated measures ANOVA's with Group (experimental and control) and Time (pre and post) as the independent variables and Issues and Specificity as the dependent variables. Issues was so labeled because the sample members were asked to review several scenarios in which an administrator made a decision regarding a special education issue. The respondents to the survey were asked if the administrator had acted correctly based on the regulations. Specificity was so labeled because the sample members were asked to cite a specific regulation that governed each scenario.

When analyzing the Group X Time interaction of the dependent variables, the analysis for Issues indicated significant effects for the members in the experimental group whose members demonstrated an increase in knowledge of the regulations after the two-month treatment period. The analysis showed the groups to be equivalent at pre-survey, but unequal at the post-survey. Additionally, the analysis for Specificity indicated significant effects for those members in the experimental group who could cite legal reference from the regulations for the scenarios. Follow-up analysis indicated that the interaction was caused by the vastly increased scores of the experimental group from the pre-

to post-tests, while the control group grew only slightly during the same time period. The analysis showed the groups to be nonequivalent at the pre-survey and post-survey. Even though there was a random sample, the results of the pre-survey indicated that 47% of the control group responded to the questions to indicate the legal citations while none of the experimental group cited the legal regulations. In the post-survey, the non-users had only 57% of the principals responding to the Specificity section, of which 19% experienced a decrease in correct legal citations. Seventy-seven percent of the users completed the Specificity section. There was no apparent factor that could be identified to cause the initial disparity in the two groups since both groups received identical directions.

A post hoc analysis was completed isolating the experimental group to determine if any differences existed between the users and those who chose not to use the software. A significant difference was found between the users of the software and their ability to cite the regulations versus the non-users of the software over the same period of time.

Discussion

Throughout this study, it has been proposed that electronic storage and dissemination of the Regulations Governing Special Education Programs in Virginia could be designed, developed, and tested. Furthermore, the test results would indicate an increase in knowledge of the regulations in special education. The results of a positive effect on the software user would be an impetus to project the benefits of an electronic version of the regulations over the printed format.

These two proposals are supported with the following discussion.

Phase One: The Development Phase

- 1.0 Can a software package that electronically stores and retrieves a document containing the Virginia Regulations Governing Special Education Programs for Children with Disabilities (effective January 1, 1994) be developed?

When determining if a multimedia solution can be used to present specific information for instructional purposes, Scheiwer and Misanchuk (1993) have suggested that one should consider the content of the document, the learners involved, and the learning climate. With regard to the content, the information must be clearly and logically written and capable of being segmented. The document used in this study, the Regulations Governing Special Education Programs for Children with Disabilities, fit these characteristics of segmented structure as discussed by Hannafin and Rieber (1989) and highlighted in Chapter 3. Clarity requirements were supported by the hypertext authoring tool and

SpeciaLink's design, specifically the screen design and the linking patterns, which were presented in an intuitive way to meet the behavioral needs of the users. At the same time, the structure of *SpeciaLink* maintained fidelity with present orientation of the printed format. The findings related to the design and development of the experimental study are summarized in Chapter 4.

The content of the document chosen for this study was complex while at the same time the content was critical for the users to know. The material was considered complex because it may require users to make repeated readings of the same segment. Therefore, the reader would have to refer often to the resource tool whether it was in a printed or electronic format. The material was considered realistic, because it provided information needed to govern a current program in the school.

The multimedia format had a potential marketability. The users were representative of a heterogeneous group, representing various school sizes and special education population. The number of potential users was significant and accessible. Finally, the learning climates of the organizations targeted for the sample study were positive to the study. Superintendents were willing to allow the software to be used in their school districts, which was a prerequisite of the study and discussed in Chapter 3.

Phase Two: Evaluation of *SpeciaLink*

2.0 How effective was *SpeciaLink* in providing the regulations governing the special education programs in Virginia?

The second part of the proposal projected the following benefits of an electronic version of the regulations over the printed format. An electronic version is motivational, updatable, less expensive, and responsive to on-going training.

Motivational characteristics. Schnept and DeClus (1992) stated that principals should be able to monitor their own building operations, ensuring that every aspect of the special education program reflects the regulations. As discussed in Chapter 2, principals failing to abide by the most current mandates and policies regarding the rights of students with disabilities are at risk of facing the legal consequences for misinterpretation or lack of administrative control over special education programs. Not only do principals risk the consequences of not fulfilling the expectations of the role itself, principals who do not abide by the regulations governing special education programs may be considered negligent and could be taken to Civil Court by the Office of Civil Rights because of infractions in supporting the legal rights of the disabled students. Many of the Civil Court decisions have been subsequently heard and supported by the Supreme Court as in Goss v. Lopez (1975), Sherry v. New York State Education Department (1979). Likewise, the superintendent who hired the principal, and even the members of the local school board, could be taken to court, because of their employee's misconduct in issues regarding the educational programming of students with disabilities as in Ventura (CA) Unified School District (1991) and Helbig v. City of New York (1993). Therefore, a principal in charge of special education programs is externally motivated to know the regulations.

Yet research shows that building-level principals often rely on central office special education coordinators in the central office to lend their support and

answer questions. When questions cannot be answered by central office staff in part because of either time constraints or lack of expertise (Billingsley & Cross, 1994), local administrators often call the Virginia Department of Education themselves. The research by Billingsley and Cross is supported by Raskoph, Associate Specialist for Grant's Administration of the Virginia Department of Education, (Personal communication, November 4, 1993). Raskoph stated that the Virginia Department of Education (VDOE) has analyzed their incoming calls and has found that calls are made from principals regarding specific programming concerns such as discipline issues, qualifications of instructional staff, and due process issues, -- all of which are explained through the regulations themselves.

With the continual downsizing of state-operated programs (VDOE projects a possible loss of 40 jobs for the 1995 fiscal year as discussed through personal communication with Michelle Hathcock, Associate Specialist of Compliance) coupled with a projected decrease in certified and qualified supervisors/coordinators of special education programs (McLaughlin, Smith-Davis, & Burke, 1988), building principals must be able to access, read, and interpret the regulations on their own. Additionally, the principals must be internally motivated to study the regulations to acquire new knowledge.

Motivation is enhanced when the learner has the time and can see immediate and tangible benefits of their daily activities (Mackay, 1991). People are motivated to learn when the learning environment is friendly and provides situational and incremental learning (Winograd & Flores, 1986).

SpeciaLink was designed based on the guidelines for writing user-friendly on-line documents (Brookshear, 1991; Schwter & Misanchuk, 1993). Additionally,

the software's navigational, search, linking, and note-taking features create a situational and incremental learning environment. These features allow the user to acquire situational knowledge on issues that seem useful at the moment. At the same time, the user builds up his or her special education knowledge in a self-paced manner.

Updatability and Cost. The laws governing the administration of special education programs have protected rights and directed the responsibilities of the building-designee. The principals have the ultimate responsibility for legal and ethical issues relating to the implementation of the laws and regulations directing the educational needs of students with disabilities. To support the goal of strict adherence to the law, Tompkins and Cooper (1993) strongly maintains that the principals' legal knowledge must be current knowledge. Research shows that the laws governing special education programs continually change. The changes may represent changes in the conceptual focus of the law or simply modifications or clarification of the existing laws (Sirotnik & Kimball, 1994).

When the federal or state laws change, the changes must also be reflected in the regulations that support the law's implementation. In 1991, the Commonwealth of Virginia drafted new regulations for special education programming to reflect The Individuals with Disabilities Education Act of 1990 (IDEA).

In Virginia, what occurs between the passing of legislation related to education and the distribution of the printed format of the document has been described by Michelle Hathcock, Associate Specialist for Compliance Issues in Special Education (personal communications, January 18, 19, & 20, 1995). After

the General Assembly passes new legislation, the document is submitted for a public comment period of 60 days. The Board of Education reviews the comments and makes modifications to the existing document and finalizes the document with an approval. Next, the document is placed on a calendar along with other documents to be released for printing, which may take up to 30 days or more. Then the document goes to the Board of Education to be signed.

At the Department of Education (DOE) the document is given to the Compliance Department of Special Education which puts it in electronica formats and then sends the document to the graphics department for editing and bid designing. Misty Kiser, Associate Specialist, Graphics Department (personal communications, January 20 & 24, 1995) stated that normally documents the size of the current regulations go through an additional formal process that includes a formal bid for a contract to print the document. The bidding phase, which takes between six to eight weeks, is handled by another agency rather than by the Department of Education. That particular agency will take usually one week to process the specifications and then place the print job information into the Virginia Business Opportunity Book. The bid is open for 30 days. After the 30-day bidding process, the agency takes one week to sort the bids and determine if the lowest bidder can do the job as specified. The company awarded the job then completes the task, which may take an additional two weeks, after their proof copy has been previewed by the Department of Education for corrections.

The printed material is delivered to the Compliance Department and distribution is made to the school superintendents. The superintendents call in their orders, and the DOE mails out the requested number of copies. There is no

limit to the number of copies or requests per superintendent. Once the copies are sent directly to the superintendent, it is up to each school district to distribute them in a timely fashion and/or store them for later distribution. After the document leaves the DOE, there is no guarantee that the building level principal will receive their copy in a timely manner, for each school district has a different distribution system and storage capability for printed documents.

For the 1994 regulations, the use of outside printing contractors was not considered. Several problems complicated the process and extended the normally anticipated time between the moment that the document is approved by the General Assembly and the moment that it is distributed to the school superintendents. Hathcock stated that the regulations passed the General Assembly in July, 1994. The regulations went through several revisions. The current regulations went through "massive changes" based on the public comments received. The process for revisions follows an established timeline. Each series of revisions must go through the following process: it takes 30 days to publish, 30 days to receive comments, and 30 days to typeset and return for public comments. Hathcock stated that the document went through two public comment review periods. Additionally, the APA writing style for this document was lengthy, which added days to the typesetting.

