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Training for and the Use of Technology and Assistive Technology in Special Education: A Survey in the State of Illinois

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Training for and the Use of Technology and Assistive Technology

in Special Education: A Survey in the State of Illinois

(TITLE)

BY

James D. Basham

THESIS

SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS
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1996

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Training for and the Use of Technology and Assistive Technology in Special Education:

A Survey of the State of Illinois.

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Abstract

This study was designed to examine the training of special education teachers employed in public schools in Illinois regarding educational technology and their use of educational technology in the classroom. Surveys were sent to a randomly-selected sample of special education teachers from the school districts and a randomly selected sample of the special education teachers of half of all special education cooperatives in Illinois. All teacher training institutions in Illinois that provide coursework for special education certification were also surveyed. Analysis was performed on the data from schools and cooperatives because the return rates for these two groups were considered acceptable for reaching conclusions regarding the populations. Returns from Chicago and the teacher training institutions were not submitted for analysis because the return rates were not considered acceptable.

Results of this study showed that responses from the two analyzed samples were generally similar. Both groups reported the highest percentages of computer use during student freetime and for drill and practice. These groups reported the lowest percentages of use of on-line connections and student-specific assistive technology devices. The reported number of respondents trained in the above areas corresponds with the state use in each area. Results showed that the highest percentages of training occurred in informal training settings. The study found that a majority of the respondents did not have students who had been assessed for the use of assistive devices. Concomitantly, a majority of the respondents' students did not have the topic of assistive technology on their students' IEPs. The teachers perceived the major barriers to providing technology in the classroom to be funding, training, administrative support, and support staff. Conclusions based on the results of this study strongly suggest that special education teachers in Illinois need more support and training in order to appropriately use technology with their students.

Dedication

During his life, my Grandpa Doug taught me that family is important, that life is what one makes of it, and one should know when it's time to sit on the beach and put their bare feet in the cool sand. This study is dedicated to my family. Without their support I would have not been able to accomplish what I have in life. I hope their support continues as I begin to take on new challenges. I'm also looking forward to the day when we are all sitting on the beach with our feet in the cool sand.

Grandpa, thank you for touching the family, within us you have eternal life.

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Thank you to everyone who contributed to this study. I hope that it can be used to have a positive effect on the children of the world.

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Introduction

With the passing of the Technology-Related Assistance Act for Individuals with Disabilities (Tech Act), assistive technology has been made available to students with disabilities (Harkin, 1995; Technology Related Assistance For Individuals With Disabilities Act of 1988). The 1988 act defines assistive technology, assistive technology service, and technology related assistance. The law defines an *assistive technology device* as "any item, piece of equipment, or product system, whether acquired commercially off the shelf, modified, or customized, that is used to increase, maintain, or improve the functional capabilities of children or individuals with disabilities (Federal Register, 1992; Illinois Council for Exceptional Children [ICEC], 1993). The law also provides the Secretary of Education in all fifty states and territories with information on technical assistance and funds to develop assistive technology projects and programs. Funding mechanisms are also provided for the identification and assessment of people with disabilities who may need assistive technology. Other major provisions of the act include: advocacy guidelines, grants for training people in assistive technology, funding for assistive technology devices with low interest loans, and grant monies for research in the area of assistive technology (Harkin, 1994; Technology Related Assistance For Individuals With Disabilities Act of 1988).

Technology is something one uses every day. Technology can be as complex as a computer or as simple as a pencil grip. Technology may be taken for granted in many peoples' lives, but for some people technology may be the key to enhanced autonomy and development.. Technology that enhances personal autonomy and educational or vocational development is generally referred to as "assistive technology". Technology is defined as any device or tool that makes everyday goals more attainable (Illinois Assistive Technology Project [IATP], 1991).

There are many examples of the uses of assistive technology. For example, Maurice, a 20-year-old quadriplegic, uses a ventilator for breathing, a head controlled

wheelchair for mobility, and a modified Sega game controller for recreation. Before Maurice discovered the uses of assistive technology, he spent most of his time in bed. Through assistive technology he recently earned his GED, and now plans to attend college with the help of his assistive technology. Assistive technology has given him greater independence and increased his quality of life, enabling him to lead a life that is closer to the life of his peers without disabilities.

Blackman (1991) wrote the story of David, a government attorney who was born with cerebral palsy. Before using assistive technology, David could not type his own reports. With the use of a special computer program, he now types his own reports and is able to function more independently at work.

The story is also told of a sixteen-year-old boy from Virginia, who was paralyzed as a result of a car accident. Today he attends a public high school where he is an honor student and participates in two student clubs. This is possible with the use of a powered wheel chair to give him mobility and a Diaphragm Pacer to help him breathe (Blackman, 1991).

Technology or assistive technology can also be used to assist students with milder disabilities. A *Success Story*, noted in Don Johnston Inc.(1995), tells about a sixth grader who uses software to write letters and work on school projects. The student notes that one of his projects was over fifteen pages long. The program helps the student organize thoughts and develop sentences. The student attributes some of his success to the software.

It has been noted that 43 million people have disabilities in the United States. 750,000 people are "newly" disabled every year. 75 percent of the people with disabilities are 16 to 64 years old (IATP, 1993). Assistive Technology is a "bridge to independence" for many people with disabilities (IATP, 1991, p.13). This bridge to independence provides the tools for many people with disabilities to have more control over their own lives, as well as assist in learning skills and concepts which would not be accessible

without technology. It enables them to function and contribute more fully in many environments, such as school, work, home, and social life (Technology Related Assistance For Individuals With Disabilities Act of 1988). One role of special educators is to provide students with disabilities the tools to help them contribute fully in society. Technology is one of these tools.

The Tech Act and its contents bring to light many challenges regarding assistive technology in the classroom, including questions about cost, change in the classroom environment, availability, lack of information, and the need for training (Illinois Assistive Technology Project [IATP], 1991; Moore, Rieth, & Ebeling, 1994).

Review of Literature

History of Technology in Education

Assistive technology or technology and its use in education date back many hundreds of years. For example, an item that many students probably use almost everyday is the calculator. Turck (1972) noted that the origin of these modern machines dates back to somewhere in the tenth century. In 1642 the first working "accounting machine" was designed by Blaise Pascal and called the Pascal Machine. It is not known exactly what year the "accounting machine" was introduced into schools, but they were available hundreds of years ago. The new calculator was built with the understanding of the old adding machines (Turck, 1972).

Skinner (1984) noted in *The Shame of American Education* that "teaching machines" (computers) were used in an eighth-grade classroom as early as 1960. He noted that The Roanoke Project took eighth-grade students through ninth grade algebra curriculum in half a school year. The eighth grade students met all ninth grade norms after completion of the course. Testing after one year showed that the students performed significantly better in math skills than a similar group of ninth grade students who had not used teaching machines. Skinner noted that this study was done in 1960 but the education system has not made use of it.

Assistive technology has also been used in the field of special needs for hundreds of years. What one knows today as a wheelchair dates back to the Roman ages where it was known as a "bathchair." Bathchairs were used to push people back and forth from their baths so the bathers would not get their feet dirty. Other devices that could be considered assistive technology such as the peg leg, the hand hook, and wooden teeth, have been used throughout history.

One type of assistive technology used today was designed more than one hundred years ago. In 1824, Louis Braille began to design an alphabet for himself and other people who had vision impairments. This alphabet, called Braille, gave him and millions of other people the ability to read (IATP, 1993).

Though the exact dates when these devices entered the educational system are not known, some are still used in the educational system of today. However, there seems to be a lag time between invention and adoption that these devices encounter before becoming part of the school curriculum (Technology Related Assistance For Individuals With Disabilities Act of 1988; Moore, et. al., 1994; Skinner, 1984).

Rationale for Legislation

In 1988, the United States Congress authorized the Technology-Related Assistance for Individuals with Disabilities Act or "Tech Act" (Harkin, 1995; Council for Exceptional Children [CEC], 1994). The Tech Act allows people with disabilities and their families to obtain needed technology (Harkin, 1995). This technology allows them a degree of independence that is taken for granted for people without disabilities (IATP, 1991).

Senator Harkin (1995) noted that proper assistive technology helps people with disabilities:

With assistive technology:

- Almost 75 percent of children were able to remain in a regular classroom.
- Forty-five percent were able to reduce school-related services.
- Sixty-two percent of working-age persons were able to reduce dependency on family members, and 58 percent were able to reduce dependence on paid assistance.

- Eighty percent of older persons were able to reduce their dependence on others and half were able to avoid entering a nursing home.
- Ninety-two percent of employed persons reported that assistive technology helped them to work faster and better, 83 percent indicated that they earned more money, and 67 percent reported that assistive technology has helped them to obtain employment in the first place.

Legislation

As stated earlier, the law defines an *assistive technology device* as "any item, piece of equipment, or product system, whether acquired commercially off the shelf, modified, or customized, that is used to increase, maintain, or improve the functional capabilities of children or individuals with disabilities (Individuals with Disabilities Education Act [IDEA], 1992; Illinois Council for Exceptional Children [ICEC], 1993).

