Computers, Technology, and Disability. [Update.]


Department of Education, Washington, DC.

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Technology Related Assistance Individ Disabil Act

This paper describes programs and resources that focus on access of postsecondary students with disabilities to computers and other forms of technology. Increased access to technological devices and services is provided to students with disabilities under the Technology-Related Assistance for Individuals with Disabilities Act (Tech Act). Section 508 of the Rehabilitation Act as amended by P.L. 99-506, may also have an impact as it requires that electronic office equipment used by the federal government be usable by persons with disabilities and may increase accessibility in other markets as well. Special programs have been developed at several colleges and universities to provide computer access for individuals with disabilities. These programs train students in use of large print terminals, adaptive keyboards, computerized brailleers, talking computers, and other aids to independence. Seven publications that discuss financial support for purchasing adaptive technology are described, along with two organizations offering financial support. Several resources that assist with accessing computer technology are also described, such as the inLarge screen enlarging program, the SpeechViewer II software and accessories package, the IBM PC User Group, the Unicorn Smart Keyboard, and a journal titled "Technology and Disability." (JDD)
COMPUTERS, TECHNOLOGY, AND DISABILITY

Tech Act

Students with disabilities, their families, and service providers will benefit from new options for obtaining technology-related assistance, as a result of the Technology-Related Assistance for Individuals with Disabilities Act, (Tech Act) PL 100-407. Reauthorized March 1994 to PL 103-218. The Tech Act, enacted in 1988, is designed to help states inform persons with disabilities about the potential impact of technology on their lives and to provide the mechanisms to put assistive technology into their hands. The Act allows each of the 50 states to establish programs that provide persons with disabilities access to appropriate technology from pre-school through retirement. As of October 1993, all fifty states have been funded.

Students with disabilities will discover a variety of helpful potential options under the Tech Act. Pre-school children with disabilities, for example, will have the opportunity to use technology. Low-interest or no-interest loans funded under the Act can be used to purchase wheelchairs or wheelchair lifts and hand controls, enabling a person with a disability to leave home and drive to school or to work. Direct funding to individuals for assistive technology, ranging from wheelchairs to reading machines, may be funded by some states. Information and referral programs funded under the Act will assist individuals with their search for additional funding for technology. Funded states have given priority to system changes. Under the Tech Act, the funding structures of each state must be changed to afford individuals easier access to funds to purchase adaptive technology. If students have used devices earlier in life, the Act promotes their continuing to have appropriate technological devices as they move from high school to college or employment.

The Tech Act builds on several other laws. Public Law 94-142, the Education for All Handicapped Children Act (reauthorized to the 1990 Individuals with Disabilities Education Act (IDEA), P.L. 101-476) created an accessible education for millions of elementary and secondary age students. One of its provisions requires school districts to provide accessible technological aids to enable a student with a disability to be competitive with other students. Under that legislation school systems have provided augmentative communication devices and word processors to enable students to speak, write, compose, and read/listen in school.

As students move to postsecondary education, Section 504 of the Rehabilitation Act of 1973, (reauthorized 1992) which mandates nondiscrimination in postsecondary programs, comes into play. Section 504 ensures nondiscriminatory access to any campus computer as part of the normal college experience. Information and referral services under the Tech Act can help students as well as colleges choose the standard and adaptive technology most appropriate to the situation. This is of vital importance, as many campus departments now house some type of computer lab for coursework. Computers equipped with speech, braille, or large print output devices allow students who are visually impaired or blind to take accounting (or other courses) using the same software as their non-disabled peers. In addition, devices such as the "head-mouse" or speech synthesizer give students with disabilities independent access to coursework and labs.

For additional information about the Tech Act or the status of your state, contact RESNA Technical Assistance Project, 1700 North Moore Street, Suite 1540, Arlington, VA 22209, 703-524-6686, ext. 305.

Section 508

Section 508 of the Rehabilitation Act, as amended by P.L. 99-506, requires that all electronic office equipment purchased or leased by the federal government be usable by persons with disabilities as is or with available peripherals. Many believe that because the federal government is the nation's largest single buyer of electronic office equipment, and is the primary market for many companies, to remain competitive manufacturers will make their products more accessible to persons with disabilities, by reducing access costs for all purchasers. "Section 508 will be as important for the '80's as Section 504 was to the '70's," according to William Roth, Director of the Center for Computing and Disability, SUNY-Albany.

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The initial guidelines issued in October 1987 by the General Services Administration for the implementation of Section 508 propose to use functional performance specifications to define electronic office equipment accessibility. By describing hardware and software functions to be made accessible, the proposed guidelines allow industry a wide range of hardware/software options for providing access to users with disabilities.

Once Section 508's final guidelines are in place, federal agencies will be unable to purchase or lease electronic office equipment that is inaccessible to persons with disabilities. Removing the need for "special" equipment by employees with disabilities should open many government jobs. Non-government employment is also expected to become more open to those with disabilities, since readily accessible equipment will be available in the mainstream marketplace.

States receiving Tech Act funds are required to comply with Section 508 guidelines, creating additional markets for accessible computers. Thus, the computer industry has responded positively to Section 508 by producing and marketing more accessible computers for people with disabilities.

Publications

Access and Opportunity: Academic Computing Under Section 508 in Higher Education and National Affairs, May 22, 1989, by Jay Brill, describes the history and potential impact of last years implementation of Section 508 of the Rehabilitation Amendments of 1986. Section 508 mandates that electronic office equipment purchased by the federal government must be accessible to users with or without disabilities. The paper provides an overview and historical background of Section 508, describing its growth since the White House/Industry Initiative on Computer Access, existing federal guidelines, and implications for higher education. A resource list of readings and contact persons concludes the paper. A single copy is free from HEATH.

Computers on Campus

Keyboards are nearly as common-place as stereos as more students than ever pack computers into their back-to-school cargo. In ever-increasing numbers, students, including those with disabilities, are using computers on campus.

Students with disabilities move into the campus computing environment in various ways depending on their previous computer experience and individual needs, but sooner or later they find their way to the campus computer center.