Recognizing the importance of having the document into the hands of the school districts and the extensive time it had taken between the passage of the regulations and the final version, the Superintendent of Education decided that the regulations should not go out for a formal bid. It was decided to handle the print job internally. The Superintendent could only handle the job internally if the costs

did not exceed \$5,000. Kiser said that the Department of Education printed the first 5,000 copies for \$4,800. The Department distributed the first 5,000 copies and had to reorder an additional 5,225 copies for \$4,999.99. The total cost came to \$0.96 each copy.

Kiser said that the \$.96 represents print costs, not postage or storage costs. The cost of postage for one document was \$1.44 for first class at the time of this study, with the total postage varying according to the quantity sent and the class. Storage costs are a critical concern at the DOE, and estimates of the storage costs for individual school districts vary. Figures for storage costs were not available.

Kiser stated, "No doubt, hands down, an electronic format and network would save on printing, postage, and storage costs." Future plans are to blend the DOE's technology division with the graphics division. Additionally, the Associate Specialist in charge of technology has asked her to actively pursue electronic delivery of documents such as the regulations in the future."

In contrast, *SpeciaLink* was designed, tested, and disseminated within four months. Since *SpeciaLink* is in an electronic form, it can be updated quickly and mailed directly to all principals. It should be noted that *SpeciaLink's* design had to meet specific criteria approval as it was Alpha and Beta tested. Recognizing the fact that the study was carried on by one researcher on a part-time basis versus a full-time staff member, the process of updating the software and dissemination revisions would be cut significantly since the shell has been designed and changes would be made only in the written text. Dissemination can be made directly by the Department of Education and mailed directly to each principal because the duplication of disks can be completed rapidly and accurately. Each building level

administrator can make additional copies for further dissemination to staff, ensuring that new regulations or modifications are accessible.

To demonstrate cost effectiveness the cost of duplicating disks was secured. Several local companies were contacted. Mike Minarik from Connecting Point Computer Center in Newport News, Virginia quoted a duplication cost of \$0.60 per disk for 5,000 disks (personal communication, February 6, 1995). Joe Fuller from Micromagnetic Inc., a Richmond company that specializes in diskette duplication, quoted a price of \$0.48 for 5,000 disks (personal communication, February 7, 1995). The price includes the disks, duplication, error-free certification, and labeling. Postage for one disk to be mailed was \$0.29 for first class mailing at the time of this study. As it is noted later in the section of Future Directions, *SpeciaLink* can form the basis of a similar system that would be available through Internet, where the cost of delivery in terms of time and money would be zero.

As seen in the above narrative, the approximate difference in duplicating the printed format of the document versus the electronic was \$0.48 per copy. This price does not include the difference in postage, which represents a savings of \$1.15 per copy for the disk versus the paper format. Figure 3 demonstrates a graphic representation of the cost differentials. You can see the savings in the disk versus the printed format.

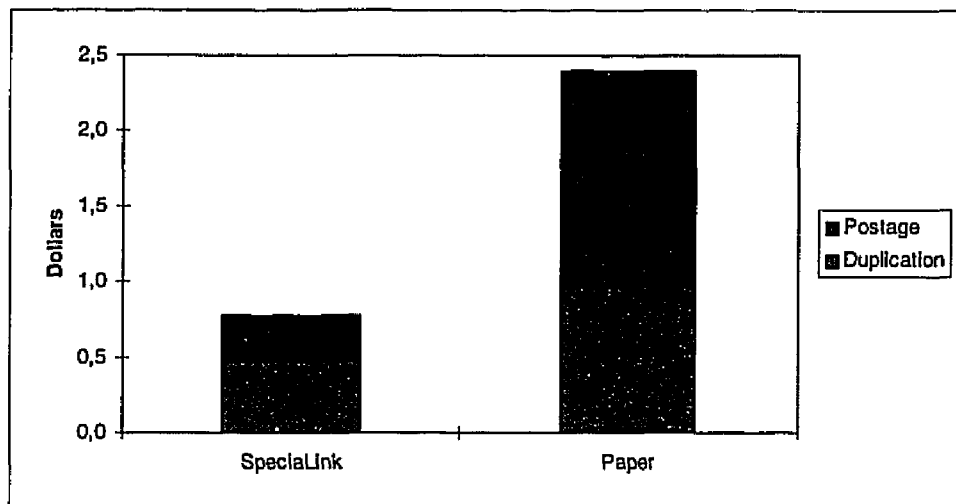


Figure 3. Cost comparison

Responsiveness to on-going training. To ensure that principals possess the most current knowledge to complete tasks of managing special education programs, state Departments of Education (SEA) and local school districts (LEA) are legally required to provide training in reading and interpreting the regulations, especially the regulations that directly impact on the administration of special education programs. The training centers on the delivery of services to the special education population. Training is to be continuous and reflect the ever-evolving role of principals. Not only do the LEA's provide training whenever new regulations are established, the LEA's provide on-going training or in-house training when changes occur in a district's role and expectations of its administrators, or in the needs of the student population being served in each site change.

A problem exists in that training must be continually provided. Yet research indicates that pre-service and in-service training of building principals has been

found to be insufficient (Carver, 1992). Administrators themselves noted that they lack skills in areas of legal interpretation and knowledge regarding special education law (Chapman, Sorenson, & Lobosco, 1987; Hyatt, 1987). Complicating the present problem of insufficient and ineffective training programs, administrators' varying and numerous daily leadership responsibilities make it more difficult to spend time away from their buildings to attend training programs.

SpeciaLink may become a useful tool for on-going training. Already discussed is the feature of updatability that allows any changes in the regulations to be rapidly and accurately modified and the current version delivered immediately to the administrators. Buttons can be designed that allow the user to immediately access any new changes by adding a separate menu item that highlights changes. In-house training can be completed by adding individual school district's directions for implementing regulations within each building. The software version of the regulations accommodates the learner by allowing them to use the tool any time it is convenient to the learner without attending outside training.

Summary of the Advantages of *SpeciaLink*

The literature review proved that principals need to have the Regulations Governing Special Education Programs for Children and Youth. Effective delivery of these regulations requires that the regulations be presented in a format that is current and clear. Additionally, the document must concisely meet the knowledge needs of the users. The regulations must also be provided in an environment that motivates users to explore the document and that accommodates incremental and situational learning.

This study sought to develop an electronic format of the regulations. To provide the foundation for development of *SpeciaLink*, this study found that principals do have the supporting hardware necessary for an electronic transference of the regulations. Additionally, there is a clear indication that the Commonwealth of Virginia has an interest in emphasizing electronic transference of educational information and documents. With the above requirements for a successful market, this study has provided a prototype software and a baseline experimental study. It is believed that *SpeciaLink* was found to meet the knowledge needs of its users at a less expensive format, therefore, becoming more effective than the printed format.

Generalizing the Study

A possible limitation of this particular study is that the sample has been drawn from an experimentally accessible group rather than a broad-based population. Additionally, the personal characteristics of each subject, such as their motivation, expertise in computer use, and their comfort with the design traits of the software may affect the outcome of the study.

The intended software users in this study were secondary school building administrators who are in charge of special educational programs. The sample represents people who have decided to work at the secondary school level and may already have preexisting knowledge needs that may affect their use of the software. The sample represented both principals and assistant principals who were administrators in sites whose student population ranged from 500 students or less to buildings of greater than 1,000 students. The special education population

within the buildings varied from 50 to over 150 students labeled and served under the special education regulations.

It is acknowledged that different schools may have different needs and that the student populations may vary. Varying student population sizes may also alter the time spent accessing the document or software. Administrators may also be very comfortable and adept in accessing the printed format of the regulations or may believe that their knowledge needs are adequate without accessing either the printed or electronic version.

Apparently, *SpeciaLink* for this study was found to be user-friendly. Yet it is acknowledged that administrators' screen-designing needs may vary across other geographical areas and may also vary with the sophistication of the users. In this study, the users were somewhat familiar with word processing and additional operations. Most importantly, they had access to computers in their offices.

Finally, it is acknowledged that the size of the instrument used to measure the effectiveness of *SpeciaLink*, *Compliance Issues in Special Education*, only had 14 items. Obviously, a 14-item survey does not sample the entire domain of special education law. For this study, it was determined that the survey provided an adequate sampling to measure knowledge regarding the issues and specificity.

Implications for Future Research

As a result of this study the following are areas of future research:

1. The document used in this research focused on Virginia's Regulations Governing Special Education Programs for Youth with Disabilities. During the study, users suggested the addition of other documents such as the Federal Law

(IDEA), most recent court cases in special education, and local district special education policy. It is acknowledged that the selected development tool can easily manage these additional documents. These documents could be easily linked to each other without increasing the user's access complexity. Key to the effectiveness is the ease of using the tool provided through menus and linking. Since the electronic method of accessing information will remain the same and the volume of information will be transparent to the user, including more documents in the software should not decrease the effectiveness of the software. With each additional document added to the memory, additional testing should be done to ensure that the software is still an effective way for delivering the regulations.

2. It was acknowledged that the subjects came from a preexisting group. Additional studies may be carried out with samples that represent elementary and middle school administrators. Sample sizes may also be increased to represent a more diverse group of potential users.

3. Cost-analysis of the study using *SpecialLink* as the reference tool versus the present format was initially not a critical consideration of this study, but was viewed as an advantage. For a larger state-wide study, this accounting analysis must be initiated in the beginning of the study.

Future Directions for *SpecialLink*

Based on technology, *SpecialLink* provides an alternative, more effective way for delivering Virginia's Regulations Governing Special Education Programs for Youth with Disabilities. Technology is constantly evolving. To take advantage of

the latest advances in technology, further work is needed to investigate how technology can improve the delivery of the regulations.

