NATIONAL CENTER FOR DISABILITY SERVICES

RESEARCH AND EVALUATION CENTER

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The Internet: A Gateway to Disability Related Resources

A recent report by the U.S. Department of Commerce indicates there is a large increase in Internet use in the U.S., which currently grows at a rate of two million new users per month. In September 2001, 54% of the nation's population was using the Internet. Currently, 45% of Americans use the Internet to email, 36% use it to search for products and service information, 39% are shopping online, and 35% are using it to search for health information.

The World Wide Web is believed to have a positive impact on the lives of individuals with disabilities by providing access to information and in many ways providing an alternative way to overcome certain obstacles. A 2000 Harris Poll found that 48% of adults with disabilities believed the Internet significantly improved the quality of their lives, an interesting finding considering that only 27% of adults without disabilities shared this experience. This poll also found that adults with disabilities were more likely than non-disabled adults to feel that the Internet allowed them to be kept informed about the world and feel connected to people with similar interests, friends and family (Taylor, 2000). But the full

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Inside this issue:

Predicting the Future of Technology for Special Learners

Tinker (2001) reports that one can find clues about the future of special education by looking at how education and the larger society are currently using technology. In 1965, Gordon Moore of Intel observed that the number of transistors on a microchip was doubling every 18 months. This rate has remained very consistent over the past 35 years. In a recent article by Robert Tinker, an innovative pioneer in technological approaches to education for 30 years, it is clear that this pattern of change applies not only to the density of transistors on microchips, but also to the entire information industry, including technology and educational applications.

Tinker (2001) cites the recent explosion of information technology, networking, and web-based developments as the roots of the future of technologies for special learners. Rather than list specific technologies and look for their direct impact on special students, Tinker (2001) cites important new educational applications enabled by technology. He lists five applications that are tied to large-scale changes that have the potential for mass-market demand and to serve general educational needs.

The first application relates to technology-enhanced literary education, which includes voice recognition, networking, computer graphics, and latent semantic analysis. The use of these technologies in a combined manner holds great potential to create a compelling learning medium for literacy. Next, since technology is changing what is necessary to learn in mathematics and science, it increasingly allows learners to understand concepts with a minimum of formal mathematical computations. Future technology will emphasize conceptual learning without having to master formal mathematical proofs and calculations. This conceptual learning will be attained through the use of technologies such as simulations, probeware, force feedback, gaming, tools, programming, and other interactive strategies.

"Because it is very difficult for a teacher to provide all the needed guidance to take advantage of the learning potential of software tools, software designers are increasingly including guidance in the software that is often called 'scaffolding'" Tinker (2001). Just like the scaffolds of a construction site, the software is adjusted to the individual's needs, and removed when it is no longer needed. Tinker (2001) cites scaffolding as having the potential to be very practical for special learners because it provides a more universal design that could adjust factors such as level of presentation, visual complexity, number of options, and educational strategies.

Distance learning is cited as the fourth potential application for special learners. A common finding in current research is that there is no significant difference in student learning and satisfaction between well-designed online and face-to-face courses. Online courses provide the means for the learner to engage in active self-learning. This mechanism recognizes that education is an individual process where individuals with different learning needs and styles can be accommodated. It emphasizes learning that is meaningful, where individuals are involved in and enjoy the learning process, and where individuals acquire knowledge to better understand their own interests. "Distance learning will be a significant resource for teachers with inclusive classrooms who need help with special students" (Tinker, 2001).

Finally, Tinker cites new dissemination channels as the fifth application to watch in terms of future technology for special learners. Included in this broad category are e-commerce, free materials, open source systems, and cooperatives. These channels are all made possible through the World Wide Web, where there exists attractive opportunities for development and distribution.

Tinker (2001) concludes that the increasing pattern of mass-production of technology facilitates its arrival into the education sector. Once within education, applications for its use by special learners become an inevitable reality.

Tinker, R. (2001). Future technologies for special learners. *Journal of Special Education Technology*. 16 (4).

Equal Access to All: Section 508

People with disabilities tend to be less educated than people without disabilities. Having access to online learning is critical for people with disabilities to participate fully in education. Unfortunately, many of the original online learning programs were not designed to accommodate individuals with various types of disabilities.