The Tech Act has three major purposes. The first purpose is to provide financial assistance to states to help develop a state wide technology-related assistance program. This program will be set up for all individuals with disabilities (Technology Related Assistance For Individuals With Disabilities Act of 1988). The second purpose is to set up assistance for the payment of these devices. The third purpose is to have the federal government provide the states with technical assistance and funding for the "innovation" of projects that provide information and service to the citizens of the state (Technology Related Assistance For Individuals With Disabilities Act of 1988).

In addition to its three purposes, the Tech Act provides rules and regulations that govern the use of assistive technology in the field of special education. The Tech Act was designed to ensure that the technology related needs of individuals of all ages with disabilities are met by doing the following: (a) increasing public awareness, (b) providing better information about funding, and (c) facilitating both public and private entities to provide technology and technology services to people with disabilities (Behrman, 1993). The Tech Act upholds the findings of the Americans with Disabilities Act (ADA) of 1990

that a "disability is a natural part of the human experience and in no way diminishes the right of individuals to enjoy full inclusion and integration in the economic, political, social, cultural, and educational mainstream of American society" (Harkin, 1995).

The Tech Act also addresses some training barriers to the adoption of technology in special classrooms. In order to overcome a lack of information, the Tech Act provides for training in assistive technology. Grants are awarded to institutions of higher learning to prepare students and faculty in special education and related fields for careers in providing assistive technology devices and services to people with disabilities (CEC, 1994).

In addition to the Tech Act, assistive technology is also referred to in Part B of Individuals with Disabilities Education Act (IDEA). This act is the legislation which governs and provides for the education of individuals with disabilities. Within Part B, assistive technology is redefined and required to be provided by public agencies to a student with a disability if specified as part of the student's special education related services and/or supplementary aids as part of a Free Appropriate Public Education [FAPE]. Assistive technology goals and objectives are, therefore, required on a student's individualized education program [IEP] if such modifications are needed to provide his/her FAPE. It is also noted, under Subpart E of IDEA, that parents have the right to have an independent evaluation of the provisions on the IEP related to FAPE. This includes related services and supplementary aids (i.e., assistive technology). If parents do not agree with the related services or supplementary aids provided through the IEP, they may request a due process hearing (IDEA, 1992).

Current Status

In this country it is noted that there are 43 million people with disabilities (IATP, 1993). The IATP (1991) noted that everyone with a disability, no matter how slight or severe, should have a complete assistive technology evaluation for their technology needs. They further noted that only six percent of the children with disabilities in Illinois receive assistive technology services.

However, if students are to receive the benefits of assistive technology their teachers must be trained and supported in its application. Swan and Sirvis (1992) published for the Council for Exceptional Children *The CEC Common Core Of Knowledge And Skills Essential For All Beginning Special Education Teachers*. First, it was specified that all special educators should be able to "choose and use appropriate technologies to accomplish instructional objectives and to integrate them appropriately in the instructional process." (p.19) Second, all special educators should know the "ways in which technology can assist with planning and managing the teaching and learning environment." (p.19) In essence, all beginning special education teachers should be trained in integrating and using assistive technology into special education instruction, and practicing teachers should be trained in using technology for classroom management.

Teacher training in the United States, including the training of special education teachers, is monitored by the standards of the National Council for Accreditation of Teacher Education [NCATE]. NCATE (1994) standards recognize the need for training in classroom use of technology. The opening page of the standards note that every professional education unit is expected to meet the standards of this document. Under *Content Of Studies* the standards note "Candidates complete a sequence of courses and/or experiences to develop an understanding of the structure, skills, core concepts, ideas, values, facts, methods of inquiry, and uses of technology of the content they plan to teach (p.4)." The importance of technology is also acknowledged under *professional and pedagogical studies* for initial teacher preparation. It states that students who are training to be teachers should understand the impact of technology on schools, and should be competent in educational technology, and the use of technologies in instruction, assessment, and enhancing productivity.

A study of the uses of assistive technology in the special education classroom in the state of Virginia was done by Behrmann (1993). This study found that eighty school systems had less than 25% of eligible students receiving assistive technology. The study

further found that 75% of the schools had less than 10% of their students using assistive technology. Eighty-three schools had less than 10% of eligible students with assistive technology goals and objectives on their IEP's.

Behrmann (1993) went on to note that a survey of 94 professionals from different multidisciplinary teams found that 43.6% of these professionals believed that providing assistive technology to students is the job of the special educator. They also described two major problems related to providing assistive technology. The first problem is lack of funding to provide the devices and provide for inservice training for personnel (It should also be noted that 50% of devices cost under \$50.00 [IATP, 1991]). The second problem is a lack of trained personnel to assess and implement student needs.

Parette (1991) found in the state of Arkansas, that when teachers were asked about their training needs, four of the top five professional needs were related to lack of assistive technology training. The teachers stated that they did not know what assistive technology is available, they did not know how to conduct assessments and evaluations in assistive technology, they did not know what vocational options were available in technology, and they lacked practical experience in working with assistive technology. In his study of teaching professionals he found that "68% of the respondents reported insufficient training in college regarding technology and its applications with persons with disabilities." (p8)

Lack of preservice training has caused a problem with the application of computers in the classroom. A study done by Moore, et al., (1994) was intended to respond to teachers' concerns about lack of preservice training in computer literacy. Their study was designed to describe the changes of teacher perceptions, knowledge, and attitudes about the use of computers in their classrooms after they were trained to integrate computers into their program. This study was conducted with special education teachers of students with mild disabilities. It found that after being trained, the teachers showed a significant increase in positive attitude toward computer-based instruction in the classroom. The study

also found that after receiving training the teachers felt computer based instruction was worth the planning time and was useful in the classroom.

Barriers to Technology in the Classroom

Uslan (1992) states that assistive technology is the key to independence and increased functioning for people with disabilities. The problems associated with assistive technology aren't how the devices can change peoples lives, but how does one get the devices to the people. Though assistive technology is a key to independence, it also involves many challenges including cost, change in classroom environment, availability, lack of information, and training (Moore et al., 1994; ARC, 1993; Uslan, 1992; Illinois Assistive Technology Project [IATP], 1991; Parker, Buckley, Truesdell, Riggio, Collins and Boardman, 1990).

Parker, et al., (1990) conducted a study to find the most prevalent barriers to the use of assistive technology. The survey they used focused on four areas; knowledge of assistive technology, ability to utilize assistive technology, problem areas, and the desired solutions to these problems. The sample for their study consisted of teachers in Massachusetts of students with multiple disabilities including vision and hearing impairments. They found that the surveyed sample noted four major barriers to the use of assistive technology. First, they noted that there was a problem matching the child to the appropriate technology. Second, they noted a lack of training in assistive technology. Third, it was noted that they needed more information regarding all areas (funding, types, services, training etc.) of assistive technology. Fourth, they noted the lack of personnel to maintain these devices.

Parker, et al. (1990) suggested some solutions to the above problems. Their first recommendation was to have on-site workshops for schools and training institutions. Their second recommendation was to develop resource centers for professionals and parents. Third, they recommended a resource person who could visit the schools on a

regular basis and assist teachers in attending to the assistive technology needs of students. Fourth, they recommended a computer network for technical assistance.

Uslan (1992) also did a study to describe areas which are barriers to obtaining assistive technology for people who are visually impaired. The study, based on an analysis of current data in the above field, found two major barriers. First, people with visual impairments felt that cost was a major barrier in obtaining assistive technology. It was noted that the cost of assistive technology for the blind ranged from \$1,000 to \$20,000 per device. Second, the lack of information in the area of assistive technology was seen as a problem. It was noted that, even if the person found the appropriate device, information on how to obtain funds for the device was lacking. The study concluded that people with visual impairments need both the equipment and financial assistance in acquiring the equipment.

The ARC (1993) distributed a question and answer sheet that noted three major barriers to the use of technology and assistive technology for people who are mentally disabled. The first problem is that people lack training in the assessment, design, and service of assistive technology devices. The second problem is the lack of devices that can or are modified for specific people with specific disabilities. The third problem is that of cost. It is noted that cost is a major barrier in obtaining any device.

The literature frequently mentions several barriers in obtaining and using technology and/or assistive technology in the classroom. One of the major barriers mentioned is the cost of the technology. Two other major barriers mentioned in the above studies is the lack of information and trained support personnel. The final major barrier is the lack of training in all areas (including; funding, updated information, and support personnel) of technology for individuals with disabilities (Moore et al., 1994; ARC, 1993; Uslan, 1992; Parker et al., 1990)

Summary

Assistive technology and/or technology has been called a bridge to independence for people with disabilities. It provides people with disabilities the freedoms many other people take for granted. Congress has found the uses of assistive technology so promising that they passed the Tech Act in 1988 to provide support for the use of assistive technology for individuals with special needs. Since the passing of the Tech Act, barriers have been noted that hinder the provision of assistive technology to people with disabilities. One of the major barriers to providing and using appropriate technology is a lack of preservice and inservice training for people in human related service fields. This lack of training has also hindered the use and growth of assistive technology in the school system; therefore, it has denied potential growth to people with disabilities (Moore et al., 1994; ARC, 1993; Uslan, 1992; IATP, 1991; Parker et al., 1990).