Specifically, with the current explosive use of Internet, additional research is needed to investigate how *SpeciaLink* can be delivered through Internet in a HTML format. A perceived advantage of *SpeciaLink* on the Internet is that with Internet, there will be no delivery cost for the software -- cost in terms of money and time. With Internet, the latest version of the regulations may be transferred instantaneously to the administrators upon their request. There would be no need to duplicate disks and pay postage, since each user can retrieve the document from Internet and transfer it to their own disks. The idea of delivering the regulations over the Internet is very promising since the number of schools that participate on Internet is growing every day.

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Appendix A
Correspondence Accompanying Surveys

August 23, 1993

Dear «title» «lastname», Superintendent of Public Schools :

Special education programming in our public schools often encompasses 20 percent of administrators' daily responsibilities. Many schools have special education programs that involve a large portion of the school population and have designated personnel to be responsible for all administrative decisions for these programs. State-wide training and in-service training are provided to the administrators, yet, often the laws, regulations and standards governing special education programming change rapidly. Also, administrators in these positions do not remain the same and constant training and retraining maybe necessary. Due to these changes and the critical nature of legally complying with the laws, it is important that administrators have accurate and immediate access to specific areas of the laws governing special education programming.

As partial completion of my Doctoral Degree in Education, Professor Thomas Ward and I are conducting an experimental study in the Tidewater area involving the development and testing of a prototypical software which will be used to access the regulations/standards for special education program. It is our intent to investigate the efficacy and applicability of an electronic system used for storing, referencing, and manipulating special education law. This electronic system will enable principals to access special education law accurately and efficiently, and serve as an individualized on-going training model.

The experimental study will involve a survey letter that will be mailed to all secondary school administrators of special education programs in the Tidewater area. This survey will serve as a pre-test for evaluating the effectiveness of the software. Half of the population will serve as a control group and the other half will be asked to voluntarily serve as the experimental group. The experimental group will be given the software and be asked to reference the law via their personal computers during their normal special education administrative decisions. At the end of two months we would retrieve the software program and ask the administrators several questions concerning their own opinions and use of the software. Use of the software is strictly voluntary. Both groups will be re-surveyed and changes in responses to the questions will be evaluated.

Thank you very much for considering this research to be conducted in your school system. Enclosed you will find copies of the surveys, signed approvals of my proposal, and a list of secondary school administrators to be considered for this research. If you have any additional questions related to this research please feel free to contact me at (804) 220-1683 (home) or Professor Thomas Ward at (804) 221-2358 (office).

Sincerely,

Courtney S. Frantz
Doctoral Candidate

Dr. Thomas Ward
Assistant Professor

December 27, 1993

Dear «title» «lname»,

I would like to thank you for agreeing to participate or inviting your assistant building level administrator in charge of special education programs to participate in the testing and evaluation of *Special Link*, an electronic version of the Regulations Governing Special Education Program in Virginia. *Special Link* represents the most accurate and up-to-date regulations as approved by the State Board of Education in October, 1993. We will be sending you the initial surveys the first of January, 1994.

Special Link will be presented in February at Virginia's Council for Exceptional Children Conference in Roanoke as research in progress and again in the National Council for Exceptional Children's Conference in Denver, Colorado in April. Your district's participation indicates your desire to be leaders in the field of technology as evaluators not merely consumers.

Copies of the research results and the software will be available to your district through your special education director. For any additional information feel free to contact me at (804) 220-1683 or Dr. Thomas Ward at (804) 221-2358.

Again, thank you.

Courtney S. Frantz
Doctoral Candidate

February 24, 1994

Dear «title» «lname»:

You have been selected to represent secondary school building administrators of special education programs in Virginia's Tidewater area who will be participating in a pilot study entitled *SpecialLink*. *SpecialLink* is the electronic version of Virginia's Regulations Governing Special Education Programs for Children with Disabilities, effective January, 1994. It is the intent of this pilot project to evaluate the effectiveness and efficiency of this resource. With your superintendent's approval, you and your colleagues have already completed the pre-survey, Compliance Issues in Special Education that explains the study.

The next stage of the project involves the actual testing of the software followed by a critical review by the software users. The software will be available for use for two months. This project is voluntary and your access of the *SpecialLink* depends on your special education programming needs. At the end of the project, data will be collected from all participants representing access, interest, and suggestions. Upon request, individual participants will receive a summary of the pilot study.

Enclosed you will find the following: the software, *SpecialLink*; a manual providing user information; and a copy of Administrator's Use of Computers Survey. Please return the survey in the self addressed envelope.

Thank you again for you participation. I look forward to working with you on this pilot project.

Sincerely,

Courtney S. Frantz
Doctoral Candidate

Dr. Thomas Ward, Assistant Professor
The College of William and Mary
School of Education

For additional software questions throughout the study, please do not hesitate to call either:

Dr. Stamos Karamouzis, The College of William and Mary office # (804) 221-3467 or 864-2014 Courtney Frantz, New Kent Schools, office # 966-9656 or home # 220-1983

March 4, 1994

Dear Director of Special Education Programs:

I would like to thank your district for agreeing to participate in the testing and evaluation of *SpecialLink*, an electronic version of the Virginia Regulations Governing Special Education Programs for Children with Disabilities. *SpecialLink* represents the most accurate and up-to-date regulations as approved by the State Board of Education in October, 1993 with an effective date of January 1, 1994. A copy of this software is provided to the special education directors for their own reference while the software is being tested by their district.

The building administrators named below have been placed in our experimental group and will be voluntarily using the software for two months. At the end of the experiment we will evaluate the software, asking the users to determine *SpecialLink*'s effectiveness. If building level administrators are having any difficulty with the software system, phone number are provided which can be accessed on a 24 hour basis and calls will be returned the day called. A tutorial built into the software and a written manual accompany the software.

SpecialLink has been presented in February at Virginia's Council for Exceptional Children Conference in Roanoke as research in progress and again in the National Council for Exceptional Children's Conference in Denver, Colorado in April. Your district's participation indicates your desire to have your building administrators be given the opportunity to be leaders in the field of technology as evaluators not merely consumers.

Copies of the research results will be available to your district upon request. For any additional information feel free to contact me at (804) 220-1683 or Dr. Thomas Ward at (804) 221-2358.

Again, thank you.

Courtney S. Frantz
Doctoral Candidate

*School of Education
College of William & Mary
Jones Hall
Williamsburg, VA 23185*

Fall, 1993

Dear Administrator:

This letter is to thank you for your participation in the Special Link Project. Your participation was instrumental for the success of the project. We are in the stage of assessing the effectiveness of the software. For the final stage, we request that complete the enclosed survey and return it by _____. A return envelope is enclosed for your convenience. Your honest and complete statements are very important to the validity of the research project you have most kindly participated.

Thank you in advance for completing the survey. An attempt will be made to furnish you a copy of the projects' results upon request. If you have any questions or comments concerning the project please call Ms. Courtney Frantz at (804) 220-1683.

Sincerely,

Courtney Frantz
Doctoral Candidate

Dr. Thomas Ward
Associate Professor

**School of Education
The College of William & Mary**

Compliance Issues in Special Education

This survey is the final post survey that will be used to evaluate an experimental study, called *SpeciaLink Project*, involving an alternative method of in-service training in the monitoring of special education programs. It is requested that **principals who are the building level administrators of special education programs** complete the survey and return it by the due date.

Spring, 1994

Dear Administrator:

First, let me thank you for participating in an experimental study, called *SpeciaLink Project*. To evaluate the effectiveness of the software documenting Virginia's Regulations Governing Special Education Programs for Students with Disabilities, we are asking **principals who are building level administrators of special education programs** to complete the following survey. This survey has also been used in the pretesting phase of the experiment. We are asking administrators to complete the survey using the Regulations Governing Special Education Programs for Children with Disabilities (January 1, 1994) to address the specific violation indicated in the scenarios.

This survey takes approximately 10 minutes to complete and should be returned in the self addressed envelope by _____. The survey itself contains no identifying codes and both you and your school district will remain anonymous in the reporting of the data. All data will be reported as group data representing the experimental group versus the control group used in the testing of this software.

Thank you in advance for completing the survey. Again, if you would like a copy of the final study results please contact me (804) 220-1683 (home) or the project's advising professor, Dr. Thomas Ward, at (804) 221-2358 (office).

Sincerely,

Courtney Frantz
Doctoral Candidate

Dr. Thomas Ward
Assistant Professor

**School of Education
The College of William & Mary**

Compliance Issues in Special Education

This survey is the final post survey that will be used to evaluate an experimental study, called *SpeciaLink Project*, involving an alternative method of in-service training in the monitoring of special education programs. It is requested that **principals who are the building level administrators of special education programs** complete the survey and return it by the due date.

Spring, 1994

Dear Administrator:

First, let me thank you for participating in an experimental study, called *SpeciaLink Project*. To evaluate the effectiveness of the software documenting Virginia's Regulations Governing Special Education Programs for Students with Disabilities, we are asking **principals who are building level administrators of special education programs** to complete the following survey. This survey has also been used in the pretesting phase of the experiment. We are asking administrators to complete the survey using the software *SpeciaLink* to address the specific violation indicated in the scenarios.

This survey takes approximately 10 minutes to complete and should be returned in the self addressed envelope by _____. The survey itself contains no identifying codes and both you and your school district will remain anonymous in the reporting of the data. All data will be reported as group data representing the experimental group versus the control group used in the testing of this software.

Thank you in advance for completing the survey. Again, if you would like a copy of the final study results please contact me (804) 220-1683 (home) or the project's advising professor, Dr. Thomas Ward, at (804) 221-2358 (office).

Sincerely,

Courtney Frantz
Doctoral Candidate

Dr. Thomas Ward
Assistant Professor

April, 1994

Dear Administrator:

By the end of the month, the experimental phase of the *SpeciaLink Project*, the electronic storage of the Virginia Regulations Governing Special Education Programs for Children with Disabilities, will be completed. We sincerely appreciate the time you have taken to use the software and to give us comments. On the basis of your opinions and actual usage of the software, we will make recommendations to the Virginia Department of Education regarding a state-wide experimental program with an electronic form of the regulations.