Individual campuses have varying levels of disability-related access to microcomputers and campus mainframes. Many campus computer centers blend several kinds of computers and peripherals to meet student needs imposed by sensory or mobility limitations. Some students need speech, braille, or large print terminals; others need tactile and auditory graphic displays or braille plotters as their computer sophistication increases.

Computer use is a standard part of many curricula, including humanities, math and science, and is a required tool for library access on many campuses. Most colleges provide access to computers for students with disabilities in mainstream computer centers, although some have special centers to provide supplemental services not typically available in a computer center. Special centers may provide extended hours of operation, immediate access to braille printers or speech output devices, or have space for oversize keyboards and large workstations. Most campuses have a mix of facilities, with at least minimal access to the main computer center.

University of Wyoming (WY) students have used Commodore 64s. Stanford University (CA) students connect using Macintoshes with inLarge software or DEC Rainbows with DEC Talk. Students use magnifying lenses, several different brands of talking screen readers, or refreshable braille displays as they work with mainframe computers. The IBM or its clone appears on most campuses fitted with adaptive keyboards or special software. Students may work directly with the mainframe, and with access for special needs in receiving information from mainframe peripherals. Data from plotters and high speed printers can be delivered via a host of adaptive tools used to produce braille graphics, large print output, or braille/print on one page.

At Yale University (CT), laptop portable computers supplement mainframe use as a liberating option for incoming students. Yale has several laptop computers available to lend to students to compensate for limitations caused by blindness, hearing impairment, or learning disabilities. Yale, Stanford, and other schools using mainframe computers to control their library card catalogs are providing access through speech terminals, enhanced keyboards, and large print or braille displays.

Access Aids at Community Colleges

The California Community College system's High Tech Center for the Disabled is the leading edge of technology for campuses. The California model, started with a 2.5 million dollar state department of rehabilitation grant, provides help to the state's 106 community colleges, advising on hardware, software, and new technology for dissemination. The California High Tech Center, replicated in 12 other states nationwide, provides a cost-effective method of serving institutions, and college systems.

Carl Brown, Director of the California High Tech Center, feels that both promise and peril may be in the future, as educational institutions move to create electronic information systems. If these systems are accessible, students will be expected to have access to staggering amounts of information. If inaccessible, we will be returning students to dependency.

The first encounter with computer technology for students with a disability may often occur at community colleges, thus many community colleges have instituted classroom training with necessary access aids. The Northern Essex Community College (MA), a relatively small school, provides access at the classroom level, adapting existing equipment as necessary. Nassau
Community College (NY), with a large student body, provides access and training in eleven different labs, teaching students to become independent users while providing facility support on a regular basis. Institutional budgets and grant funds combine to assist community college programs to make computing accessible. State Department of Rehabilitation grants, State model program funding, and corporation donations are used to provide access to computers at both community and senior colleges discussed above.

Nassau Community College Computer Access Project

Nassau Community College, NY, held a formal dedication program to open the Computer Access Project, on November 27, 1990. The project, designed by Dr. Victor H. Margolis and coordinated by Miriam Goldberg, was established to provide all Nassau students with disabilities access to the computer as part of their educational experiences. The Project has brought to the campus a comprehensive array of adaptive devices which enable a student with a mobility or visual limitation to access the computer. In addition, Nassau now has a variety of software designed to assist students with learning disabilities or hearing impairments to overcome writing and language handicaps.

"The need for the Computer Access Project derives from the growing importance of this new technology in the educational setting, on the job, and as a personal resource," said Victor Margolis. "Throughout the College more and more faculty require their students to use the computer as an integral part of the learning experience in their classes. It has also become necessary for students entering virtually every professional discipline to have at least some familiarity with the computer, both to conduct the business of their field as well as to be competitive in the job market. In addition, the computer can also serve as a useful tool in the student's personal life for writing, calculating, and environmental control," said Margolis.

Since computer use is so critical to higher education, providing access to computers was seen as a logical continuation of the College's philosophy of providing equal opportunities for its diverse student body. Through the efforts of Margolis, the Computer Access Project was developed over the last several years by creatively seeking out and building upon various funding sources from the New York State Vocational Education Act program, gifts from the New York State Commission for the Blind and Visually Handicapped, the Xerox Corporation (which granted a Kurzweil reading machine to the College), and from college funds.

Set up in the media area of the college library, the Computer Access Project is designed so that Computer Specialist, Ms. Goldberg, can assist students to select the most appropriate adaptive aid to meet their needs and then teach them to use it. As a result of the Computer Access Project any student can now access the mainframe computer in upper level computer courses and can use the College Library's computerized catalog system, TOSUS. The Program will also install the device anywhere on campus, lend the adaptive software to students, and assist students to acquire this equipment.

For a fuller description of the adaptive aids and devices for particular disabilities, contact HEALTH, or Victor Margolis, Coordinator of Disabled Student Services, Nassau Community College, Stewart Avenue, Garden City, NY 11530. (516) 222-7138 (voice), (516) 222-7617 (TT).

Technology Assists Disabled Students on Campus

State universities at San Francisco, Arizona, Mississippi, Michigan, Illinois, Los Angeles, and Pennsylvania; independent colleges and universities such as George Washington, Valparaiso, Hendrix, and Taft; and community colleges in Catonsville, South Florida, and Central Florida are among the hundreds, perhaps thousands, of post-secondary institutions nationwide buying and utilizing talking computer, speech-activated computers, telecommunications devices for the deaf, computerized brailers, talking calculators and other products to attract disabled students. Such technology is purchased with funds from a variety of sources: through the college or university budget, from the state Vocational Rehabilitation Agency, or through philanthropic gifts.

Many institutions of higher learning have also developed special services to counsel, train in advocacy, and make available to students with disabilities necessary accommodations for courses and programs of study. A number of schools have active recruitment programs which identify the computerized laboratories, specialized technology, classroom adaptations, as well as teachers and counselors who assist disabled students on their campuses in order to attract students with disabilities.