Lack of training for special educators in the field of technology is a problem that needs to be addressed in training American's educators. Information in this area is limited; few studies have been done to determine the use of technology in the special education classroom. Behrmann (1990) found that less than 10% of students in special education had technology goals and objective on their IEPs. Parette (1991) found that many teachers did not know the options that were available with the use of technology. Both of the above researchers linked their findings to the lack of training received by personnel in special education. In order for the problem to be fully understood, more research is needed in this area.

Hypothesis

Based on the above history and review of the use of assistive technology and/or technology for students in special education, the following hypotheses were determined to need investigation:

1. Given that the educational use of technology has been available and has been used for students with disabilities for many years, we would expect that teachers had received

some training for that use, and that teachers would be using technology in their classrooms.

2. Given that the Tech Act specifies that students with disabilities are to be assessed for appropriate use of technology, we would expect that teachers of students with disabilities would be aware of the Tech Act, and would have in their classrooms students who had been assessed for, and have as part of their IEPs, appropriate use of technology.

To study the above hypotheses the following research questions were developed:

1. What types of technology are being used in the special education classroom?
2. Are special education personnel receiving training in the use of technology for education?
3. Where are special education personnel getting the above training?
4. What are the major barriers in providing technology to students with disabilities?
5. Are students being assessed for use of technology in the classroom?
6. Is technology a topic that is being included on student's IEPs?

Method

This study was designed to examine the training of special education teachers employed in public schools in Illinois regarding educational technology and their use of educational technology in the classroom. To determine the extent of training for and use of educational technology in the classroom, information was gathered regarding three populations. Surveys were sent to (a) a randomly selected sample of special education teachers from all school districts in Illinois, (b) a randomly selected sample of the special education teachers of half of all special education cooperatives in Illinois, and (c) all teacher training institutions in Illinois that provide coursework for special education certification.

Design

Two cross-sectional surveys were employed to gather information from the three groups of interest. The first survey (Appendix A) was sent to both groups of teachers in order to define the current level of training and use of technology in the special education classroom. Each survey was accompanied by a cover letter (Appendix B) that explained the study and requested that the administrator forward the letter to teachers who educate children with learning disabilities, social emotional disorders, or children who are educable mentally handicapped, in grade levels kindergarten through twelfth grade. The second survey (Appendix C) roughly paralleled the first, and was sent to teacher training institutions to determine the current status of available training for educational technology. Each of these surveys was also accompanied by a cover letter (Appendix D) which asked each department chair to fill out and return the survey.

Sample

Sample A.

A list of all school districts in the state of Illinois, ranked according to size (*sample A*), was obtained from the Illinois State Board of Education (Illinois State Board of Education [ISBE], 1995). Given the preponderance of large districts, a random sample of the intact list was likely to yield a heavy percentage of large districts and give no

representation to smaller districts. Therefore, in order to obtain representation of districts of varying size in the sample, the following procedure was used. The list was divided into 19 groups, based on the number of students served in the district. Districts that serve between 1 and 999 ($n=241,565$ students) were grouped by increments of 100. Districts that serve between 1000 and 9999 ($n=1,001,512$ students) were grouped by increments of 1000. All school districts that serve over 10,000 students ($n=246,840$ students) were then included in one group, excluding the city of Chicago. City of Chicago School District 299 was considered a separate group based on the fact the district's student population ($n=407,241$) accounts for nearly 30% of the entire state student population. It was decided to consider Chicago School District 299 as a separate group so as not to let one district's policies possibly skew the outcome of the study.

According to the list supplied by ISBF (1995), the total number of students served by public education in Illinois is 1,897,161. Fiscal and time constraints limited the possible number of surveys sent to around 300. Given the total number of students, this allowed 1 survey to be sent for every 6000 students in the state. In order to obtain the number of surveys to be sent to each group, the group's total student population was summed and divided by 6000. This gave the number of surveys to be sent to each group. The appropriate number of districts within each group was chosen using the random table of numbers in Borg & Gall (1989). A list of schools within these districts was then obtained from ISBE (1994). Schools within each chosen district were then selected using the same random number table. This gave the yield of 250 total surveys for this sample. Surveys and cover letters were then sent to the administrators of the selected schools. The administrators were asked to forward the surveys to the appropriate faculty member.

Sample B.

Using the above list of school districts in rank order (ISBE, 1995) it was decided to create a separate sample for the City of Chicago Public Schools. City of Chicago Public Schools, though not a totally homogenous set of schools, are administered and funded by a

single source and are situated in an urban area which is unlike any other single geographic area in the state. It is assumed that this creates a degree of stability within this group that is not likely to be found between any other districts in the population. In addition, these schools represent one-third ($n=407241$) of the total student population in Illinois.

Assuming that a small number of surveys could, therefore, represent this group of schools, 20 surveys were sent to this group. It was intended that surveys returned from this group would be weighted to represent their true population when included with the other groups. Schools were chosen using the same method as in *Sample A.* Again, surveys were sent to building administrators with cover letters asking them to forward the surveys to the appropriate staff member.

Sample C.

A list of Special Education Cooperatives in the state was obtained through the Illinois State Board of Education (1994). A list of the total number of students served in cooperatives was unobtainable from the ISBE. Therefore, 50% of the total group of cooperatives were surveyed. This percentage was decided upon based on the assumption that the cooperatives educate a majority of the students in special education throughout the state of Illinois. This gave the yield of 44 surveys for this sample group. Cooperatives and schools within the cooperatives were chosen using the same process used for the districts and schools in *Sample A.* Surveys and cover letters were sent to the cooperative directors asking them to forward the survey to the appropriate faculty member.

Sample D.

The final sample was drawn from all the teacher preparation institutions in the state. A list of these programs was obtained through the Council For Exceptional Children (1995). Surveys were sent to the chairperson of each department who was asked to complete the survey or forward it to an appropriate faculty member.

Instrumentation

The two surveys used were tailored for this study based on a survey obtained from The Interagency Project for Assistive Technology (1995) in North Dakota. The surveys were also developed using information reported in previous survey studies regarding the use of technology in special education and training regarding technology in education. These studies were done by Behrmann (1993) in Virginia, Parette (1991) in Arkansas, and Blackhurst and MacArthur (1986) in Lehm (1989) in a study of higher education. The first survey consisted of 25 questions and was sent to selected public school districts and special education cooperatives (Appendix A). The second survey consisted of 20 questions and was sent to all teacher training institutions in Illinois (Appendix B). Drafts of both surveys were reviewed by several school and higher education personnel. Their comments and recommendations were integrated into the final survey. The surveys were designed to address the research hypotheses by answering the following questions:

1. What types of technology are being used in the special education classroom?
2. Are special education personnel receiving training in the use of technology for education?
3. Where are special education personnel getting the above training?
4. What are the major barriers in providing technology to students with disabilities?
5. Are students being assessed for use of technology in the classroom?
6. Is technology a topic that is being included on student's IEPs?

Data Collection and Analysis

Surveys for all sample groups were coded to identify the specific sample site to which the survey was sent, in order to facilitate follow-up. Surveys for the first three samples; (a) school districts, (b) special education cooperatives, and (c) Chicago District 299 were sent to the administrator of the selected schools. The cover letter explained to administrators the intent of the mailing and asked them to forward the survey to a teacher or person who teaches special education in the following categories: Learning Disabled (LD),

Social Emotional Disorder (SED), Educable Mentally Handicap (EMH), kindergarten through twelfth grade (K-12). The survey excluded teachers and faculty members who teach early childhood special education, since early childhood special education is driven by separate legislative governance, funding mechanisms, and teacher requirement criteria.

Surveys for the fourth sample, the institutions of higher education, were sent to the department chairperson of special education at each teacher training institution. The cover letter asked the chairperson to complete the survey or to forward the survey to an instructor within their department who gives instruction to undergraduate students regarding technology.

A stamped return envelope was provided with each survey. The participants in both samples were asked to have the completed survey returned within two weeks after the arrival of the materials. A follow-up mailing was done for the public school districts and the special education cooperatives. Final return rates for all sample groups are listed in Table 1.