Please complete the following three surveys

- (1) *Administrator's Use of Computers*, demographic information concerning the present use of computers by building level administrators,
- (2) *Compliance Issues in Special Education*, the post survey information sheet that allows you the opportunity to use *SpeciaLink* to look up information on issues regarding special education programming, and
- (3) *SpeciaLink Review*, the culminating survey on your views on the effectiveness and efficiency of *SpeciaLink*.

A return stamped self-addressed envelope is available in the original package of the software and included in this letter, as well. An envelope is also available in the original mailing to return the software.

It is **very important** to end the testing program by

SpeciaLink disk in drive A: or B:

drive by typing A: or B:

RETURN

- inserting
- switch to that
- type

Again, we appreciate your efforts in evaluating this new resource. Final reports will be made available to you and your superintendents upon requests.

Sincerely,

Courtney S. Frantz
Dr. Thomas Ward

Appendix B

Surveys

School of Education
College of William & Mary
ADMINISTRATOR'S USE OF COMPUTERS SURVEY

This survey is administered in connection with the *Special Link Project* being conducted at the College of William & Mary. It is requested that building level administrators of special education programs complete the survey and return it by _____. A return envelope is enclosed for your convenience. Your honest and complete statements are very important to the validity of the research project you have most kindly agreed to participate. If you have any questions concerning the survey please call Ms. Courtney Frantz at (804) 220-1683.

Instructions: Please mark the response which most closely represents your use of computers.

1. Do you currently use a computer?

yes	no
-----	----

2. How comfortable are you in using the computer for any of your daily operations as an administrator?

very	somewhat	not
------	----------	-----

3. When completing basic computer operations, how comfortable are you with the following software:

- 3.1 word processing

very	somewhat	not
------	----------	-----

- 3.2 data entry

very	somewhat	not
------	----------	-----

- 3.3 spread sheets

very	somewhat	not
------	----------	-----

- 3.4 locating data bases

very	somewhat	not
------	----------	-----

4. As an administrator, how often do you select new software for:

- 4.1 your own personal use

never	sometime s	often
-------	---------------	-------

- 4.2 your school use

never	sometime s	often
-------	---------------	-------

5. Do you advise teachers or other administrators in using the computer for various administrative or instructional tasks.

never	sometime s	often
-------	---------------	-------

6. In the future do you feel that computers will play an integral part of administrators' leadership roles in education?

yes	no
-----	----

**School of Education
The College of William & Mary**

Compliance Issues in Special Education

This survey is part of an experimental study, called *Special Link Project*, involving an alternative method of in-service training in the monitoring of special education programs. It is requested that building level administrators of special education programs complete the survey and return it by the due date.

Spring, 1994

Dear Administrator:

The rapid changes in special education legislation both at the Federal and State level indicate the need for new, modern, and effective ways of in-service training for public school principals who are administrators of special education programs. You are part of a carefully selected sample of individuals to represent secondary school administrators of special education programs in Virginia. This sample will be used in an experimental study involving an alternative method of in-service training in the monitoring of special education programs.

A sample of fifty administrators will be reviewing a prototypical software system used to access the regulations/standards for special education programming. This software can be used on personal computers. It is the intent of this research to develop a new electronic information system and evaluate the system's ability to provide administrators with an efficient way to reference and manipulate special education law.

Enclosed is a survey that serves as one of the tools used in the pre-evaluation of the software. This survey takes approximately 10 minutes to complete and should be returned in the self addressed envelope by _____. The survey itself contains no identifying codes and both you and your school district will remain anonymous in the reporting of the data. The code on the envelope is used to assist with any non-respondents. A subsequent survey will be mailed to you during the year and will be used to measure any changes due to the new electronic information system being designed for principals. After data has been reviewed, the summary of the results will be provided to you at your request.

Thank you in advance for completing the survey. If you have any questions concerning the survey please contact me (804) 220-1683 (home) or the project's advising professor, Dr. Thomas Ward, at (804) 221-2358 (office).

Sincerely,
Courtney Frantz

Instructions: Read each of the situations below. Indicate whether the action taken is in compliance or in violation with the Virginia Special Education Regulations. If you determined that a violation in regulations has occurred, you may indicate the specific violation (though this is not mandatory for the validity of the survey).

1. The Johnsons have their son evaluated by an outside psychologist. They contact the guidance counselor, and ask if the psychologist's evaluation/report can be used by the multidisciplinary team. The counselor assures the Johnsons that a psychological and other evaluations as appropriate will be completed by the district and only those evaluations will be considered in determining eligibility.

Issue: Use of outside evaluations for eligibility decisions

District is in:

_____ compliance

_____ violation

(violation identified: _____)

2. The Smiths disagree with the district's eligibility decision and request an independent evaluation at public expense. The building administrator replied that the district has a policy which does not allow for independent evaluations at public expense.

Issue: Procedures for independent evaluations

District is in:

_____ compliance

_____ violation

(violation identified: _____)

3. The district began evaluating Alex following a teacher's referral and parental notification via registered mail. The building administrator argued that procedural safeguards have been met as parents were informed prior to any testing.

Issue: Service delivery and parent participation

District is in:

_____ compliance

_____ violation

(violation identified: _____)

4. Katie was found eligible for special education and related services on May 20, 1993. The district plans to hold an IEP meeting in early September the same time annual reviews of all IEP's are held.

Issue: Service delivery

District is in:

_____ compliance

_____ violation

(violation identified: _____)

5. The district's multidisciplinary team is evaluating John in all areas at the suspected disability. Specifically, the district completed a psychological, educational, sociocultural, and a speech evaluation. A needed neurological evaluation, however, was requested to be paid by the parents.

Issue: Responsibilities of local school divisions and state agencies for evaluations

District is in:

_____ compliance

_____ violation

(violation identified: _____)

6. Michael's IEP states that he is to receive 45 minutes of resource services five days a week and catheterization. Because of scheduling issues and the recent retirement of the school nurse, the district is currently providing 40 minutes of resource service, three days a week. The parents are responsible for catheterization.

Issue: Service delivery in least restrictive environment

District is in:

_____ compliance

_____ violation

(violation identified: _____)

7. The Williams are nervous about their upcoming IEP meeting. They ask if they can bring their neighbor who is a professor in special education at the university. They are told, "Certainly, you may attend the meeting and bring anyone you like with you."

Issue: State regulations

District is in:

_____ compliance

_____ violation

(violation identified: _____)

8. According to student record management, records on students in special education are confidential and are kept in a separate locked file cabinet. General education teachers often consult these records as they serve special education students in their classroom. The access list, however does not include general education teachers.

Issue: Management of student records

District is in:

_____ compliance

_____ violation

(violation identified: _____)

9. In a meeting the Corchecks and the classroom teacher discuss the academic difficulty that their daughter, Ann is having in class. The teacher tells the Corchecks that she has tried to modify her classroom structure as suggested by the Child Study Committee, but it is not helping Ann. She told the Corchecks that they may go to the principal and request an evaluation. But general education teachers are not allowed to make referrals for evaluation only special education teachers and the Child Study Committee

Issue: Responsibilities of local school district in identification

District is in:

_____ compliance

_____ violation

(violation identified: _____)

10. Because of funding considerations, the special education director, in consultation with the building administrator, decided to discontinue Alex's residential placement and serve the student with the school district. A letter informing the parents of the decision was promptly sent out.

Issue: Service delivery in individualized education program

District is in:

_____ compliance

_____ violation

(violation identified: _____)

11. In the process of reviewing records of students' classifications as other health impaired, the nurse noticed that three students had suffered an external brain injury. Because of the IDEA requirements, the nurse requested a reevaluation of these students for classification under brain injury. The building administrator, in consultation with the special education director, replied that such traumatic brain injury determination will take place at the regular triennial evaluation and not at this time.

Issue: Service delivery safeguards in evaluation

District is in:

_____ compliance

_____ violation

(violation identified: _____)

12. The IEP of a seventeen year old student with learning disabilities does not include a transition plan. The district argues that a transition plan is not necessary as the student is involved in a work study program at the school.

Issue: Free and appropriate public education

District is in:

_____ compliance

_____ violation

(violation identified: _____)

13. The Child Study Committee is referring John for further evaluation to the multidisciplinary team. The building administrator recommended that an additional modification in the general education classroom be tried for the next two months, as the evaluation schedule is already full.

Issue: Time lines

District is in:

_____ compliance

_____ violation

(violation identified: _____)

14. Thomas, a student with severe emotional disturbances, violated the school-wide disciplinary policy on carrying firearms. The building administrator expels the student for the remainder of the school year in accordance with the disciplinary policy.

Issue: Suspension or expelling students with disabilities

District is in:

_____ compliance

_____ violation

(violation identified: _____)

School of Education
College of William & Mary

SPECIAL LINK REVIEW

Instructions: Please circle the most appropriate response to each question.

1. Approximately, how often did you use *Special Link* in special education management decisions?

very often often somewhat not often

2. In making most of your special education management decisions, when was *Special Link* most helpful.

Prior to final decision during decision process after decision for verification

3. How effective was *Special Link* in providing you with accurate and precise information that was tailored to your administrative needs?

very effective effective somewhat effective not effective

4. Does the design of *Special Link* account for the following personal attributes of the user:

4.1 computer skill level:

very accountable somewhat not
accountable accountable accountable accountable

4.2 skill & experience using the law:

very accountable somewhat not
accountable accountable accountable accountable

4.3 vocabulary of the menu and tutorial:

very accountable somewhat not
accountable accountable accountable accountable

4.4 reporting preference of the law:

very accountable somewhat not
accountable accountable accountable accountable

5. In your opinion, what is the likelihood that *Special Link* would be used by other administrators of special education programs?

very likely likely somewhat likely not likely

6. Due to your involvement in this research project using *Special Link* as an alternative or supplement to your present legal resource for special education, how would you rate your present level of comfort and skills in the legal knowledge concerning special education?

greatly improved improved somewhat improved not improved

7. What specific suggestions would you make in modifying *Special Link* program for other administrators of special education programs?