For example, Arizona State University (ASU) serves 500 disabled students, nearly 100 of whom are learning disabled, 35 are visually impaired, 20 have hearing losses, and the remainder have orthopedic disabilities. Jay Taska, program coordinator for blind and visually-impaired students at ASU sees a hunger in his students to learn to use computers and related technology to their advantage.

"I have been working with disabled people, most of whom are blind, for a decade. Ten years ago, the promise of technology to aid blind and other disabled people was beginning to develop and they were cautious. Today, their caution has turned into optimism. They know they need computer knowledge to compete and to become employable," said Taska.

Taska's department has two IBM PCs with two different speech output capabilities, four Apple IIEs with EECO voice synthesizers, a...saBraille connected to an Apple IIe, two Kurzweill Reading Machines, a NEC and a variety of educational and business software. "Our goal here," says Taska, "is to give the students as much hands-on experience as they need. We start all of our students on a word processor and then gradually build up to using other programs that are beneficial to them."

Taska and counselors in other colleges and universities believe technology is an equal opportunity tool. They believe disabled students must learn to use technology and they counsel students to describe their...
competencies during interviews. They encourage students to get as much hands-on experience as possible. Counselors at some schools assist disabled students to buy the equipment they need either while attending school, before they leave school, or shortly afterwards. This equipment can include talking computers, computerized braille systems, or other aids to independence.

**Computerized Braille Systems**

David Wilkinson, a freshman at Hendrix College, Conway, AK, has a genetic condition that has left him nearly totally blind. To help him with his work, he uses a VersaBraille II, a portable, disk-based braille system with disk storage and retrieval capabilities, 6 1/2 hour rechargeable batteries, and a multi-function calculator program. It costs $6,495.

“Willy has made a big difference in my life. For years I had to keep all of my school notes, computer notes, and piano-tuning notes in braille. My room was overflowing with braille notes. My shelves were heavily stacked with them. Storing them was a problem. Now the brailer stores everything on my three and one-half inch disks,” he said. “When I knew I would not need the notes anymore, I burned them,” he said. His brailer has eliminated the storage problems.

Wilkinson’s brailer has made life easier for him. Its word-processing capabilities saves him time because he does not have to retype his material many times. “I would be lost without my computerized brailer. It’s easy to carry, use, and to store data. It is the right tool for me for school,” he says.

**Talking Computers**

Talking computers, which audibly read what is on the screen, are valuable tools for blind and multiply handicapped students. Susan Turner, a graduate student at San Francisco State University, has multiple sclerosis and is legally blind. To do her class work, she uses a PC VERT, which combines voice output with large memory and controls—cost: $3,650. There are other models to consider: a VERT Plus—an extremely high quality speech product which is not as fast as the PC VERT but sells for $2,495, and a Soft VERT—which has the ability to work with different speech synthesizers such as an ECCO or a Dectalk, and sells for $750.

“For a blind person, talking computers (or peripherals) are the best tools on the market when it comes to giving us equal employment opportunities with sighted people. With a talking computer, we can do anything a sighted person can do in a job requiring a computer and some jobs that do not,” says Turner.

Turner has been using a talking product for years. She uses it from 10 to 25 hours weekly for word-processing functions, record keeping, filing and note taking. Within a year she will have earned a master’s degree in interdisciplinary studies in education. She wants to design elementary level educational software for disabled and non-disabled students.

Turner speaks to disabled students often on the benefits of technology to their careers. She encourages them to master technology and to transfer this knowledge from education to the job market. She gives credit to the work of Disabled Students’ Services Director Dr. Cindy Kolb at San Francisco State University, who has acquired the necessary technology to assist disabled students to be able users of computers and other equipment.

Students at a number of colleges and universities are using their computerized braille systems to produce graphics. Such software as the Super Cranmer Graphics Package from the Computer Access in Higher Education (CAHE) has enabled blind and visually impaired students of economics, mathematics, arts, engineering, and science to comprehend such phenomena as size, shape, trends, cycles, phases, and proportional shares. Braille graphics also create new professional career opportunities for blind and visually impaired students.

Large print hardware and software driven products, resembling giant microscopes, allow users on many campuses to magnify a letter, word, sentence, or paragraph up to beyond 50 times. While some of these products produce only large print, the BEX provides capability to word process in English and output in braille, speech, or large print as well as translate and word process in braille.

**Other Aids to Independence**

“Through education we disabled students have the opportunity to become independent,” says Carrie Milton, a journalism/computer science major attending a mid-western university. She is taking speech therapy courses using a computer and is making progress in controlling her stuttering, “I am learning to slow down my speech using a computer. I do not fear stuttering as much as I did. I have been talking more in class and outside. I feel as though I have been liberated.”

Keith Fires is a 32 year old mathematician who has muscular dystrophy. His ability to use a speech activated computer call CASH (Computer-Aided System for the Handicapped) has enabled him to work as a mathematics teacher and be successfully recruited by a major industrial company near Santa Ana. He says, “Speech activated computers are necessary for students who cannot use a keyboard. Using a speech activated computer, disabled students can do more than they realize. With this technology they are on an equal par with non-disabled students.”

Dr. Jim Bliss, president of Telesensory Systems, Inc., and a strong advocate of making computing and related technology accessible and available to disabled students, said, “Computer technology is a pathway to education for disabled students. It is essential that these students have the equipment they need to be educated. These students are our future. They have a basic right to be educated and to contribute to society.”

**Publications**

Computer Access in Higher Education for Students with Disabilities, by Carl Brown and Colleagues (1987). This reference handbook explains the process of adapting computer technology on the community college campus for students with disabilities. Based on the author’s experiences directing the first High-Tech Center, now the key-
College computing accommodation continues to be a critical issue on college and university campuses. ACB, one of the nation's leading advocacy organizations, expects the resolution to help underscore the importance of providing computer access at colleges and universities.

This resolution addresses a subject of great significance to college students and faculty who are blind or visually impaired. Since the use of computers and related technology is now imperative in educational settings, it is essential for educational institutions to ensure that appropriate access to computer equipment is afforded to students and faculty who are blind or visually impaired.