Table 1
Return Rates by Group

Group	Surveys Sent	Surveys Returned	Cover Letter Returned	Completed Surveys
	<u>n</u>	<u>n</u> (%)	<u>n</u> (%)	<u>n</u> (%)
Schools	250	140(56.0)	3(1.2)	137(54.8)
Cooperatives	44	30(68.2)	2(4.5)	28(63.6)
City Of Chicago	20	2(10.0)	—	2(10.0)
Teacher Training Institutions	26	9(34.6)	NA	9(34.6)
Total	340	181(53.2)	5(1.4)	176(51.7)

The study was originally designed to include four samples; randomly selected public school districts in Illinois, City of Chicago School District 299, randomly selected special education cooperatives, and all teacher training institutions in the state of Illinois. Two of the four samples had return rates which supported analysis of the data reported; school districts had 56.0% of surveys returned, the cooperatives returned 68.2%.

Returns from Chicago and the teacher training institutions were not submitted for analysis because the return rates were not considered acceptable. City of Chicago School District 299 returned 10.0% of their surveys, and the teacher training institutions returned 34.6%. Analysis was performed on the data from schools and cooperatives because the return rates for these two groups were considered acceptable for reaching conclusions regarding the populations.

The two distinct samples of data were coded separately in Microsoft Excel 5.0 (1994) for the PowerPC, then translated into Statistical Package for the Social Sciences (SPSS/PC+) (1995). Descriptive statistics were performed on all data from the sampled school districts and special education cooperatives. These statistics examined the distribution of data throughout the variables on the survey.

Results

The data reported in this section are based on survey responses from special education personnel in public schools in the state of Illinois. Since there is a difference in the sampling procedures for the two samples, data are presented separately for school districts and for cooperatives. The school district sample was based on .03% of students and 50% of the cooperatives were sampled.

Characteristics of Respondents

A description of the respondents from school district settings indicated that 23.4% of respondents considered themselves to be teachers for students with learning disabilities and 17.5% of the respondents considered themselves teachers in cross categorical (LD/SED/EMH) settings. The "other" category included people who wrote in positions such as LD/SED Diagnostician, Department Chair, SSD/LD Teacher (sic), LD/BD/EMH Technology Teacher, Special Education Case Teacher and any other position labels that did not fit into the categorical labels on the survey.

The returns from the cooperatives indicated that the largest single categorical response (17.9%) to come from teachers who work with children with social emotional disorders. The second largest reported position again was that of cross categorical at 21.4%. As found in the returns from the school districts the highest percent went to the given category of "other" (Table 2).

Table 2

Characteristics of Respondents: Special Education Position

Respondent Position	Schools	Cooperatives
	<u>n</u> (%)	<u>n</u> (%)
ID	32(23.4)	3(10.7)
SED	5(3.6)	5(17.9)
ID/SED	23(16.8)	3(10.7)
EMH	3(2.2)	—
SED/EMH	—	1(3.6)
ID/EMH	9(6.6)	—
ID/SED/EMH	24(17.5)	6(21.4)
Consultant	2(1.5)	1(3.6)
Inclusionary	4(2.9)	—
Other	35(25.5)	9(32.1)

Thirty one percent of respondents from the schools reported that their highest degree was a Bachelor of Science. Nearly 40% of the respondents have been awarded a Master of Science. The third highest ranked response was a Master of Arts with 19.7%. Within the group employed by a special education cooperative 39.3% of the respondents have Bachelor of Science, 28.6% have Master of Science and 25.0% reported having a Master of Arts. Between both groups, three people reported having a Doctorate and those people were employed by school districts (Table 3).

Of the professionals employed by school districts 22.6% have been working in the field of special education for 16-20 years, 18.2% of the respondents have been working for 21-25 years. 14.6% of the respondents from regular school districts have been working for 1-5 years, while 10.9% have been working for over 25 years.

Twenty five percent of the respondents from the special education cooperatives have been working in the field for 11-15 years. Of the respondents in the cooperatives, 21.4% had only worked in the field for 1-5 years and 14.3% have worked for 6-10 years. In the special education cooperatives 10.7% have worked in the field for at least 25 years (Table 3). Years in service were roughly the same for the 2 samples, though school districts were represented by slightly more seasoned teachers than the cooperatives.

Table 3
Frequency Distribution Characteristics of Respondents: Levels
 Of Education and Years in Service

Variable	Schools	Cooperatives
	<u>n</u> (%)	<u>n</u> (%)
Level of Education		
BA	6(4)	1(3.6)
BS	43(31.4)	11(39.3)
MA	27(19.7)	7(25.0)
MS	54(39.4)	8(28.6)
EdD	—	1(3.6)
PhD	3(2.2)	—
Other	1(.7)	—
Years in Service		
1-5 years	20(14.6)	6(21.4)
6-10 years	19(13.9)	4(14.3)
11-15 years	27(19.7)	7(25.0)
16-20 years	31(22.6)	5(17.9)
21-25 years	25(18.2)	3(10.7)
25+ years	15(10.9)	3(10.7)

Technology Currently in the Classroom

Respondents were asked what types of technology they currently had in their classrooms. Respondents employed by the school districts reported the highest percentages of computers to use during student free time (78.1%), computer for students to do drill and practice (70.8%), and computer for professional use (66.4%). The same respondents also reported that 90.5% of them had no access to the internet or world wide web (Table 4).

Respondents employed by the cooperatives reported similar use of computers in the classroom. 85.7% have computers for student freetime, 78.6% have computers for drill and practice, and 57.1% have computers for professional use. These respondents also reported 67.9% of them have a computer for student self instruction. They reported similar percentages of respondents without internet or world wide web access (89.3%) (Table 4).

Table 4

Percentages of Different Types of Technology Used and Not Used in the Classroom

Variable	Schools		Cooperatives	
	Used n(%)	Not Used n(%)	Used n(%)	Not Used n(%)
Comp. for Freetime	107(78.1)	28(20.4)	24(85.7)	4(14.3)
Comp. for Professional Use	91(66.4)	45(32.8)	16(57.1)	12(42.9)
Comp. for Drill Practice	97(70.8)	38(27.7)	22(78.6)	6(21.4)
Comp. for Self Instruction	62(45.3)	73(53.3)	19(67.9)	9(32.1)
Internet World Wide Web	11(8.0)	124(90.5)	3(10.7)	25(89.3)
Comp. for Assessment	29(21.2)	106(77.4)	4(14.3)	24(85.7)
Comp. For Instructional Presentation	31(22.6)	104(75.9)	6(21.4)	22(78.6)
Assistive Technology Device	25(18.2)	110(80.3)	8(28.6)	20(71.4)
Other	9(6.6)	126(92.0)	3(10.7)	25(89.3)

Training Areas

School Districts.

The survey addressed areas in which the respondents had received training in the field of educational technology and areas in which the respondents perceived a need for training. In the school districts, 68.6% have not received training in current legislative issues, but 68.6% wanted to be informed about this area. Responses from school districts indicated that 54.0% have not received any training pertaining to the Internet and World Wide Web, but that 61.3% would like to receive hands-on training in this area. In the area of funding mechanisms, 81.0% have not received any form of training in funding issues for assistive technology, but over 74% perceived a need for some form of training in this area. In the area of including technology on the student's IEP, 21.4% responded that they have been informed about this area, 67.9% have not received any training, and 40.1% called for hands on training in the area. Responses also indicated that, in the area of assessing a student's need for assistive technology, 80.3% had not received any training, 41.6% would like to be informed about this area, and 27.7% indicated a need for hands on training (Table 5a). Specific skill areas are reported in table 6a.

Cooperatives.

Responses from the cooperatives were very similar to the school districts in the area of training received in and perceived needs for training. In the area of current legislation, 75.0% had not received any form of training, while 50.0% would like to be informed about this area. When asked about training for use of the Internet and World Wide Web, 57.1% of the respondents noted that they had not received any training, but 57.1% wanted to receive hands-on training in that area. In the area of funding for assistive technology 78.6% of the respondents had not received any training and nearly 60% of the respondents felt a need for at least one form of training. When asked about knowledge of how to include technology on the IEP 21.4% have received hands on training, 57.1% have not received any training, and over 81% responded as having a need for training in that area. When questioned regarding knowledge and/or use of assessment of student need for assistive technology, 75.0% of the respondents from cooperatives had not received any training, 32.1% wanted to be informed on this area, and 21.4% of the respondents wanted hands-on training in this area (Table 5b). Specific skill areas are reported in table 6b.