Appendix C

Issues & Specificity: Individual Respondents

Beta Testing Phase: Compliance Issues in Special Education: Issues # 1-4 out of 14
(Pre Experimental Survey Results and Post Experimental Survey Results of Control
Group)

CODE ISSUE #

	#1		#2		#3		#4	
	PRE	POST	PRE	POST	PRE	POST	PRE	PRO
2.2	1 0	1 2	0 2	0 2	1 1	1 1	1 1	1 0
2.4	1 2	1 2	0 2	2 2	1 2	0 2	1 2	1 2
4.1	1 0	1 2	1 0	1 2	1 1	1 2	1 1	1 2
4.2	1 2	1 1	1 2	0 0	1 2	1 1	1 2	1 1
5.2	1 2	0 2	0 2	0 2	1 2	1 1	1 2	0 0
5.8	0 2	0 2	0 2	0 2	1 2	1 2	1 2	0 2
7.3	1 2	0 2	1 2	0 2	1 2	1 1	1 2	0 2
8.3	1 2	1 2	0 2	0 2	1 2	1 2	0 2	0 2
9.1	1 2	1 2	9 2	1 2	0 2	1 2	1 2	1 2
9.2	1 2	1 1	0 2	0 2	1 2	1 1	0 2	1 1
9.4	0 2	0 2	0 2	1 2	1 2	1 2	0 2	1 2
10.2	1 2	0 2	0 2	1 0	1 1	1 1	1 2	1 1
11.1	1 0	0 2	1 1	1 1	1 0	0 2	1 1	1 2
12.1	0 0	1 2	1 0	1 1	1 1	1 1	0 2	1 1
12.5	1 2	1 2	1 2	1 0	1 2	1 0	1 2	1 0
12.6	1 1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
14.1	0 2	1 1	1 1	0 0	1 2	1 0	0 2	1 0
15.1	1 0	1 0	1 1	1 1	1 1	1 1	1 1	1 1
15.3	0 2	0 2	0 2	0 2	1 2	1 2	0 2	0 2

Note. CODE refers to responds' identification codes; ISSUES refers to specific scenarios of the surveys as identified below; PRE refers to surveys mailed before the experimental testing of *SpeciaLink*; and POST refers to survey mailed after the two month experimental testing of *SpeciaLink*.

First number refers to DECISION regarding the scenario response as in compliance or not in compliance to the regulations; SPECIFICATION refers to the specific violation identified by respondent.

1 refers to a right response; 0 refers to a wrong response; 2 refers to no written response;

*(1= Use of outside evaluations for eligibility decisions; 2= Procedures for independent evaluations; 3= Service delivery and parent participation; 4= Service delivery)

Beta Testing Phase: Compliance Issues in Special Education: Issues # 5-8 out of 14
(Pre Experimental Survey Results and Post Experimental Survey Results of Control
Group)

CODE ISSUE #

	#5		#6		#7		#8	
	PRE	POST	PRE	POST	PRE	POST	PRE	PRO
2.2	1 0	1 1	1 1	0 2	1 1	0 2	1 1	0 1
2.4	1 2	1 2	1 2	0 2	0 2	0 2	1 0	1 2
4.1	1 1	0 2	1 0	1 2	0 2	0 2	1 0	1 2
4.2	1 2	1 1	1 2	1 2	1 2	1 0	1 2	1 0
5.2	1 2	0 0	1 2	1 1	1 2	1 1	1 2	1 1
5.8	1 2	0 2	1 2	1 2	1 2	1 2	1 2	1 2
7.3	1 2	0 2	1 2	1 1	1 2	0 2	0 2	0 2
8.3	0 2	0 2	0 2	0 2	0 2	0 2	0 2	0 2
9.1	1 2	1 2	0 2	1 2	1 2	1 2	0 2	1 2
9.2	0 2	1 1	1 2	1 1	1 2	0 2	1 2	1 1
9.4	0 2	1 2	0 2	1 2	1 2	1 2	1 2	1 2
10.2	1 2	1 1	1 2	1 0	1 2	1 2	1 2	1 0
11.1	1 0	1 2	0 0	0 2	0 0	1 2	1 0	1 2
12.1	1 1	1 2	1 0	1 2	1 2	1 2	1 1	1 2
12.5	1 2	1 0	1 2	1 1	1 2	1 2	0 2	0 2
12.6	1 1	1 1	1 1	1 1	0 2	0 2	1 1	1 1
14.1	1 2	1 0	1 2	0 2	0 2	0 2	0 2	0 2
15.1	1 2	1 2	1 2	1 2	0 2	0 2	0 2	0 2
15.3	1 2	1 2	1 2	1 2	0 2	0 2	0 2	0 2

Note. CODE refers to responds' identification codes; ISSUES refers to specific scenarios of the surveys as identified below; PRE refers to surveys mailed before the experimental testing of *SpeciaLink*; and POST refers to survey mailed after the two month experimental testing of *SpeciaLink*.

* (5= Responsibilities of local school divisions and state agencies for evaluations; 6= Service delivery in least restrictive environment; 7= State regulations

Beta Testing Phase: Compliance Issues in Special Education: Issues # 9-10 of 14
(Pre Experimental Survey Results and Post Experimental Survey Results of Control
Group)

CODE ISSUE #

	#9		#10		#11		#12	
	PRE	POST	PRE	POST	PRE	POST	PRE	PRO
2.2	1 0	1 0	1 0	1 0	0 2	0 2	1 1	1 1
2.4	1 2	1 2	1 2	1 2	1 2	0 2	1 2	1 2
4.1	1 0	1 2	1 1	1 2	0 0	0 2	1 1	0 2
4.2	1 2	1 1	1 2	1 2	1 2	1 0	1 2	1 1
5.2	1 2	1 1	1 2	1 0	0 2	0 0	1 2	1 0
5.8	1 2	1 0	1 2	1 2	1 2	1 2	1 2	1 2
7.3	1 2	1 2	1 2	0 2	1 2	1 2	1 2	1 2
8.3	1 2	1 2	0 2	1 2	1 2	1 2	1 2	1 2
9.1	1 2	0 2	0 2	1 2	1 2	1 2	1 2	1 2
9.2	1 2	1 1	0 2	0 2	1 2	1 0	0 2	1 1
9.4	1 2	1 2	0 2	0 2	0 2	1 2	0 2	1 2
10.2	1 2	0 2	1 2	1 1	1 2	0 2	1 2	1 1
11.1	0 0	0 0	1 0	1 2	1 0	1 2	1 2	1 2
12.1	1 0	1 0	1 0	1 2	1 1	1 1	1 1	1 1
12.5	1 2	1 1	1 2	1 1	1 2	1 0	1 2	1 1
12.6	1 1	1 1	1 2	1 1	1 2	1 1	1 2	1 1
14.1	1 2	1 1	1 0	0 2	1 2	0 2	1 2	0 2
15.1	1 2	1 2	1 2	1 0	1 0	1 0	1 0	1 0
15.3	1 2	1 2	1 2	1 2	0 2	0 2	0 2	0 2

Note. CODE refers to responds' identification codes; ISSUES refers to specific scenarios of the surveys as identified below; PRE refers to surveys mailed before the experimental testing of *SpeciaLink*; and POST refers to survey mailed after the two month experimental testing of *SpeciaLink*;

First number refers to DECISION regarding the scenario response as in compliance or not in compliance to the regulations; SPECIFICATION refers to the specific violation identified by respondent.

1 refers to a right response; 0 refers to a wrong response; 2 refers to no written response;

* (9= Responsibilities of local school district in identification of students with disabilities; 10=Service delivery in individualized education program; 11=Service delivery safeguards in evaluation; 12=Free and appropriate public education)

Beta Testing Phase: Compliance Issues in Special Education # 13-14 of 14 Issues (Pre Experimental Survey Results and Post Experimental Survey Results of Control Group)

CODE ISSUE #

	#13		#14	
	PRE	POST	PRE	POST
2.2	1 0	1 0	1 1	1 2
2.4	1 2	9 2	1 2	1 2
4.1	1 1	1 2	1 0	1 2
4.2	1 2	1 0	1 2	1 1
5.2	1 2	1 1	1 2	1 0
5.8	1 2	0 2	1 2	1 2
7.3	1 2	0 2	1 2	0 2
8.3	1 2	1 2	1 2	1 2
9.1	1 2	1 2	1 2	1 2
9.2	1 2	1 0	1 2	1 2
9.4	1 2	1 2	1 2	0 2
10.2	1 2	1 2	1 2	1 2
11.1	1 2	1 2	1 0	1 2
12.1	1 1	1 1	1 1	1 1
12.5	1 2	1 0	1 2	1 1
12.6	1 2	1 2	1 2	1 2
14.1	1 2	1 2	1 2	1 1
15.1	1 0	1 0	1 0	1 0
15.3	1 2	1 2	1 2	1 2

Note. CODE refers to responds' identification codes; ISSUES refers to specific scenarios of the surveys as identified below; PRE refers to surveys mailed before the experimental testing of *SpeciaLink*; and POST refers to survey mailed after the two month experimental testing of *SpeciaLink*;

First number refers to DECISION regarding the scenario response as in compliance or not in compliance to the regulations; SPECIFICATION refers to the specific violation identified by respondent.