Equipment to be provided in these labs should be adequately trained to use the equipment so that students unfamiliar with it would be able to use the technology as well as their non-disabled peers. The setup, training, and maintenance costs of these computers should be incurred by the department or school housing them, rather than by the Disability Support Services office on campus.

ACB members believe that the need to make computers accessible to, and usable by, individuals who are visually impaired or print disabled should be viewed as equivalent to the need to make other campus facilities accessible to individuals who use either wheelchairs or sign language interpreters. Institutions of higher learning have made relatively rapid progress in removing physical barriers, providing auxiliary aides, and making programmatic accommodations to achieve access. However, these institutions must also address the critical issue of access to computers.

According to ACB, colleges and universities that do not make at least one computer in each computer lab accessible may be in violation of Section 504 of the Rehabilitation Act as amended in 1992. Public colleges and universities that do not provide computer access may also be in violation of Title II of the Americans with Disabilities Act of 1990. Such violations may jeopardize the continuation of federal funding to the college or university. ACB is urging the Department of Education to provide guidance to institutions of higher learning in the area of computer access and to take steps to identify violators of Section 504 of the rehabilitation Act and the Americans with Disabilities Act.

The American Council of the Blind, (ACB) is an information and referral advocacy agency. It has 32 state/regional affiliates and 21 national special interest and professional affiliates, the goals of which are to improve the well-being of people who are blind or visually impaired through legislative advocacy; to improve educational and rehabilitation facilities; to encourage and assist all persons who are blind to develop their abilities; and to conduct a public education program to promote greater understanding of people who are blind. For more information, contact ACB at 1135 13th Street, NW, Suite 720, Washington, DC 20005. (202) 467-5081.

$$$ for Adaptive Technology

Consumers, families of consumers, counselors, postsecondary education administrators and instructors, governmental officials and others are interested in and concerned about how to obtain adaptive technology which is now available to improve the lives of people with disabilities. The term "adaptive technology" refers to devices that enhance personal independence, such as electric scooters, wheelchairs, and augmentative communication devices. Adaptive technology might refer to medical equipment, such as a respirator. It also refers to equipment which expands vocational options and includes devices which enable people to participate in school or work, such as electronic readers, computers and various peripherals which might also control lights, door locks, page turners, and telephones. Of course, these categories often overlap since a person who uses a wheelchair for personal independence also might need it for vocational reasons. The resources described below discuss...
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Reimbursement Adaptive Technology, appearing in the Winter 1988 NARIC Quarterly, is an excellent, comprehensive article that covers the process for obtaining and reimbursing adaptive devices for people with disabilities. Selecting an appropriate technological device requires an assessment of needs, often best done by a physician, therapist, or rehabilitation specialist. Locating a source of funds to purchase the device requires reviewing of one's own private resources and determining if one meets eligibility requirements for insurance reimbursement or publicly funded programs. The article reprints a useful Funding Sources Checklist and it describes some common ways to fund purchases, such as medical/health insurance, worker's compensation, special education funds, and personal payment resources. Some extremely helpful tips are included about how to write a justification statement and tailor a request to the type of source from which one is requesting funds. The article concludes with a bibliography of materials, all of which are available from the National Rehabilitation Information Center (NARIC). For a copy of the Winter 1989 NARIC Quarterly, contact NARIC at 8455 Colesville Road, Suite 935, Silver Spring, MD 20910-3319, (800) 346-2742 or (301) 588-9284 Voice/TT.

Assistive Technology is the topic of the NICHCY News Digest Number 13, 1989. While directed to parents and professionals working with children and youth, this 20-page News Digest contains extremely informative articles for consumers of any age. "Federal Legislation and Assistive Technology" details the current mandates; "Technology: Becoming an Informed Consumer" provides case histories of young people whose assistive technology enabled them to become independent while in high school; and "Starting the Funding Process" spells out steps necessary to identify and secure money for purchasing technological devices. The Digest concludes with FYI: Information Resources of publications and organizations for further information. News Digest is available free from NICHCY (National Information Center for Children and Youth with Disabilities), PO Box 1492, Washington, DC 20013 or by contacting the ERIC Clearinghouse Document Reproduction Service at (800) 443-3742 and requesting document #330130.

NARIC/ABLEDATA has available several papers of interest to those seeking financial assistance for technology. The most recent is State Sales Tax and Assistive Technology: Securing Exemptions for Sensory, Communication, and Mobility Aids (accessing #X009633). Also available is Subsidy Programs for Assistive Devices. (accession #X05577). Both of these are written for service providers, program planners, assistive device companies, government agencies, and consumers with disabilities. In addition, Consumer Needs Assessment, written for those planning research or service relating to assistive technology development and distribution, describes the results of a 3 year study of the perceived technology needs of people with disabilities. (use accession #SSX009638, X009635, X010498, X010715 to order the results of the study's first four years). To order call NARIC/ABLEDATA at (301) 588-9284 (Voice/TT) or (800) 346-2742.

Financing Adaptive Technology: A Guide to Sources and Strategies for Blind and Visually Impaired Users, by Steven B. Mendelsohn (1987). Mendelsohn uses his legal background to untangle the maze of red tape that often surrounds the rehabilitation system to guide readers through the process of trying to select and purchase adaptive technology. Mendelsohn shows the unexpected pitfalls that may sabotage the process when both the client and agency are ready to purchase adaptive technology. Readers learn that some of these pitfalls such as agency technology guidelines, state procurement policies, and limited case budgets may be unavoidable.

Using Social Security funding to finance equipment is masterfully explained in a chapter which should be required reading for rehabilitation counselors and other caseworkers. Mendelsohn describes the Social Security regulations in simple language and lucidly explains the newly mandated Plan for Achieving Self Support (PASS).