Table 5a

General Areas of Training Received and the Perceived Need for Training: Schools

Variable	Schools							
	Training Received			Training Important				
	Informed n(%)	Hands-On n(%)	Both n(%)	None n(%)	Informed n(%)	Hands-On n(%)	Both n(%)	None n(%)
Basic Understanding	32(23.4)	39(28.5)	22(16.1)	44(32.1)	36(26.3)	66(48.2)	18(13.1)	15(10.9)
Historical Issues	29(21.2)	7(5.1)	2(1.5)	99(72.3)	82(59.9)	8(5.8)	1(7)	45(32.8)
Current Legislation	38(27.7)	4(2.9)	1(7)	94(68.6)	94(68.6)	8(5.8)	2(1.5)	31(22.6)
Current Practices	38(27.7)	27(19.7)	17(12.4)	55(40.1)	36(26.3)	62(45.3)	23(16.8)	15(10.9)
Current Hardware/Software	25(18.2)	44(32.1)	25(18.2)	43(31.4)	10(7.3)	95(69.3)	22(16.1)	9(6.6)
Emerging Hardware/Software	28(20.4)	23(16.8)	8(5.8)	78(56.9)	47(34.3)	58(42.3)	13(9.5)	18(13.1)
Professional Productivity	19(13.9)	43(31.4)	14(10.2)	61(44.5)	16(11.7)	87(63.5)	22(16.1)	11(8.0)
Internet/World Wide Web	34(24.8)	21(15.3)	8(5.8)	74(54.0)	14(10.2)	84(61.3)	19(13.9)	18(13.1)
Funding Assistive Technology	22(16.1)	4(2.9)	—	111(81.0)	79(57.7)	18(13.1)	5(3.6)	34(24.8)
Technology on IEP	30(21.9)	11(8.0)	2(1.5)	93(67.9)	44(32.1)	55(40.1)	19(13.9)	18(13.1)
Assessing Need for AT	18(13.1)	8(5.8)	1(7)	110(80.3)	57(41.6)	38(27.7)	7(5.1)	34(24.8)
Software Design/Authoring	17(12.4)	3(2.2)	—	117(85.4)	62(45.3)	16(11.7)	3(2.2)	55(40.1)
Hardware Design/Authoring	15(10.9)	—	1(7)	121(88.3)	64(46.7)	12(8.8)	3(2.2)	57(41.6)
Other	—	—	—	—	—	2(1.5)	1(7)	—

Table 6a

Specific Areas of Training Received and the Perceived Need for Training: Schools

Variable	Schools							
	Training Received				Training Important			
	Informed n(%)	Hands-On n(%)	Both n(%)	None n(%)	Informed ^d n(%)	Hands-On n(%)	Both n(%)	None n(%)
Curricular Adaptations								
Writing	18(13.1)	31(22.6)	11(8.0)	77(56.2)	11(8.0)	86(62.8)	19(13.9)	19(13.9)
Reading	17(12.4)	30(21.9)	15(10.9)	75(54.7)	10(7.3)	90(65.7)	19(13.9)	17(12.4)
Math	22(16.1)	24(17.5)	14(10.2)	77(56.2)	10(7.3)	90(65.7)	18(13.1)	18(13.1)
Social Skills	17(12.4)	13(9.5)	8(5.8)	99(72.3)	11(8.0)	83(60.6)	17(12.4)	25(18.2)
Other	7(5.1)	4(2.9)	5(3.6)	7(5.1)	7(5.1)	35(25.5)	8(5.8)	5(3.6)
Computer Assisted Instruction								
Drill and Practice	19(13.9)	59(43.1)	14(10.2)	45(32.8)	9(6.6)	88(64.2)	18(13.1)	20(14.6)
Tutorial or Self Instruction	18(13.1)	48(35.0)	11(8.0)	60(43.8)	9(6.6)	88(64.2)	18(13.1)	21(15.3)
Games	16(11.7)	57(41.6)	16(11.7)	48(35.0)	14(10.2)	83(60.6)	16(11.7)	23(16.8)
simulation modeling	16(11.7)	24(17.5)	5(3.6)	92(67.2)	8(5.8)	79(57.7)	13(9.5)	36(26.3)

Table 6b

Specific Areas of Training Received and the Perceived Need for Training: Cooperatives

Variable	Cooperatives					Cooperatives				
	Training Received					Training Important				
	Informed n(%)	Hands-On n(%)	Both n(%)	None n(%)	None n(%)	Informed n(%)	Hands-On n(%)	Both n(%)	None n(%)	
Curricular Adaptations										
Writing	2(7.1)	3(10.7)	9(32.1)	14(50.0)	5(17.9)	10(35.7)	6(21.4)	7(25.0)		
Reading	3(10.7)	3(10.7)	7(25.0)	15(53.6)	5(17.9)	15(53.6)	3(10.7)	5(17.9)		
Math	2(7.1)	3(10.7)	8(28.6)	15(53.6)	4(14.3)	16(57.1)	3(10.7)	5(17.9)		
Social Skills	4(14.3)	1(3.6)	5(17.9)	18(64.3)	7(25.0)	13(46.4)	3(10.7)	5(17.9)		
Other	1(3.6)	—	2(7.1)	25(89.3)	3(10.7)	8(28.6)	2(7.1)	16(53.6)		
Computer Assisted Instruction										
Drill and Practice	2(7.1)	9(32.1)	6(21.4)	11(39.3)	3(10.7)	18(64.3)	4(14.3)	3(10.7)		
Tutorial or Self Instruction	2(7.1)	8(28.6)	7(25.0)	11(39.3)	3(10.7)	18(64.3)	4(14.3)	3(10.7)		
Games	1(3.6)	9(32.1)	7(25.0)	11(39.3)	3(10.7)	18(64.3)	4(14.3)	3(10.7)		
simulation modeling	2(7.1)	4(14.3)	4(14.3)	18(64.3)	3(10.7)	15(53.6)	3(10.7)	7(25.0)		

Educational Levels Where Training is Occurring

Respondents were questioned about where they received training regarding the use of technology. From the school districts, 24.8% reported receiving training during undergraduate years, 24.8% received training during their graduate years, 62.0% received it during inservices, and 63.5% trained themselves informally. Respondents from cooperatives reported similar data. 25.0% received training during undergraduate years, 32.1% received training during graduate years, 60.7% received training during inservices, and 67.9 of the respondents trained themselves (Table 7).

Table 7

Levels Where Training was Received

Variable	Schools*	Cooperatives*
	<u>n</u> (%)	<u>n</u> (%)
Undergraduate	34(24.8)	7(25.0)
Graduate	34(24.8)	9(32.1)
Inservice	85(62.0)	17(60.7)
Informal	87(63.5)	19(67.9)

Note. *These percentages total more than 100 in columns because respondents were able to check more than one category

Students Assessment

The respondents were asked how many of their students have been assessed for the educational use of assistive technology. In school districts, 71.5% of the respondents noted that none of their students (0%) had been assessed for use of assistive technology, 19% responded that between 1-20% of their students had been assessed, and 2 respondents (1.5%) noted that all of their students had been assessed. The cooperative numbers were similar: 64.3% of respondents reported that none (0%) of their students had been assessed, 21.4% reported that between 1-20% of their students had been assessed, and 1 respondent (3.6%) noted that all the students in that classroom had been assessed (Table 8).

Table 8

Reported Percentages of Students That Have Been Assessed for Assistive Technology

Variable	Schools	Cooperatives
	<u>n</u> (%)	<u>n</u> (%)
Percent Assessed for Use		
0%	98(71.5)	18(64.3)
1-20%	26(19.0)	6(21.4)
21-40%	2(1.5)	—
41-60%	1(.7)	1(3.6)
61-80%	3(2.2)	1(3.6)
81-99%	5(3.6)	1(3.6)
100%	2(1.5)	1(3.6)

Technology on Student IEPs

The respondents were then asked what percent of students had the topic of assistive technology on their IEP. Over 75% of the respondents from the school districts noted that no students (0%) had the topic of assistive technology on their IEPs'. Nineteen percent of the respondents have 1-20% of their students with the topic on their IEP, while .7% of the respondents reported having had all of their students with the topic of assistive technology on their IEP. The special education cooperatives responses were similar: 75% reported none of their students (0%) with assistive technology on their IEPs', 21.4% reported that 1-20% of their students have the topic on their IEPs, and 1 respondent (3.6%) reported having all students with the topic of assistive technology on IEPs (Table 9).

Table 9

Reported Percentages of Students That Have the Topic of Assistive Technology on Their IEPs

Variable	Schools	Cooperatives
	<u>n</u> (%)	<u>n</u> (%)
Percent Included on IEP		
0%	104(75.9)	21(75.0)
1-20%	25(18.9)	1(3.6)
21-40%	1(.7)	1(3.6)
41-60%	2(1.5)	1(3.6)
61-80%	—	2(7.1)
81-99%	1(.7)	1(3.6)
100%	1(.7)	1(3.6)

Contact with Technical Support

Respondents were asked how much contact (excluding mandatory inservices) the respondents had with their regional technical support staff. Of the respondents employed by school districts: 5.1% had monthly contact, 10.9% had contact several times a year, 4.4% had contact twice a year, 8.8% had contact yearly, and 64.5% had no contact. The respondents from the cooperatives noted that 17.9% of them had contact several times a year, 7.1% had semiyearly contact, and 75.0% had no contact at all (Table 10).

Table 10

Amount of Contact with Regional Technology Support Staff

Variable	Schools	Cooperatives
	%	%
Monthly	7(5.1)	—
Several Times a Year	15(10.9)	5(17.9)
Semi Yearly	6(4.4)	2(7.1)
Yearly	12(8.8)	—
None	88(64.2)	21(75.0)

Perceived Barriers

Respondents were then asked to rank five barriers to providing technology to their students. The respondents from the schools perceived that their overall top barrier was funding. This was ranked first or second by 54.8% of the respondents. The second highest barrier for the schools was lack of training. This was ranked first or second by 27.8% of the respondents. Lack of support staff was ranked third with 23.3% of the people ranking it either first or second (Table 11).