1 refers to a right response; 0 refers to a wrong response; 2 refers to no written response;

* (13= Child study committee; 14=Suspension or expelling students with disabilities)

Beta Testing Phase: Compliance Issues in Special Education Issues 1-4 out of 14 Issues
(Pre Experimental Survey Results and Post Experimental Survey Results of
Experimental Group)

CODE ISSUE #

	#1		#2		#3		#4	
	PRE	POST	PRE	POST	PRE	POST	PRE	PRO
0.1	1 2	1 2	1 2	1 1	1 2	1 1	1 2	1 2
2.1	1 2	1 1	1 2	1 1	1 2	1 1	1 2	1 1
2.3	1 2	1 1	0 2	0 2	1 2	1 1	1 2	1 1
3.1	1 2	1 1	1 2	1 2	1 2	1 2	1 2	1 2
4.3	1 2	1 1	0 2	1 2	1 2	1 1	1 2	1 1
5.1	1 2	1 1	1 2	1 1	1 2	1 1	1 2	1 1
5.3	0 2	1 1	0 2	0 2	1 2	1 1	1 2	0 2
5.4	1 2	1 1	1 2	1 1	1 2	1 1	1 2	1 2
5.6	1 2	1 1	0 2	1 1	1 2	1 1	1 2	1 2
5.7	0 2	1 2	1 2	0 2	0 2	1 1	0 2	0 2
5.9	0 2	1 2	0 2	1 2	0 2	1 2	0 2	1 2
6.1	1 2	1 1	1 2	1 1	1 2	1 1	1 2	1 1
7.2	1 2	1 1	1 2	1 1	0 2	1 2	1 2	1 1
7.5	1 2	1 1	1 2	1 1	1 2	1 1	0 2	1 1
8.2	1 2	0 2	0 2	1 1	1 2	1 1	1 2	1 1
9.3	0 2	0 2	1 2	1 2	0 2	0 2	0 2	0 2
9.6	1 2	1 2	1 2	1 2	1 2	1 2	0 2	1 2
9.7	1 2	1 2	1 2	1 2	1 2	1 2	1 2	1 2
9.8	0 2	1 1	1 2	1 2	0 2	1 1	1 2	1 2
9.9	1 2	1 1	1 2	1 1	1 2	1 1	1 2	1 1
10.1	1 2	1 2	0 2	0 2	1 2	1 2	1 2	1 2
12.2	0 2	1 2	1 2	1 2	1 2	1 2	1 2	1 2
12.3	1 2	1 1	0 2	1 1	1 2	1 2	1 2	1 1
12.4	1 2	1 1	0 2	1 1	1 2	1 1	1 2	1 1
13.1	1 2	1 1	0 2	2 1	1 2	1 1	1 2	1 1
15.2	1 2	1 2	1 2	1 2	1 2	1 2	1 2	1 2

Note. CODE refers to responds' identification codes; ISSUES refers to specific scenarios of the surveys as identified below; PRE refers to surveys mailed before the experimental testing of *SpeciaLink*; and POST refers to survey mailed after the two month experimental testing of *SpeciaLink*.

First number refers to DECISION regarding the scenario response as in compliance or not in compliance to the regulations; SPECIFICATION refers to the specific violation identified by respondent.

1 refers to a right response; 0 refers to a wrong response; 2 refers to no written response;

* (1= Use of outside evaluations for eligibility decisions; 2= Procedures for independent evaluations; 3= Service delivery and parent participation; 4= Service delivery)

Beta Testing Phase: Compliance Issues in Special Education: Issues # 5-8 out of 14
(Pre Experimental Survey Results and Post Experimental Survey Results of Experimental Group)

CODE ISSUE #

	#5		#6		#7		#8	
	PRE	POST	PRE	POST	PRE	POST	PRE	PRO
0.1	1 2	1 1	1 2	1 2	1 2	1 2	1 2	1 1
2.1	1 2	1 0	1 2	1 1	1 2	1 2	1 2	1 0
2.3	0 2	1 1	1 2	1 1	1 2	1 1	1 2	1 1
3.1	1 2	1 2	1 2	1 2	1 2	1 2	1 2	1 2
4.3	1 2	1 1	1 2	1 1	1 2	1 1	1 2	1 1
5.1	1 2	1 1	1 2	1 1	1 2	1 1	1 2	1 1
5.3	1 2	0 2	1 2	1 1	1 2	1 2	1 2	1 1
5.4	1 2	1 1	1 2	1 1	1 2	1 1	1 2	1 1
5.6	1 2	1 1	1 2	1 1	1 2	1 1	1 2	1 1
5.7	1 2	1 1	0 2	1 1	0 2	0 2	1 2	1 1
5.9	1 2	1 2	0 2	1 2	0 2	1 2	0 2	1 2
6.1	1 2	1 1	1 2	1 1	1 2	1 1	1 2	1 1
7.2	1 2	1 1	0 2	1 1	1 2	1 1	1 2	1 1
7.5	0 2	1 1	1 2	1 1	1 2	1 1	1 2	1 1
8.2	0 2	1 1	1 2	1 2	1 2	0 2	1 2	0 2
9.3	0 2	0 2	1 2	1 2	1 2	1 2	1 2	1 2
9.6	0 2	1 2	0 2	1 2	1 2	1 2	0 2	1 2
9.7	1 2	1 2	0 2	0 2	1 2	1 2	1 2	1 2
9.8	1 2	1 1	0 2	1 1	1 2	1 1	1 2	1 1
9.9	1 2	1 2	1 2	1 2	1 2	1 2	1 2	1 2
10.1	1 2	1 2	1 2	1 2	1 2	1 2	1 2	1 2
12.2	1 2	1 2	1 2	1 2	1 2	1 2	1 2	1 2
12.3	1 2	1 1	1 2	1 1	1 2	1 2	1 2	1 1
12..4	1 2	1 1	1 2	1 1	1 2	1 2	1 2	1 1
13.1	1 2	1 1	1 2	1 1	1 2	1 1	1 2	1 1
15.2	1 2	1 1	1 2	1 1	1 2	1 1	1 2	1 1

Note. CODE refers to responds' identification codes; ISSUES refers to specific scenarios of the surveys as identified below; PRE refers to surveys mailed before the experimental testing of *SpeciaLink*; and POST refers to survey mailed after the two month experimental testing of *SpeciaLink*.

* (5= Responsibilities of local school divisions and state agencies for evaluations; 6= Service delivery in least restrictive environment; 7= State regulations; 8=Management of student records)

Beta Testing Phase: Compliance Issues in Special Education: Issues # 9-12 out of 14
(Pre Experimental Survey Results and Post Experimental Survey Results of Experimental
Group)

CODE ISSUE #

	#9		#10		#11		#12	
	PRE	POST	PRE	POST	PRE	POST	PRE	POST
0.1	1 2	1 2	1 2	1 1	1 2	1 1	1 2	1 2
2.1	1 2	1 0	1 2	1 0	1 2	0 0	0 2	1 1
2.3	1 2	1 1	1 2	1 1	1 2	1 1	1 2	1 1
3.1	1 2	1 2	1 2	1 2	1 2	1 2	1 2	1 2
4.3	1 2	1 1	1 2	1 1	1 2	1 1	1 2	1 1
5.1	1 2	1 1	1 2	1 1	1 2	1 1	1 2	1 0
5.3	1 2	1 1	1 2	1 1	1 2	1 1	1 2	1 1
5.4	1 2	1 2	1 2	1 1	1 2	1 1	1 2	1 1
5.6	1 2	1 1	1 2	1 0	0 2	1 1	1 2	1 0
5.7	1 2	1 1	1 2	0 2	1 2	1 1	1 2	1 1
5.9	1 2	1 2	0 2	1 2	0 2	1 2	1 2	1 2
6.1	1 2	1 1	1 2	1 1	1 2	1 1	1 2	1 1
7.2	0 2	1 1	0 2	1 1	0 2	1 1	1 2	1 1
7.5	1 2	1 1	1 2	1 1	1 2	1 1	1 2	1 2
8.2	1 2	1 1	1 2	1 1	1 2	1 1	1 2	1 1
9.3	1 2	1 2	1 2	1 2	1 2	1 2	1 2	1 2
9.6	1 2	1 2	1 2	1 2	1 2	1 2	1 2	1 2
9.7	1 2	1 2	1 2	1 2	1 2	1 2	1 2	1 2
9.8	1 2	1 1	1 2	1 1	1 2	1 1	1 2	1 1
9.9	1 2	1 2	1 2	1 2	1 2	1 2	1 2	1 2
10.1	1 2	1 2	1 2	1 2	1 2	1 2	1 2	1 2
12.2	1 2	1 2	1 2	1 2	1 2	1 2	1 2	1 2
12.3	0 2	1 1	1 2	1 1	1 2	1 1	1 2	1 1
12.4	1 2	1 1	1 2	1 1	1 2	1 1	1 2	1 1
13.1	1 2	1 1	1 2	1 1	1 2	1 1	1 2	1 1
15.2	1 2	1 1	1 2	1 1	1 2	1 1	1 2	1 1

Note. CODE refers to responds' identification codes; ISSUES refers to specific scenarios of the surveys as identified below; PRE refers to surveys mailed before the experimental testing of *SpeciaLink*; and POST refers to survey mailed after the two month experimental testing of *SpeciaLink*;

First number refers to DECISION regarding the scenario response as in compliance or not in compliance to the regulations; SPECIFICATION refers to the specific violation identified by respondent.