Readers not eligible for rehabilitation or Social Security funding may find other options in chapters on the credit and tax systems. Readers learn how to find and use credit as well as when to buy to take advantage of the new tax codes. Mendelsohn's listing of miscellaneous funding sources opens many opportunities for creative fundraising. This book is clearly written in language that is useful to both consumers and service providers. The book is available in large print, Braille, audio cassette, and on Apple and IBM floppy disks. Available for $20.00 in any media from Smiling Interface, P.O. Box 2792, Church Street Station, New York, NY 10008-2792. (212) 222-0321.

Dole Foundation

The Dole Foundation for the Employment for People with Disabilities, a non-profit organization headquartered in Washington, DC, announced the expansion of its 1991 grant program: which will provide one or two grants of $100,000 each for projects lasting up to three years. In previous years, The Dole Foundation has awarded grants which ranged from $500 to $50,000.

The Dole Foundation awards grants to non-profit organizations that emphasize competitive employment for people with disabilities. Since its beginning, it has made grants totaling almost $3.2 million to organizations which have been successful in placing and providing follow-up services to people with disabilities.

The Dole Foundation is interested in projects that expand employment opportunities to rural residents, older adults, minorities, women, and people with severe or multiple disabilities. Assistive technology in the workplace, education and training related to the Americans with
Disabilities Act (ADA) are some of the other areas of interest.

An organization seeking funding from the Dole Foundation must submit a two-page pre-proposal which should include an explanation of the program’s goals, how they will be achieved, how these goals support the mission of The Dole Foundation, a budget, and a brief description of the fund-seeking agency.

For more information about the Dole Foundation grants program, contact Randy Davis, Program Associate, The Dole Foundation, 1819 H Street, NW, Suite #50, Washington, DC 20006. (202) 457-0318.

Easter Seal Loan Program

Under provisions of the Disability Related Technology Act, the Easter Seal Society has established Computer-Assisted Technology Services (CATS), the first national loan fund to assist persons with disabilities to purchase computer-assisted and other technologies to enable them to have the support necessary to increase independence.

Loans range from $1,000 to $3,200 during the first year, to increase the number of applicants of the program. Easter Seals CATS will take the lead in providing technical support and access to resources that can help identify the appropriate, available assistive technology. The program allows individualized payment plans, giving the individual an opportunity to build a credit history. It also allows for short-term loans for immediate access when reimbursement is guaranteed by a public agency or insurance company.

Contact Easter Seal Society Loan Officer, 230 West Monroe St., Ste 1800, Chicago, IL 60606. (312) 726-6200.

New Resources

ABLEDATA

ABLEDATA is now available from the National Rehabilitation Information Center (NARIC), operated by Macro International through a three-year contract recently awarded by the National Institute on Disability and Rehabilitation Research (NIDRR). ABLEDATA is an extensive database listing information on over 18,000 devices of assistive technology available both commercially and non-commercially from domestic and international manufacturers.

Professionals as well as individuals with disabilities can use ABLEDATA to locate both the high and low technology assistive devices they need.

Computer users can now access the listing through NARIC/ABLEDATA’s new electronic bulletin board ABLE INFORM. ABLE INFORM is an electronic bulletin board of assistive technology information maintained by NARIC and ABLEDATA. In addition to the ABLEDATA database, ABLE INFORM also includes REHABDATA, a bibliography of the NARIC Library, as well as the NARIC KnowledgeBase, which is a directory listing more than 3,000 sources of local and national information.

For more information about ABLEDATA and the ABLE INFORM bulletin board, contact ABLEDATA, 8455 Colesville Road, Suite 935, Silver Spring, MD 20910-3319, (800) 346-2742 (Voice/TT). To access the bulletin board directly with a modem, call (301) 589-3563 and use modem settings 2400 baud, 8-N-1. ABLEDATA operates between 8 A.M. and 6 P.M. ET, Monday through Friday.

Apple Technologies

The Worldwide Disability Solutions Group at Apple works with key education, rehabilitation, and advocacy organizations nationwide to identify the computer-related needs of individuals with disabilities and to assist in the development of responsive programs. WDSG is involved with Apple’s research and development to ensure that their computers have built-in accessibility features. For more information, contact Worldwide Disability Solutions Group, c/o Apple Technologies, 1 Infinite Loop, Cupertino, CA 95014. 1-800-776-2333.

The Alliance for Technology Access is a national organization dedicated to providing access to technology for people with disabilities through the coalition of 45 community based resource centers in 34 states and the Virgin Islands. Each Center provides information, awareness, and training for professionals, and provides guided problem solving to technical assistance for individuals with disabilities and family members. For more information, contact Alliance for Technology Access at, Alliance for Technology Access, 2173 E. Francisco Blvd., San Rafael, CA 94901. (415) 455-4575.

Accessing Computer Technology in Our Neighborhoods, is a new three-year grant awarded to the Alliance for Technology Access (ATA) to develop a nationally recognized model program to train people with low-incidence disabilities in the use and benefits of assistive technology. Low-incidence disability is defined by the Department of Education as more infrequently encountered disabilities such as visual disabilities, multiple disabilities, or severe orthopedic disabilities.

The project will demonstrate the ability of computer technology to...
promote integration and independence of people with disabilities. The $150,000 award to the ATA is a supporting part of a much larger federal initiative, P.L. 100-407, the Technology Related Assistance Act for Individuals with Disabilities of 1988 (the Tech Act), which enables states to develop systems for making technology available to children and adults with disabilities. The ATA Project will disseminate its findings to local, state, and regional individuals, groups, and organizations with an interest in the use and benefits of assistive technology for individuals with low-incidence disabilities. For further information, contact the Alliance for Technology Access, 2173 E. Francisco Blvd., San Rafael, CA 94901. (415) 455-4575.

inLarge is a screen enlarging program from Berkeley Systems Design for the Macintosh which extends the large print capabilities of the Mac beyond those provided by closeView with expanded magnification at the character level, differing cursor shapes, and a special scanning mode. Berkeley Systems Design is a leader in providing MacAccess features for persons with visual disabilities, and is working on full speech output for the Macintosh. For more information contact Berkeley Systems Design, 1700 Shattuck Avenue, Berkeley, CA 94709-1720.