The respondents from the cooperatives perceived that funding is their number one barrier with 78.6% of the respondents ranking it either first or second. Lack of administrative support was the second highest ranking for cooperatives with 60.7% of the respondents ranking it either first or second. The third highest barrier was noted as the lack of training with 57.1% of the respondents ranking it first or second (Table 11).

Table 11
First and Second Ranked Perceived Barriers in Providing Technology in The
Classroom

Variable	Schools			Cooperatives		
	Ranked 1st	Ranked 2nd	Total	Ranked 1st	Ranked 2nd	Total
	<u>n</u> (%)	<u>n</u> (%)	<u>n</u> (%)	<u>n</u> (%)	<u>n</u> (%)	<u>n</u> (%)
Funding	66(48.2)	9(6.6)	75(54.8)	17(60.7)	5(17.9)	12(78.6)
Adm Support	5(3.6)	12(8.8)	17(12.4)	7(25.0)	3(35.7)	9(60.7)
Training	16(11.7)	22(16.1)	38(27.8)	6(21.4)	10(35.7)	16(57.1)
Support Staff	4(2.9)	28(20.4)	32(23.3)	5(17.9)	4(14.3)	9(32.2)
Updated Information	9(6.6)	10(7.3)	19(13.9)	5(17.9)	3(10.7)	8(29.6)
Other	5(3.7)	9(6.6)	14(10.3)	1(3.6)	6(20.7)	7(24.3)

Discussion

The purpose of this study was to describe the types of training special educators have received regarding to educational technology and to examine the use of technology in the special education classroom within the state of Illinois. While examining the above information the study also explained the largest barriers in using technology as perceived by public school personnel. This discussion focuses on the results of the study presenting some interpretations for these findings. The discussion section will also note some possible limitations of the study and future implications of the study.

Characteristics of the Respondents

Because of the low return rates from Chicago School District 299 and the teacher training institutions, the data were not reported. It should be noted when interpreting the results that this study was originally designed to include four groups and only was able to report on two of the groups. Though the low return is a factor when interpreting the results the study was able to survey two randomly selected samples from a population which educates over 70% of the state's children. The results can therefore be taken to represent the current situation regarding technology for a large number of teachers in Illinois.

Another issue that should be noted when interpreting results concerns respondent position. The original question asked respondents to write in their current position (i.e. LD resource, SED Inclusionary, Cross Categorical Self Contained). The question generated answers such as: LD teacher, BD teacher, LD/EMH teacher etc. Due to the broad interpretation of this question by respondents, data was recorded by the category in which the teacher taught and the two other possible positions indicated by respondents: consultant and inclusionary teacher. An "other" category was formed to place people who indicated positions such as: LD/SED Diagnostician, Department Chair, SSD/LD Teacher (sic), LD/BD/EMH Technology Teacher, Special Education Case Teacher and any other position labels that did not fit into the categorical labels assigned by the survey. It should be noted

when interpreting results that the "other" category made up 25.5% of the returns for the school districts and 32.1% of the returns from the special education cooperatives.

Technology Currently in the Classroom

The study found that 78.1% of teachers in the school districts and 85.7% of the teachers in cooperatives had computers in their classroom for use in student freetime. The study also found that 70.8% of the teachers in the school districts and 78.6% of the teachers in the cooperatives have computers in their classrooms which are used for students to perform drill and practice. The above percentages are very positive indicators that the special education classroom is using technology in the classroom. The high percentage of use in this area may be related to the high number of respondents who have received training in this area. Over 60% of the respondents reported that they had received training in using a computer for drill and practice.

The study also found that 45.3% of the teachers employed by the public schools used computers for student self instruction. This is compared to 67.9% of the teachers that used computers for student self instruction. This is the largest difference in percentage points (22.6%) regarding the use of computers in the classroom. This may be related to the high number of respondents who reported receiving training in this area. Fifty five percent of the respondents in the school district and 65% of the respondents from the cooperatives reported receiving training in using a computer for student self instruction.

Other data generated from the respondents were not as encouraging. In the school districts, teachers indicated that 90.5% of the classrooms do not have access to the internet or world wide web. A similar lack of accessibility (89.3%) was reported by the teachers employed by the special cooperatives. Though low percentages in training were also indicated in this area, it would seem that lack of hardware might be a larger issue. Without having access to on-line services, teachers and students are unable to take advantage of a form of communication which holds many resources for both teachers and students. This may include many resources that directly affect special education, such as on-line web sites

with new teaching strategies and tactics, educational forums, and the Department of Education's homepage.

The low usage of assistive devices in the special education classroom is also a concern. Respondents from the school districts indicate that only 18.2% have any assistive device in their classrooms. Respondents from the cooperatives indicated slightly more encouraging numbers with 28.6% in their classroom. This may reflect a greater percentage of students served directly by the cooperatives with needs that may be best met with assistive technology, such as augmentative communication devices. These low percentages may be related to the lack of training indicated in by the teachers in this area. Responses indicated that almost 80% in both samples did not receive any training in funding assistive technology. In the schools 80.3% of the respondents had not received any training in assessing for student need in this area. The cooperatives indicated a slightly lower percentage, with 75.0% of the respondents not receiving training in assessing students' needs in this area. Lower percentages were further indicated concerning training to include assistive technology on student's IEPs. Respondents for school districts reported 67.9% had not received any training, and respondents from cooperatives reported 57.1% had not received training. Though the use of assistive technology is mandated by the federal government there is a reported lack of preparation for teachers in this area. This lack of preparation may be adversely affecting the use of technology in the classroom, which is what the Tech Act was designed to support.

Training Areas

As indicated above, training may be related to the use of technology in the classroom. The specific skill areas of drill and practice and self instruction represent the areas with the most training for both samples. The district respondents indicated that nearly 70% had received some sort of training in drill and practice and over 55% had received some training in self instruction. The cooperatives reported similar percentages with over 60% of the respondents reported having some training in drill and practice and

over 65% had some training in using self instruction. The areas of drill and practice and self instruction are also the areas in which the respondents reported the greatest use in the classroom. It appears, therefore, that training in a certain areas may be related to greater use in the classroom.

Current legislation in the use of technology in the classroom was another area in which respondents indicated little training. Respondents from the schools indicated that 68.6% had not received any training pertaining to legislation. The respondents from cooperatives indicated that 75.0% of them had not received any training in this area. The survey also asked if they had understanding of the definition of assistive technology as it was defined by the two governing laws: IDEA and the Tech Act (PL 101-476 and PL 100-407). The respondents from the schools indicated that 59.1% of them were not familiar with the definition and the cooperative respondents indicated that 53.6% were not familiar with the definition. This indicates that, although according to the law, the respondents have responsibility to provide services over 50% of them do not understand this responsibility.

Educational Levels where Training is Occurring

Even lower percentages were reported when respondents were asked where their training had taken place. Of the respondents from the school districts, roughly a quarter (24.8 undergraduate, 24.8 graduate) of the respondents reported receiving training in a formal education setting. Slightly higher percentages (25% undergraduate, 32.1% graduate) were reported from the cooperatives. This data show that of all the respondents in either category up to 75% of the people have not received any supervised training. Over 63% in both samples reported that they had received their training informally. This means that they took it upon themselves to become informed and/or acquire skills. This may be an indicator of how important teachers believe it is to receive training in the area of educational technology. One should credit these individuals for trying to educate themselves, but a lack of formal training has the possibility of leading to a misinformed educational community.

Even inservice training, which was reported at 60% or higher in both groups, generally lacks supervision and/or accountability. Another shortcoming of informal training is the lack of stability between one individual's training and another individual's training in terms of both amount and content. This inconsistency may lead to some students receiving appropriate services while others do not. Students and teachers both would be better served by training and/or support that is supervised and consistent across districts. Since much formal training would be responsive to certification needs, it may be necessary to consider technology proficiency as a certification standard.

Contact with Technical Support

The respondents were asked, excluding mandatory inservices, the number of times they had been in contact with this technical support staff. Of the respondents from the schools 64.2% of them had no contact. The cooperatives recorded higher numbers with 75% of them with no contact. This may be attributed to the fact that the state of Illinois is in a period of technological change. The state has just reassigned service regions for school districts and this may have lead to inadequate marketing strategies or the state may not be ready to publicize support services. Another factor may be insufficient numbers of technical support staff which can respond to the need. Unfortunately, it was not asked of respondents whether they knew if the technical support staff existed or if they had tried to contact them. On two of the returned surveys, the respondents did ask if they had technical support staff. In the cooperatives the lack of contact is higher than in the school districts, but they may have Technical Assistants or people employed specially to give assistance to cooperative districts and faculty. Another factor may be that cooperatives may not align themselves with the regional offices for technical support. This could decrease the need for respondents in the cooperatives to have as much contact with the regional support staff.