1 refers to a right response; 0 refers to a wrong response; 2 refers to no written response;

* (9= Responsibilities of local school district in identification of students with disabilities; 10=Service delivery in individualized education program; 11=Service delivery safeguards in evaluation; 12=Free and appropriate public education)

Beta Testing Phase: Compliance Issues in Special Education: Issues # 13-14 of 14
(Pre Experimental Survey Results and Post Experimental Survey Results of Experimental Group)

CODE ISSUE #

	#13		#14	
	PRE	POST	PRE	POST
0.1	1 2	1 1	1 2	1 1
2.1	1 2	1 1	1 2	1 1
2.3	1 2	1 1	1 2	1 1
3.1	1 2	1 1	1 2	1 1
4.3	1 2	1 1	1 2	1 1
5.1	1 2	1 1	1 2	1 1
5.3	1 2	1 1	1 2	1 1
5.4	1 2	1 1	1 2	1 1
5.6	0 2	1 1	1 2	1 0
5.7	0 2	0 2	0 2	0 2
5.9	0 2	1 2	0 2	1 2
6.1	1 2	1 1	1 2	1 1
7.2	0 2	1 1	0 2	1 1
7.5	0 2	1 1	0 2	1 1
8.2	0 2	1 1	1 2	1 1
9.3	1 2	1 2	1 2	1 2
9.6	1 2	1 2	1 2	1 2
9.7	1 2	1 2	1 2	1 2
9.8	1 2	1 1	1 2	1 1
9.9	1 2	1 2	1 2	1 2
10.1	1 2	1 2	1 2	1 2
12.2	1 2	1 2	1 2	1 2
12.3	1 2	1 1	1 2	1 1
12.4	1 2	1 1	1 2	1 1
13.1	1 2	1 2	1 2	1 2
15.2	1 2	1 1	1 2	1 1

Note. CODE refers to responds' identification codes; ISSUES refers to specific scenarios of the surveys as identified below; PRE refers to surveys mailed before the experimental testing of *SpeciaLink*; and POST refers to survey mailed after the two month experimental testing of *SpeciaLink*;

First number refers to DECISION regarding the scenario response as in compliance or not in compliance to the regulations; SPECIFICATION refers to the specific violation identified by respondent.

1 refers to a right response; 0 refers to a wrong response; 2 refers to no written response;

* (13= Child study committee; 14=Suspension or expelling students with disabilities)

Appendix D

Written Comments concerning SpecialLink

Researcher's Return Comments Italicized

Current Design comments:

- 1- Expand find feature to cover all areas for a search.
For the initial experiment the find feature was limited to definitions and 20 internal searches.
- 2- The menu for the definitions are along the side while the other sections the menu selections are at the bottom.
As discussed in the tutorial, for this experiment the menu for the definitions section was designed to be different to remind the users that they were in the definitions sections rather than regulations themselves.
- 3- The idea is a good one which could benefit the bookshelves of the administrators and save a few hundred trees.
- 4- Information is good and menus are more than adequate.
- 5- Very important research.
- 6- I don't like being dependent on others concerning special education issues. I have been very dependent on the special education teachers and feel uncomfortable with this dependency. This software has given me the opportunity to get to know the regulations and to become more dependent on my own knowledge concerning special education issues.
- 7- Administrators often do not know about special education regulations and this software is an excellent way to familiarize administrators with the law at any time during their day.
When designing SpeciaLink, one of the key drives was to provide, administrators with training that does not require them to be out of their building or away from their desks. Also, it was designed to be user friendly so more administrators will feel comfortable exploring the regulations before they make decisions and while they are making decisions regarding special education program issues.
- 8- I am new as an administrator of special education programs and know very little about the law. I have found this tool very helpful and would like to keep this copy of *SpeciaLink*.

One of the concerns we had when considering this research is the various background knowledge that each administrator has concerning special education regulations, especially because the regulations are often changing. We hoped to make the tool be as extensive as needed for administrators and at the same time not be a cumbersome tool for the administrators who have had many years of experience working with special education programs. The development tool used allows the designer to adequately represent the regulations and to add a component that serves as a Find or search index.

I am glad that this tool has meet your present reference needs and would continue to meet your changing needs. Many of the members in the experimental group have asked to keep their copy of Specialink. You are more than welcome to have this software and I thank you again for your participation in this study.

Wish List for Improvements comments:

- 1- Perhaps the menu could be expanded to include specific fourth district court cases and their outcomes listed under areas of infractions for example, prior permission for testing, manifestations, etc.
Excellent consideration which compliments the initial use of HyperPad as a development tool because it leads itself to the immediate interests of state jurisdictions and individual school districts.)
- 2- Need areas for updates.
As discussed in the overview of the project, one of the benefits of such a resource tool is that it can be updated at any time with minimal expense. Furthermore, these updates can be identified with a separate update menu or highlighted electronically throughout the document.)
- 3- Need Federal Regulations as well
For this experiment, we wanted to have the document to be regionally specific, therefore, we only placed in the software the Virginia Regulations. The Federal Regulations are also an important component and could easily be added without losing the speed of accessing the document or losing the effectiveness of the tool for the potential users.
- 4- Need a catalog reference to the Federal Regulations

Appendix E
***SpeciaLink* Manual**

WELCOME TO SPECIALINK

Welcome to *Specialink*. *Specialink* is a software designed for administrators of special education programs in Virginia. This software has been designed to provide the user with the latest version of the Regulations Governing Special Education Programs in Virginia (January, 1994). *Specialink* allows its user to easily access the Regulations and to link together key components of the Regulations, providing an efficient reference tool.

Chapter 1: Research component of system

Specialink, a hypermedia software system

Designers of the software

Software Users

Chapter 2: Getting Started

Installation

Starting *Specialink*

Exiting *Specialink*

Tutorial

Chapter 3: Fundamentals of *Specialink*

Components

Features

Introduction to SERV

Chapter 4: Trouble Shooting

Questions and answers

CHAPTER 1: RESEARCH COMPONENTS OF SYSTEM

SPECIALINK, A HYPERMEDIA SOFTWARE SYSTEM

SpecialLink is a software system designed with the aid of a software package called HYPERPAD 2.0. Hypermedia based software has the capability of storing large volumes of information, changing the information stored instantaneously, adapting the information both content and format to the needs of the users, and providing text with graphics and sound to enhance the interest of the user.

The system is best described as a storage of multiple file boxes or stacks each representing sections of the original document. Each stack can be opened in any order: viewing sequentially as in the original document, starting at the middle going forward or backward; starting in the end of the document, returning to beginning of document. The software provides cross-referencing so a reader can 'jump' from one part of the data base to another, going beyond the structure of the text. The user may open a new stack of related information by pointing the mouse to a high-lighted area and clicking the mouse. The user may return to the original screen of information. Many additional features may be placed on this system such as printing, allowing the user to store one's own information on the system, printing what is on the screen, adding sound and pictures to the program etc.

HYPERPAD has been proven very successful in other educational areas such as the medical field and special education for the following reason: the user may select smaller lessons to view on the screen at a time; the order of the lesson may be changed; and each stack may be linked to previously learned material supporting the user's entry knowledge and learning style.

DESIGNERS OF THE *SPECIALINK*

Specialink has been designed by Courtney S. Frantz, Ed. S., in partial completion of her doctoral degree in Education Administration, emphasis in Special Education under the direction of Dr. Thomas Ward, Assistant Professor of The School of Education and assisted by Dr. Stamos Karamouzis, Assistant Professor in The Computer Science Department of the College of William and Mary.

SOFTWARE USERS

This software is in an experimental phase and is being tested by a voluntary group of secondary school administrators of special education programs in the Tidewater, Virginia schools. All superintendents in the Tidewater, Virginia have approved the research. Special education directors and/or research directors of each school districts have a copy of the software used in this experiment.

Due to the experimental nature of this project, it was initially determined that only key sections of the software be evaluated such as the directional capability of the system, the internetting of the text, and the find and notes features of the program. Virginia's Regulations Governing Special Education Programs for Children with Disabilities will be the focus document for this evaluation due to the needs of the experimental group.

The purpose of the experiment is to determine if an electronic version of the regulations can be useful to administrators of special education programs. Suggestions for modifications by the experimental group will be implemented. The research data will be presented to the Virginia Department of Education for consideration as a state-wide pilot project.

SOFTWARE ADVANTAGES

The perceived advantages of this software version of Virginia's Regulations Governing Special Education Programs for Children with Disabilities:

- users may move within the document itself faster than in manual form because of the point and click method of high-lighting key words.
- users may refer quickly to the definitions of key words within the regulations.
- users may refer quickly to the funding guidelines set by the SEA for each program mandate
- users can be provided with the most up-to-date regulations immediately after approval by SEA because the disk version, the regulations can be quickly designed and distributed.
- users can add their own notes to sections of the document which may apply specifically to their school or a particular student in their school.
- local LEA's can eventually add specific school-wide regulations to the existing document through the buttoning design without changing the exact document.

CHAPTER 2: GETTING STARTED

INSTALLATION

steps:

- 1- Boot (turn on) your system with DOS
- 2- Insert disk provided in drive A or B
- 3- At the C: prompt, when in drive A type **A:INSTALL A:**
or when in drive B type **B:INSTALL: B**

STARTING *SPECIALINK*

steps:

- 1- At the C: prompt, type **SLINK**

EXITING *SPECIALINK*

steps

- 1- on each page is a button to return to the Introductory Page of *Specialink* designated by the words **EXIT**
- 2- on the Introductory Page of *Specialink* is a button designated by the words **QUIT**
The Quit button exits user from *Specialink* to DOS.

For the experimental phase of *Specialink*, users will be asked to record their session. Users are asked to high-light and press ENTER one of the following responses:

You used *Specialink* for:

- A. Just browsing the regulations
- B. When faced with an issue,
but BEFORE a decision was made.
- C. When faced with an issue,
but AFTER a decision was made.

This will provide data which will help evaluate the effectiveness and efficiency of the software.

B. TUTORIAL

A tutorial is provided within the software. The tutorial, taking less than five (5) minutes to complete, provides the user with a lesson on how to use *SpeciaLink*. The user accesses the tutorial by high-lighting the TUTORIAL button found on the Introductory Page. It is advised that all users go through the tutorial before beginning to read the regulations document.

CHAPTER 3: FUNDAMENTALS OF *SPECIALINK* COMPONENTS:

PAGES

Each screen represents pages in Virginia's Regulations Governing Special Education Program for Children with Disabilities. The regulations are documented without additions or deletions to the written text. Specific sections of the regulations may be opened by using the FIND feature or by using the TABLE OF CONTENTS found at the beginning of each subsection as a menu.