Students who wish to read more than class notes on their computers can use Computerized Books for the Blind (CBFB). This service provides texts and technical books as ASCII text files—readable by any computer with a speech output device. CBFB is a nonprofit organization devoted to providing written information in computer accessible format to persons with disabilities. CBFB is attempting to bring the concept of books on disk to life. For details contact Books for the Blind, 20 Boszel Road, Princeton, NJ 08540. 1-800-221-4792.

Equal Access, the Complete Book is a comprehensive guidebook that contains the main publications of Equal Access to Software and Information -- EASI. These include Computers and Students with Disabilities: New Challenges for Higher Education, EASI's Adaptive Computing Evaluation Kit for Colleges and Universities, Opportunities: Equal Access to Electronic Services for Disabled Patrons, and the handbooks for EASI's first three Seminar Modules. The Seminar Modules include Introduction and Background to Adaptive Computing Technology in Higher Education, Laboratory Environment, and Planning and Implementation Strategies. Also included are the TRACE Center's Accessibility Checklists and a guide to Resources and Tech Act States. All of the publications listed above can also be purchased separately. To order the Complete Book, contact McGraw-Hill Inc., Primis, Princeton Road, Sl, Hightstown, NJ 08520. (800) 962-9342.

IBM Support Programs for Persons with Disabilities

IBM has announced a new multimedia product that speech and language pathologists can use with children and adults with speech impairments to development and improve language skills. The IBM SpeechViewer II is a software and accessories package designed to make learning language skills easy and fun. The software uses bright colors and animated graphics to motivate and reward users. Exercises on pitch, volume, vowel and consonant pronunciation, word pronunciation and speech timing, help people with language impairments improve their skills.

SpeechViewer II analyzes a user's speech signal characteristics such as pitch, volume, voicing, and intonation. These data activate playful, gamelike animations which provide immediate feedback. The user's performance in each exercise is tracked automatically and can be saved and integrated into various reports requested by the speech and language pathologist. SpeechViewer II is one of many IBM products designed to help people with special needs.

An educational allowance is available to qualifying educational institutions. For more information, call the IBM Special Needs Information Referral Center at (800) IBM-4832.

IBM's National Support Center for Persons with Disabilities (NSCPD) serves to help health care leaders, agency directors, policy makers, employers, educators, public officials, and individuals learn how computers can enhance the quality of life for persons with disabilities in school, home, and the workplace. Although the center is unable to prescribe an assistive device or software, it does provide information on what technology is available from IBM. Resource guides on disabilities affecting hearing, learning, speech and language, mobility, and vision, list vendor and support group names, addresses, and descriptions. In conjunction with selected community service organizations, IBM offers a program that makes it easier for persons with disabilities to purchase computers for rehabilitative and therapeutic purposes. Under the program, eligible individuals may purchase IBM Personal System computer products at a 33 to 50 percent discount and may receive individual assistance from local affiliates of the community service organization when selecting, ordering, and installing equipment. Contact the National Easter Seal Society, 230 W. Monroe St., Chicago, IL 60606. (312) 551-7100.

IBM PC User Group—BBS is a bulletin board system that provides information about IBM-compatible software and hardware. Developed and maintained by IBM's NSCPD in Atlanta, GA, the service is for PC User Groups across the country. There is no fee and no requirement for membership. The PC User Group offers many basic services, including information from the NSCPD database and a related bulletin board message area for user communications.

IBM is now offering a Program to Train Disabled Persons with two major initiatives. They are Computer Programmer Training for Severely Disabled Persons (CPT) and Personal Computer Based Skills Training for Disabled Persons (PST). The Computer Programming provides an opportunity for persons with disabilities to enter the world of information processing. The physical limitations of a person would not
Computer Based Skills Training is necessary for students who cannot qualify or complete the computer programming training. The Personal Development Network has developed over 40 training projects throughout the United States; 33 of these centers train only PC microprocessing, and seven centers offer both training entities. After the individual has completed training, the project staff attempts to place the graduate in competitive employment. Qualifications for entering training vary among the programs and should be discussed with the administrator of the local program. The students in these programs are certified as disabled by their state Vocational Rehabilitation agency. For additional information contact IBM Program to Train Disabled Persons, IBM Corp., 800 North Frederick Avenue, Gaithersburg, MD 20879. (301) 240-0111.

ISSAC—Information Systems for Advanced Academic Computing, provides information about IBM-compatible software and hardware for higher education instruction and research. The system was developed and is being maintained at the University of Washington. ISAAC is funded by IBM as a service to faculty, students, and staff of institutions of higher education. There is no fee for membership. ISAAC offers two basic services: a bulletin board and numerous databases. ISAAC contains research abstracts, software catalogs, a software information database and notes from colleagues around the country. The bulletin board provides the opportunity for discussion among its users, who include more than 1500 colleges and universities. For more information contact ISAAC Access, m/s PC-06, University of Washington, Seattle, WA 98195. (206) 543-5604.

Corporate Assistance for Disability Support Centers—IBM recently announced that $4.5 million in technology will be made available to disability support centers that receive federal support. Under a program entitled IBM Disabilities Assistance Network, the company will loan personal computers and software at no cost to agencies and non-profit organizations that operate in the interests of persons with disabilities. The technology is designated for use by centers receiving federal grants to provide effective needs assessment, resource coordination, and telecommunications. Corporate Support and Community Programs for IBM. 1-800 426-4832.

Selected Publications

The National Easter Seal Society announces a quarterly technology publication, Computer-Disability News. This new publication is for individuals with disabilities and their families, educators, and rehabilitation professionals. This publication is a listing of numerous key resources for readers to contact for additional information. Computer-Disability News will feature stories about either software for people with learning disabilities or a model program in which computers assist persons who are aging.

For more information or for a free copy of the lastest newsletter contact Easter Seal System, National Easter Seal Society, 230 W. Monroe Street, Suite 1800, Chicago, IL 60606. (312) 726-6200.