Student Assessment

The respondents were asked the percentage of their students who had been assessed for the use need of appropriate assistive technology. The data that were generated from this

question indicated that in school districts, 71% of the respondents reported having none of their students assessed. The cooperatives show slightly lower numbers with 64% of the respondents reporting that none of their students had been assessed. This lower number in cooperatives may be attributed to the employment of "Technical Assistants" or people who provide assistance to other professionals. Also 5.5% more of the respondents in cooperatives received training in area of technology assessment. High percentages of teachers having none of their students assessed, in both groups, may be attributed to the lack of training both groups received in the area of assessing for student need of assistive technology. In school districts, 80.3% did not receive any training and in the cooperatives 75.0% did not receive any training on this topic.

Technology On Students' IEPs

The fact that there were high percentages of students who were not assessed may be related to the high percentage of students who do not have the topic of technology on their IEPs. The respondents from the school districts reported that 75.9% of them had the topic of technology on none (0%) of their students IEPs. The cooperatives showed a similar number with 75% of the respondents not having the topic on any of their students IEPs. Again, may can be related to the lack of training both groups received in the are of including technology on IEP (See tables 5a & 5b). The issue of lack of training in legislative issues (See tables 6a & 6b) also raises the question of whether respondents are aware of their obligation to include assistive devices on the IEPs.

Another potential factor in this area may be the lack of a mandated standardized IEP form in the state. Within Illinois, each school district and cooperative may have different IEP forms which are not required to include a section on technology. It might stimulate both training for assessment and use of technology if the state standardized a form which included state and federal mandates. Requiring districts to consider technology as a classroom aid may also stimulate the state and districts to research mechanisms to surpass the barriers stated below.

Perceived Barriers in Providing Technology

Funding.

In order to define the barriers to obtaining technology in the classroom respondents in both samples were asked to rank what they considered to be the top five barriers. Both samples perceived funding as their number one barrier. In the school districts, 54.8% of the respondents ranked funding either first or second. 78.6% of respondents from the cooperatives ranked funding first or second. Again, this may be related to the fact that only about 20% of respondents are receiving training regarding the funding of assistive technology. Training in funding issues such as third party billing, grant writing, and fundraising are essential to providing children with the proper technology. An issue related to funding is the area of assessment. Training personnel in proper assessment and classroom use is likely to lead the districts and cooperatives to purchase appropriate equipment. It might also facilitate the development of new ideas to make use of existing equipment.

Training.

Respondents employed by the school districts reported lack of training as the second largest barrier. 54.8% of the respondents ranked funding first or second. The respondents from the cooperatives ranked it third overall, with 78.6% of them ranking it first or second. As stated above, in all most every academic area lack of training may be contributing to the state of technology use in the special education environment. The lack of training may be contributing to the inability of school personnel to meet federal guidelines. More importantly, the lack of training may be interfering with the possibility for thousands of students to meet their fullest potential.

Administrative Support.

Within the special education cooperatives administrative support was ranked as the second highest barrier to providing students with technology. 60.7% of the respondents

ranked this area as being either the first or second largest barrier. The above percent is noteworthy due to the fact that the other sample (school districts) ranked administrative support as one of the least restricting barriers (12.4%). The high ranking in the cooperatives may be due to the fact that administrators do not perceive that teachers need training in the areas of technology and/or assistive technology (i.e. assessment, funding, legislation) because the cooperatives employ personnel to provide overall technical assistance. Further research is needed to determine why such a large percent of respondents from the special education cooperatives ranked administrative support as the second highest barrier.

Support Staff.

The respondents from the school districts ranked lack of a support staff as the third highest barrier to incorporating technology into the classroom. As mentioned earlier, the lack of support in this area may be due to the lack of public awareness at the regional and state levels of education. Also, as stated earlier, the lack of contact with support staff may be accounted for by lack of staff to respond to the need. It is possible that increased training could reduce the need for as many support personnel. However, it is also possible that training could create a greater need for support personnel. Further research is needed to investigate the apparent lack of contact with support personnel.

Limitations of the Study

There are some limitations to interpreting the above data. The first possible limitation is that this study only focused on one state. It is not clear to what extent the results would hold true beyond Illinois. The study generated poor response rates from two of the four samples in the original study. Consequently, the study is missing data from one district, Chicago Public Schools 299, which educates almost 30% of the entire student population.

The survey instrument in this study was designed specifically for this study. Therefore, the results can not be specifically compared to results generated by other

instruments. Results for several questions on the instrument were not reported due to apparent misinterpretation by the respondents. Although this study has the above possible limitations it should also be noted it seems to be the first study of its kind in the state of Illinois.

Implications for Further Research

Further research is needed in many areas of the uses of assistive technology and/or technology in the special education classroom. In Illinois, an attempt could be made to complete the picture of classroom technology by retrieving data regarding technology use in the city of Chicago. Data regarding technology training provided by teacher training institutions in Illinois would help state policy makers understand the current and future need for training, and the feasibility of including such training in certification requirements.

Refined analysis of data from this survey might also yield more specific information regarding training needs. For example, further analysis could determine whether or not there is a relationship between years of service and source of training or level of use in the classroom. In other words, are teachers who have been teaching longer more likely or less likely to report a high use of technology in their classrooms, and are they more or less likely to report having learned to use technology in their preservice training or on their own? Further analysis might also reveal whether or not there is a relationship between type of students served and use of technology or the source of training. More specific analysis might help policy makers and training institutions in Illinois pinpoint where scarce training resources would be best targeted. This analysis might also help regional technical support centers determine where they might best allocate resources or whether they have enough resources to do the job they are intended to do. A further evaluation of barriers might also help policy makers and funders determine how best to address them.

Conclusion

This study was conducted to determine the extent of training for the use of educational and assistive technology in special education classrooms in Illinois. Results of this study strongly suggest that special education teachers in Illinois need more support and training in order to appropriately use technology with their students. Results suggest that current resources may need to be increased or prioritized differently in order to provide adequate support from regional support staff. This study has obtained useful information that could help the state of Illinois facilitate change in training and use of technology in the special education classroom.

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1. The following set of questions will ask you about training (if any) you received regarding assistive technology in the classroom.

1. At what level(s) of education (if any) did you receive training regarding assistive technology? (please mark **X** where appropriate)

Undergraduate Graduate
 Inservice Informal (training on own)

2. If you did receive training in technology, which of the following areas did it cover? (Please put an **X** under 'informed' if you received information only and mark 'hands-on' in the areas you received hands-on training. Check all that apply.)

	Informed	Hands-On
Basic Understanding (current terminology, applications, equipment)		
Historical Issues		
Current Legislation		
Current Practices (of including technology in the classroom)		
Current Hardware and/or Software		
Emerging Hardware and or Software		
Professional Productivity (electronic gradebooks, desktop publishing)		
Use of Internet and or World Wide Web		
Curricular Adaptations		
<i>writing</i>		
<i>reading</i>		
<i>math</i>		
<i>social skills</i>		
<i>others</i>		
Use Of Computer Assisted Instruction (CAI)		
<i>drill and practice</i>		
<i>tutorial or self instruction</i>		
<i>games</i>		
<i>simulation modeling</i>		
Funding Assistive Technology		
Including Technology on IEP		
Assessing Need for Assistive Technology		
Software Design and Authoring		
Hardware Design and Production		
(other)		

3. In your opinion, training in educational technology has WHAT level of importance in training special educators? (circle one appropriate answer)

Very High High Low Very Low

4. In your opinion, training in educational technology should be given at what level(s) of education?
 (Please respond by circling the appropriate number using this scale: 1- definitely not needed, 2- needed but not essential, 3- somewhat needed, 4- needed, 5- strongly needed)

Preservice (undergraduate years)	1	2	3	4	5
Inservice	1	2	3	4	5
Masters	1	2	3	4	5
Doctoral	1	2	3	4	5
Informal (training on own)	1	2	3	4	5

5. In your opinion, in what areas do undergraduate students in special education need to receive training regarding educational technology?
 (Please put an **X** under 'informed' if you believe it should be information only and mark 'hands-on' in the areas you believe should have hands-on training. Check all that apply.)