BUTTONS

Each screen is designed with a background of buttons. You use the mouse to point to a button and click the mouse. These buttons give the user access to special education regulations. They allow the user to move throughout the document based on the user's information needs. The buttons are high-lighted in a different color. Some of the buttons appear in the background and are stationary while each page changes. Other buttons appear on the individual pages which allows the user to clarify a word by going to the definition of the word or to additional reference sections within the regulations itself.

BACKGROUND BUTTON INFORMATION

Background buttons are the tools used to move throughout the document itself. The background buttons are as follows:

Menu	goes to the Introductory Page menu of <i>Specialink</i> Table of Contents
Notes	will allow user to write notes and store that information to the software, creating a personalized component.
Print	this feature allows the user to print what is seen on each screen.(not available now)
Find	helps the users to locate key words in the document
Previous	places user back to the most recent page on the screen, the previous page viewed.
>	moves forward one screen following sequential order within the original document
<	moves backwards one screen in reverse sequential order within the document
Exit	takes the user back to the Introductory Page of <i>Specialink</i>

INDIVIDUAL SCREEN BUTTON INFORMATION

Button information on individual screens allows the user to refer to definitions of key words and/or to move within the document itself, linking various aspects of the regulations. These buttons are provided to the user according to need. Users do not have to open these additional screens to continue through the document.

FEATURES:

BROWSING:

The user may move from one screen to the next by using a button found at the bottom of the page which allows the user to move forward moving within the sequence of the regulations or backwards within the regulations.

Specialink pages can be viewed sequentially, moving forward one page or one screen at a time by using the greater than sign ">". Users can move in reverse throughout the document by selecting the less than sign "<". Moving forward from the last page of the documents brings the user to the first page of the document. Similarly, moving in reverse from the first page brings the user to the last page. These buttons including the Exit button remain for each screen in the *Specialink* software.

Browsing also refers to the movement within the document itself which is facilitated by activating a button. In addition to the sequential movement from one page to another the user may "jump" from a specific page to another page of the regulation. The designation page does not have to be immediately following the page of origin. This movement is achieved by selecting (using the tab key or the mouse) specific sections of the regulation that appear to be high-lighted.

For example:

If you are on a particular page (i.e., page 10) which contains the following text:

A. *Evaluation:*

d. Assignment of surrogate parent when necessary;...

Then by selecting the word " *surrogate* " you will move to another page that contains information pertinent to that word.

SEARCHING:

The "FIND" button triggers a powerful and advantageous feature of *Specialink*. This selection allows the user to type a word and the software will immediately locate the first occurrence of the specified word. Each subsequent occurrence of the word within the document will also be found if the user enters a carriage return (enter/return key on the keyboard) while the word is high-lighted. Thus the user can continue through the document until the desired reference that contains the specified word is shown on the screen.

Word of caution: The FIND feature will search for specific character strings ONLY within the specific section of regulations that the user is in. *Specialink* divides the regulations into six sections that correspond to the six items of the initial Table of Contents. If you wish to search for a particular character string at a different section than the one you are currently in, first you have to move to that section.

TAKING NOTES:

A useful feature of *Specialink* is that the user has the ability to add to the volume of information of the software without changing the original document itself.

The NOTES feature allows the user to add additional references which may pertain to their own school district or building site. While in the NOTES feature the user has the ability to generate additional pages for his/her own notes. Each page is scrollable which allows the user to enter information that exceeds the size of the screen. The user may access the information that is on a particular page but not currently on the screen by maneuvering up and down the scrolling bar at the right hand side of the screen. The cursor is the guide to the screen display. The notes are written using the key board much like a word processing program. Movement from one page to another is done by selecting the buttons "<" and ">" .

PRINTING

The user may print what is found on the screen
(This feature is currently not available).

INTRODUCTORY PAGE:

Start	<u>Regulations Governing Special Education Programs or Children with Disabilities</u>
Tutorial	is the Help program for the software. The manual appears in electronic form along with additional help information for the user
Quit	returns the user to the hard drive

REGULATIONS GOVERNING SPECIAL EDUCATION PROGRAMS FOR CHILDREN WITH DISABILITIES (effective January, 1994)

TABLE OF CONTENTS

The first page of document is the **Table of Contents** page. Each section of the regulations has been divided into easy references, linked together through a written script. After locating the specific section of the regulations, the user points and clicks to read data in that section. Each subsection is subsequently designed by high-lighting in the same format with the legal numbering system of the regulations.

DEFINITION	definitions found in the regulations
RESPONSIBILITIES OF VDOE	specify the Virginia Department of Education responsibilities to the local school districts (LEA) and to the Federal government in the administration of special education programs.
RESPONSIBILITIES OF LEA	specify the responsibilities of Local Education Associations as representative of the Virginia Department of Education serving the special education population in their respective districts.
FUNDING	describes how local school districts are reimbursed by the State Education Association for special education programs.
YOUTH IN RESIDENCE OR CUSTODY	describes the responsibilities of the SEA for youth in residential programs or custody who are handicapped.
EXIT BUTTON	will allow you to stop on a page and returns you back to the Introductory Screen.

**CHAPTER 4:
TROUBLE SHOOTING**

Any questions or problems with the software may be addressed to Dr. Stamos Karamouzis at his office (804) 221-3467. This service is available on a 24 hour basis. Users are asked to leave their name, school, and a brief description of the problem. You will receive a return call that day.

At the end of the trial period. Users will be asked to give their overall impressions of the software by responding in a written survey and/or through a personal interview.

Appendix F
Screen Captures

WELCOME TO SpecialLink

SpecialLink is an electronic storage program containing the Virginia Regulations Governing the Special Education Programs for Children with Disabilities (effective January 1, 1994).

This is a tutorial to provide you with the tools you need to use SpecialLink. Please continue with the tutorial by using the mouse or TAB then ENTER to high-light the greater than key.



TABLE OF CONTENTS

Definitions

Responsibilities of the VDOE

Responsibilities of LEA

Funding

Youth in Residence or Custody

Compliance with 504 of Rehab ACT

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Part III

RESPONSIBILITIES OF LOCAL SCHOOL DIVISIONS AND STATE AGENCIES

- 3.1 - Applicability of Requirements for LEA (listing of contents)
- 3.2 - Identification, Evaluation, and Eligibility
- 3.3 - Service Delivery
- 3.4 - Procedural Safeguard
- 3.5 - Requirements for Establishing Surrogate Parent Procedures
- 3.6 - Administration and Governance

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3.3 SERVICE DELIVERY

A. FREE APPROPRIATE PUBLIC EDUCATION

- ☐ A.1 - Age of Eligibility
- ☐ A.2 - Continuum of Alternative Placements
- ☐ A.3 - Least Restrictive Environment (LRE)
- ☐ A.4 - Safeguards in Evaluation, Eligibility and Placements
- ☐ A.5 - Transportation
- ☐ A.6 - Reevaluation
- ☐ A.7 - Non-academic and extracurricular services and activities
- ☐ A.8 - Physical Education

B. INDIVIDUALIZED EDUCATION PROGRAM

- ☐ B.2 - Accountability
- ☐ B.3 - Participants in Meeting
- ☐ B.5 - Content of IEP
- ☐ B.6 - Private School Placement
- ☐ B.10 - Children on Homebound
- ☐ B.11 - Suspension or Expulsion of Children with Disabilities
- ☐ B.12 - Assistive Technology

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E. Evaluation

1. The LEA shall establish procedures for the evaluation of referred children which includes the following:
 - a. Written prior notification (in native language);
 - b. Opportunity for independent evaluation;
 - c. Written parental consent;
 - d. Assignment of **surrogate** parent when necessary;
 - e. Opportunity for impartial hearing;
 - f. Confidentiality;
 - g. Opportunity for examination of records; and
 - h. Nondiscriminatory testing.
2. The LEA shall establish policies and procedures to ensure the following:
 - a. Tests and other evaluation materials:
 1. Are neither culturally nor racially discriminatory;
 2. Are provided and administered in the child's

(continued)

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"Support Services" means implementing the comprehensive system of personnel development; recruitment and training of hearing officers in conjunction with the Supreme Court of Virginia; and recruitment and training of surrogate parents; and public information and parent-training activities relating to a free appropriate public education for children with disabilities.

"Surrogate parent" means a person appointed in accordance with procedures set forth to provide children who are in legal or physical custody of the state, or whose parents are not known or are unavailable, with the protections of procedural safeguards.

"Testing" means individual evaluation procedures (formal testing and assessment) to determine initial or continued eligibility for special education services.

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10. Children with disabilities on Homebound Instruction

Funding

Homebound instruction shall be deemed appropriate for a child with disabilities only when such placement is stipulated in the child's IEP and is in accordance with the requirements of the least restrictive environment.

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4.2 State Funds

State funds to assist local school divisions with the cost of providing special education and related services for children with disabilities are provided through the SEA's appropriation as follows:

A. Children with disabilities enrolled in programs operated by a local school board:

1. Day school programs

In addition to the funds received for each pupil from Basic Aid, LEAs will receive payment to support the state share of the number of special education teachers and aides required by the Standards of Quality.

2. Homebound instruction

LEAs shall be reimbursed 60 percent of the hourly payment to teachers employed to provide homebound instruction to eligible children. Such reimbursement shall not exceed 60 percent of an established hourly rate determined annually by the Department, and shall be in addition to Basic Aid.

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EXIT

Vita

Courtney Siler Frantz

Birthdate: December 29, 1948

Birthplace: Richmond, Virginia

Education:

1990-1995

The College of William and Mary
Williamsburg, Virginia
Certificates of Advanced Graduate Study
Doctorate and Educational Specialist

1972-1974

George Peabody College of Education
Vanderbilt University
Nashville, Tennessee
Master of Science

1967-1971

The University of Richmond
Richmond, Virginia
Bachelor of Science