Journal of Visual Impairment and Blindness: Danger & Opportunity, December 1990, is a special issue concentrating on the many possible technological capabilities for people who are blind or visually impaired. Some of the articles in this publication are focused on reading through technology, computer technology, training blind and visionally impaired persons with technology, descriptive video service, and more. Each of the chapters begins with a history of the technological device or service and ends with future trends. The print in the Journal is small and could be hard to read, but it is very descriptive. The Journal lists several services and publications that have been reviewed for people who are blind or visually impaired. It also lists a detailed calendar of conferences, seminars and meetings for professionals, consumers, and family members. The Journal posts many positions available throughout the country for candidates interested in working with people who are blind and visually impaired. Copies of this Journal are available in print, cassette, and braille editions. To obtain a copy of this special issue, $10 sent to Journal of Visual Impairment & Blindness, 15 West 16th Street, New York, NY 10011.

Personal Computers for Persons with Disabilities: An analysis, with Directories of Vendors and Organizations (1990), by William Roth, is a book that describes how the rapid advancement of computer technology holds great potential for people with disabilities. Roth begins by outlining ways in which people with sensory, motor, cognitive, and mental disabilities can use new technology for both input and output. The author also gives examples of how people with disabilities can interact with this new "user-friendly" technology. In another chapter, the author explains how he can match people with disabilities with appropriate computer technology.

Throughout this publication, Roth uses the word "match," rather than "prescribe," "authorize," and "evaluate." The chapter on disability explains the many different input devices for people with disabilities. There is also a small section on the many different output devices and where a person with a disability may obtain copies of documentation in alternative formats. The chapter on Disabilities and Computer explains the importance of assistive technology for persons with disabilities. For example, Roth described how a person who has use of only one finger can use technology to overcome the limitation of slow input when only one finger is used.

Appendices provided guidelines established by Public Law 94-506, Section 508 (a)(1), "to ensure that computers purchased by the federal government are accessible or can be easily adapted for disabled users." Selected products (both IBM and Apple) and vendor information...
Technology and Disability, edited by William Mann and Joseph P. Lane, is a peer-reviewed journal that focuses on the application of rehabilitative and assistive technology for persons with disabilities, particularly in the performance of major life functions: education, employment, and recreation. Its inaugural issue addresses the needs of persons with visual impairments, beginning with an overview of technology applications for such persons. Additional articles address technology applications including four major methods used by persons with low vision or blindness to gain access to information and specific applications of technology for young children, students, and older persons. Another chapter includes the advocacy process, legislation, and funding for assistive technology. Another article provides historical data on the history of the development of electronic travel aids and electronic reading machines for persons with disabilities. The case-study section is particularly interesting as it provides real life examples of assistive technology used by individuals in the workplace. Future editions of the journal will address how assistive technology is being used in other areas (mobility, vocational education, communication, orthotics, etc.). To obtain a subscription to Technology and Disability prepay $60 (individuals), $98 (institutions), to Butterworth Heineman Publishers, 225 Wildwood Avenue, Unit B, Woburn, MA 01801. (800) 366-2663.

Selected Technology

Franklin Electronic Publishers, Inc. opened a new world of communication for people with disabilities with its new Language Master 6000SE Special Edition. This is the first hand-held fully speaking electronic dictionary, thesaurus, spelling corrector, and English language resource designed to help people who are blind, visually or speech impaired, learning disabled, dyslexic, or who possess other disabilities to easily access information and communicate with others.

A Message Key allows up to 26 messages to be entered, stored, and "spoken" at any time. A person who wishes to eat a meal at a certain time each day can type, "I would like my lunch at noon." When the message key is pressed the computer will "spoken" the request. This feature will provide individuals with speech impairments with a portable, easy to use means of communicating basic needs.

For more information, contact Franklin Electronic Publishers, 122 Burrs Road, Mt. Holly, NJ 08060, (609) 261-4800; Fax (609) 261-1631.

Students who use braille have a wide range of new technologies available to them. The Optacon II from Telesensory Systems Inc. provides text to tactile conversion for print materials including maps, blueprints, video display terminals, and traditional printed materials. The Optacon II re-engines the original Optacon, and the resulting product is smaller, lighter, and less expensive than the original. In a first for assistive technology vendors, Telesensory and Canon USA have established a subsidized financing plan to assist blind individuals in purchasing their own Optacon. The Mitarai/Canon Optacon financing plan is the first nationwide program using a large consumer credit system to finance technological aids for individuals with disabilities. For more information contact Telesensory Systems, Inc., P.O. Box 7455, Mountain, View, CA 94039-7455. (415) 960-0920.

PRD+ from Productivity Software International is a memory resident software product that enables persons with limited keyboard skills to increase typing speed through expanding abbreviations. Compatible with most commercial software, including Lotus 1-2-3 and WordPerfect, PRD+ recognizes several thousand user-definable abbreviations. By typing "asap" PRD+ will type "as soon as possible" saving the typist 14 keystrokes. Each copy of PRD+ includes PECK, a free program to enable a one-finger or mouthward typist to use shift or control keys readily. This program is a useful utility for many students with disabilities, although it would benefit from a "pop-up" set of word choices to assist users in managing the list of abbreviations. PRD+ is available in standard, professional, and student versions from Productivity Software Int., 211 E. 43rd St., Suite 2202, New York, NY 10017-4707. (212) 818-1144.

Recording for the Blind (RFB) has initiated an Electronic Text (E-TEXT) program to provide additional resources to people with visual or other print disabilities. RFB plans to use electronic text for resources such as professional journals and reference books. Electronic or computerized text is material encoded as digital data on a computer diskette. A blind or print-disabled person can access the material with a personal computer in which a speech synthesizer, braille display or character enlarging equipment can be attached. In addition, RFB plans to distribute audio cassettes on which electronic text had been "read" by a speech synthesizer. RFB decided to introduce E-TEXT because only 10 percent of printed material available to individuals with sight is repro-
duced in a format accessible to people with print disabilities.

RFB emphasized that the E-TEXT program is a supplementary service to its existing core service of recorded book production. For further information on E-TEXT, contact Recording for the Blind, Office of Public Affairs, 20 Roszel Road, Princeton, NJ 08540. (609) 452-0606.