	Informed	Hands-On
Basic Understanding (<u>current terminology, applications, equipment</u>)		
Historical Issues		
Current Legislation		
Current Practices (of including technology in the classroom)		
Current Hardware and/or Software		
Emerging Hardware and/or Software		
Professional Productivity (<u>electronic gradebooks, desktop publishing</u>)		
Use of Internet and/or World Wide Web		
Curricular Adaptations		
<i>writing</i>		
<i>reading</i>		
<i>math</i>		
<i>social skills</i>		
<i>others</i>		
Use Of Computer Assisted Instruction (CAI)		
<i>drill and practice</i>		
<i>tutorial or self instruction</i>		
<i>games</i>		
<i>simulation, modeling</i>		
Funding Assistive Technology		
Including Technology on IEP		
Assessing Need for Assistive Technology		
Software Design and Authoring		
Hardware Design and Production		
(other)		
(other)		

II. The following questions ask about providing technology to students

6. Please check all types of technology used in your classroom

- Computer for students to use in freetime
 Computer for teacher professional productivity
 (electronic gradebook IEP builder word processing)
 Computer for students to perform drill and practice
 Computer for student self-instructional use
 Computer for Internet and or World Wide Web Connection
 Computer for assessment of students
 Computer for instructional presentations
 An assistive technology device (including computer hardware, and or software, but not
 excluding other devices) purchased to help **fulfill needs of a specific student**
 (Other) _____
 None Used

7. **Approximately what percent** of your students with IEPs have been assessed for use of assistive technology?

8. If any students have been assessed for assistive technology, who did the assessment? (Please check all that apply.)

- Regular Education Teacher
 Special Education Teacher
 OT/PT
 Consultant
 University/College _____
 Private Firm/Company
 Other State Agency: _____
 (Other) _____
 None Have Been Assessed

9. **Approximately what percent** of your students with IEPs have the topic (goal or otherwise) of assistive technology included on their IEPs?

10. **Rank the top five barriers**, if any, you encounter when trying to provide assistive technology to students with disabilities?

(Please rank, 1= largest, 5= smallest)

- _____ Lack of Funding
 _____ Lack of Administrative Support
 _____ Lack of Training
 _____ Lack of Trained Personnel for Hardware and Software Support
 _____ Lack of Updated Information
 _____ (Other) _____
 _____ (Other) _____
 _____ (Other) _____

11. Are you familiar with the definition of **assistive technology** in IDEA (P.L. 101-476) and the Tech Act (P.L. 100-407)?

(Please respond by circling the appropriate number using this scale: **1**: I know and understand the definition. **2**: I've read and understand the definition. **3**: I have a general understanding. **4**: I've read the definition. **5**: Not familiar)

1 2 3 4 5

12. **Excluding mandatory inservices** have you had any contact with your regional technology support staff? (Circle One)

Monthly Several Times a Year Semianually
 Yearly None

May we contact you for clarification or further information regarding any of your responses?

Yes No

Thank You For Completing The Survey...



Department of Special Education
118 International House
Charleston, IL 61920-3099
Phone: 217-581-5315
Fax: 217-581-7004

Dear Administrator:

In order to better determine the technology training needs of special education teachers in Illinois, we are sending the enclosed survey to a randomly selected sample of teachers who serve children with special needs. We are interested in the responses of teachers who educate children with learning disabilities (LD), behavior disorders (BD), and/or children who are educable mentally handicapped (EMH), in grade levels kindergarten through twelfth grade.

We would appreciate it if you could forward this survey to a teacher in your building who is certified to educate children identified as requiring specialized services (K-12). This survey is being used for research purposes only and all replies are strictly confidential. It is our intention that the attached survey will take less than fifteen minutes, and hopefully help us better understand the needs of professionals in the field of special education.

If your building does not have a professional who provides the above education, please check the box below and return this letter to us in the self-addressed envelope.

Please return the survey by March 11.

Thank you for your assistance. Your cooperation is truly appreciated.

James D. Basham
Graduate Student

P. Helen Bair
Assistant Professor



Department of Special Education
118 International House
Charleston, IL 61920-3099
Phone: 217-581-5315
Fax: 217-581-7004

Dear Administrator:

In order to better determine the technology training needs of special education teachers in Illinois, we are sending the enclosed survey to a randomly selected sample of cooperatives that serve children with special needs. We are interested in the responses of teachers who educate children with learning disabilities (LD), behavior disorders (BD), and/or children who are educable mentally handicapped (EMH), in grade levels kindergarten through twelfth grade.

We would appreciate it if you could forward this survey to a teacher in your cooperative who is certified to educate children identified as requiring specialized services (K-12). This survey is being used for research purposes only and all replies are strictly confidential. It is our intention that the attached survey will take less than fifteen minutes, and hopefully help us better understand the needs of professionals in the field of special education.

If your cooperative does not have a professional who provides the above education, please check the box below and return this letter to us in the self-addressed envelope.

Please return the survey by February 29.

Thank you for your assistance. Your cooperation is truly appreciated.

James D. Basham
Graduate Student

P. Helen Bair
Assistant Professor



Appendix C

Please Return In Enclosed Envelope To:

Survey Returns
 Department of Special Education
 Eastern Illinois University
 600 Lincoln Ave
 Charleston, IL 61920

Directions: Please provide the following demographic information. The respondent name will be for contact purposes only. The researcher insures anonymity of all respondent data.

University or College: _____

Respondent Name: _____

Respondent Position: _____

Department Name: _____

Department accreditation by: (please circle one or more)

NCATE CEC (Other) _____ NONE

Circle the areas in which your department provide undergraduate training:

LD SED EMH OTHER(s) _____

Approximate number of special education majors graduating per year:

Undergraduate _____ Graduate _____

Approximate number of special education majors enrolled per year:

Undergraduate _____ Graduate _____

Departmental curriculum is mainly geared to train students to work in what type of geographical area:

Urban Rural Mixed

If you would like a summary of survey results, check here _____

Survey Directions: Specific directions are given as needed. When "(other)" is noted please write in the explanation of other (this will help us interpret the information and design future surveys).

Again, thank you for taking the time to complete this survey.

1. In your opinion, training in educational technology should be given at what level(s) of education? (Please respond by circling the appropriate number using this scale: 1- definitely not needed, 2- needed but not essential, 3- somewhat needed 4- needed, 5- strongly needed)

Preservice	1	2	3	4	5
Inservice	1	2	3	4	5
Masters	1	2	3	4	5
Doctoral	1	2	3	4	5
Informal (training on own)	1	2	3	4	5

2. In your opinion, your department assigns WHAT level of importance to training of special educators for use of assistive technology?

Very High High Low Very Low

3. In what areas do undergraduate students receive training regarding assistive technology? (Please put an **X** under '**informed**' if students are provided with information only and mark '**hands-on**' in the areas students receive hands-on training. Check all that apply.)

 Check here if your department doesn't provide any undergraduate training regarding assistive technology.

	Informed	Hands-On
Basic Understanding (current terminology, applications, equipment)		
Historical Issues		
Current Legislation		
Current Practices (including technology in the classroom)		
Current Hardware and/or Software		
Emerging Hardware and/or Software		
Professional Productivity (electronic gradebooks, desktop publishing)		
Use of Internet and/or World Wide Web		
Curricular Adaptations		
<i>writing</i>		
<i>reading</i>		
<i>math</i>		
<i>social skills</i>		
<i>other(s)</i>		
Use Of Computer Assisted Instruction (CAI)		
<i>drill and practice</i>		
<i>tutorial or self instruction</i>		
<i>games</i>		
<i>simulation modeling</i>		
Funding Assistive Technology		
Including Technology on IEP		
Assessing Need for Assistive Technology		
Software Design and Authoring		
Hardware Design and Production		
(other)		

5. Does your college or university offer a specialized major, minor, program, or area of concentration (undergraduate or graduate) regarding assistive technology or technology in education?

Yes No Don't Know

6. A) If yes, what is the name of the program?

B) What department houses or administers this program?

C) If possible, briefly describe how it is related to special education?

7. At what level is this education available? (Circle all that apply.)

Undergraduate Masters Doctoral

8. **Rank the top five** barriers, if any, that you have encountered when trying to provide training in assistive technology. (1= Largest, 5= Smallest)

_____ Lack of Time to Prepare Student (does not fit in curriculum)
 _____ Lack of Training for Current Faculty
 _____ Lack of Equipment
 _____ Lack of Trained Personnel to Provide Training
 _____ Lack of Administrative Support
 _____ Lack of Need
 _____ Lack of Demand
 _____ Lack of Updated Information
 _____ (Other) _____
 _____ (Other) _____
 _____ (Other) _____
 _____ Don't Know
 _____ None Encountered

May we contact you for clarification or further information regarding any of your responses?

Yes No

Thank You For Completing The Survey.



Department of Special Education
118 International House
Charleston, IL 61920-3099
Phone: 217-581-5315
Fax: 217-581-7004

Appendix D

1«last»
«univ»
«dept»
«address_1»
«address_2»

Dear «title» «last»:

In order to investigate the technology training available to special educators in Illinois, we are sending the enclosed survey to all state universities and colleges in Illinois that provide preservice training for special education certification.

This survey is being used for research purposes and as part of a master's thesis project. All replies are strictly confidential. It is our intention that the attached survey will take less than fifteen minutes, and hopefully help us better understand the needs of professionals in the field of special education.

Please return the survey by March 5th.

Thank you for your assistance. Your cooperation is truly appreciated.

James D. Basham
Graduate Student

P. Helen Bair
Assistant Professor