Sound-Proof is a user-friendly computer program which enables the student to hear words spoken by a high quality speech synthesizer as they are simultaneously highlighted on a computer monitor. This new product enables people with learning disabilities to write, review, and proofread their own work. Sound-Proof enables the user to easily catch punctuation and grammatical errors, hear omissions, and determine whether what has been written makes sense.

Reading comprehension can be enhanced because Sound-Proof visually highlights each word as it is spoken.

Sound-Proof can be previewed through a video that details how to use the system, and features a student description of how Sound-Proof is beneficial when used within the academic environment. For more information and a preview of the video about Sound-Proof, call (800) 722-3393 or write to HumanWare, Inc., 6245 King Road, Loomis, CA 95650.

The original combination of Toshiba 1100+ Laptop computer and Artic speech output had a tremendous impact on students with disabilities. Now, over two years after its introduction, the next generation Toshiba 1000 which is 25% lighter, less expensive, and talking with a Texas Instruments speech chip, is making inroads on campuses today. The Zenith laptop is also popular, with or without speech options, as are many other laptop MS-DOS computers on campuses throughout the country. For example, computerized notetaking at Northern Essex Community College (MA) lets an individual provide notes in braille, large print, or as speech for students with disabilities. Notetakers type class notes into the laptop computer (Tandy 100) and after class, download to a Macintosh where the notes can be converted to the format of the student's choice. Students with learning disabilities have the option to listen and read simultaneously.

For more information contact Rubin Russell, Northern Essex Community College, 100 Elliot Street, Haverhill, MA 01830. (508) 374-3654.

The Unicorn Smart Keyboard, a computer keyboard for people with disabilities, was the $10,000 Grand Prize winner this year of the National Search Competition conducted by the Johns Hopkins University. Unicorn, which has a membrane keyboard composed of 576 small keys that can be grouped to form larger, custom keys, is a flexible alternative to standard computer keyboards. The keyboard works with IBM and IBM compatible, Macintosh, and all Apple computers. It comes with six pre-programmed overlays. Six optional custom overlays may also be ordered. When the user places one of these overlays on the keyboard, the keyboard automatically recognizes the overlay and interacts appropriately with the computer.

More than 500 individuals entered the National Search Competition, which was co-sponsored by MCI Communications Corp. and the National Science Foundation. The National Search was a competition for ideas, systems, devices, and computer programs designed to help the more than 25 million Americans with disabilities. The competition was open to all residents of the United States. Amateurs, computer professionals, and students were invited to compete for prizes and awards, which were announced at a dinner on Monday, February 3, 1992, following a two-day exhibit and demonstration by all 39 finalists at the Smithsonian Institution. □
HEATH Publications List

The HEATH Resource Center operates the national clearinghouse on postsecondary education for individuals with disabilities. Support from the United States Department of Education enables the Center, a program of the American Council on Education, to serve as an information exchange about educational support services, policies, procedures, adaptations, and opportunities on American campuses, vocational-technical schools, adult education programs, independent living centers, and other training entities after high school. The Center collects and disseminates this information so that people with disabilities can develop their full potential through postsecondary education and training if they choose.

Resource Papers
- (ASL) Access to the Science and Engineering Lab and Classroom
- (BVI) Students Who Are Blind or Visually Impaired in Postsecondary Education
- (CPP) Career Planning and Employment Strategies
- (DHH) Students Who Are Deaf or Hard of Hearing in Postsecondary Education
- (DL) Adults with Disabilities and Distance Learning
- (FA) Financial Aid for Students with Disabilities
- (GR) Getting Ready for College: Advising Students with Learning Disabilities
- (HI) Head Injury Survivor on Campus: Issues and Resources
- (LD) Learning Disabled Adults in Postsecondary Education
- (MSP) Measuring Student Progress in the Classroom
- (MTM) Make the Most of Your Opportunities
- (OSN) Young Adults with Learning Disabilities and Other Special Needs
- (PD) Adults with Psychiatric Disabilities on Campus
- (PVR) Vocational Rehabilitation Services — A Postsecondary Student Consumer’s Guide
- (SAS) Strategies for Advising Students with Disabilities
- (VE) Education for Employment

Newsletter
- (NL) Annual Subscription (fall, winter, and spring issues)

Newsletter Article Reprints
- (ADA) Americans with Disabilities Act
- (ADD) Attention Deficit Disorder
- (ADM) College Admissions Tests
- (AHS) After High School, What’s Next?
- (CQ) Community Colleges and Students with Disabilities
- (CL) Current Language
- (CTD) Computers, Technology, and Disability
- (DS) Descriptive Summary of ETS Project
- (FAC) Facts You Can Use
- (FOC) Focus on Faculty
- (FL) Foreign Language for Students with LD
- (HSDA) High School Diploma Alternatives
- (KTS) Keefe Technical School
- (LDHA) LD Among High Achieving Students
- (LS) Students with Disabilities and Law School
- (RSH) Resources for Students with Severe Disabilities on Campus
- (SCS) Student Consumer Speaks Up
- (SPC) Summer Pre-College Programs for Students with LD

Other Publications
- (SSWI) Social Security Work Incentives
- (VA) Vocational Assessment

Single copies of these other publications are free. Multiple copies may be ordered on a cost-recovery basis. For details, call HEATH at (800) 544-3284 or (202) 939-9320. Both numbers are Voice or TT.
Fax: (202) 833-4760
Internet: HEATH@ACE.NCHE.EDU

Alternate Media
- Please send materials on audiocassette.
- I have enclosed a blank 5 1/4 “ or 3 1/2” DD/DS diskette, so please transfer to computer media:

Name ____________________________
Title ____________________________
Address __________________________
City ______________________________
State __________ Zip __________

CHECK THE LINE BELOW THAT BEST DESCRIBES YOU:

Person with Disability __________ Counselor __________
Adult Educator __________ Other (Specify) __________
Teacher/Instructor __________ Administrator __________

Please mail back to: HEATH, One Dupont Circle Suite 800, Washington, DC 20036-1193.