However, with the passage and enforcement of Section 508, an amendment of the Rehabilitation Act of 1973, (which requires any electronic and information technology products and services that federal agencies buy to be accessible by people with a wide range of disabilities), online learning providers are being forced to rethink, redesign, and rebuild their Web sites and other learning applications. To this end, enforcing the new Section 508 guidelines has the potential, through on-line learning, to open doors of opportunities for people with disabilities to gain higher education, obtain meaningful employment, earn higher income, and lead more fulfilling lives.

Web designers have not found it easy to comply with Section 508 web accessibility guidelines. As Web sites become more graphical, they become less accessible to users with a disability. Thus, online training courses for individuals with disabilities must be virtually graphic and icon free, that is, textual with no shortcuts, and provide alt-text-tags that describe pictures or other images using text. Furthermore, the site must be compatible with a screen reader and other types of assistive technology. Meeting web site accessibility requirements can be costly, especially since many of the web designers operate on a small scale. Moreover, making accessible instructional materials for subjects like art or archeology may be problematic. In addition, there is the small window of time for E-Learning providers to accomplish these accommodations, as federal funding will only be distributed to those providers who comply with Section 508. According to Curtis Chong, Director of the National Federation for the Blind, "Many barriers will remain for those disabled individuals wanting easy access to many online learning programs, mostly because vendors haven't had time to prepare."

Despite the problems facing web designers, the outlook for creating accessible web sites and online learning courses appears promising. According to Joel Schettler, Senior Editor of *Training*, vendors are making every effort to comply with these new guidelines in spite of the problems. For example, online learning vendors such as SkillSoft, and ElementK, have found that by using "templates" to bring about accessibility to their online training programs, cost is kept to a minimum. Companies can further reduce costs when making their sites accessible by offering multimedia on one site rather than several versions of the same site. Although corporate America is not required to comply with Section 508 guidelines, companies such as IBM, Microsoft, and Sun Microsystems are taking the initiative in making their Web sites more accessible. As they are the forerunners in software design and development, it is only a matter of time before other companies follow suit.

On the whole, designing accessible online training may remove some of the barriers that prevent individuals with disabilities from participating in education, work, and the community. Still, one must keep in mind that no single online learning program meets all the needs of every person with a disability. But with long range planning, E-Learning programmers can design accessible online learning programs that consider future universal access and design in order to adapt to different types of disabilities.

Reference:

Schettler, J. (2002). Equal Access to All: New federal accessibility guidelines for electronic information technology may open new roads to the online learning superhighway [electronic version]. *Training*. January, v39, 44 -48.

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potential of the Internet is minimized by the reality of use within the community with disabilities. The fact is that people with disabilities are less likely than the general population to use computers or the Internet.

The latest government report shows that individuals with a disability are less likely than individuals with no disability to live in a house that has a personal computer. Even in homes with a computer, individuals with a disability are less likely to use it or the Internet. In general, people with disabilities tend to use the Internet at rates below that of the average population. The disproportionate rate of Internet use between people with disabilities and those without disabilities can be influenced by factors such as education and income, but statistical analyses done by the researchers of this project indicated that even when these factors were considered, people with disabilities were still less likely than people without disabilities to be Internet users.

The report also highlighted the differences in use among Internet users. It found that people with disabilities are more likely than the population to use the Internet to search for health and government information. This data supports the findings of a recent Schwab Learning online poll, which indicated that the most useful resource for information about learning differences, child development, and education were articles on the Internet. The Internet can provide relatively inexpensive, updated, and valuable information to individuals with disabilities and their families. There are countless Internet sites that focus on disability, (i.e.: specific types of disabilities) and many provide an opportunity for interaction between individuals with similar experiences. A good example of a useful and interactive site is the Schwab Learning site at **www.schwablearning.org**.

The Charles and Helen Schwab Foundation established Schwab Learning in 1988, with a mission to help children with learning differences (LD) be "successful in learning and life." Schwab Learning has two components, the Schwab Learning Center in San Mateo, California and Schwablearning.org. The Schwab Learning Center provides support, resources and information free of charge to parents and families of children with LD. The website supplements the work of the Center by making the resources and supports available nationwide. The site provides accurate, research-based information, as well as a forum for interaction among parents.

Schwab Learning was born from the personal experiences of Charles and Helen Schwab. Their son was diagnosed with dyslexia, and, in the process of his assessment, Charles Schwab became aware of his own dyslexia. As a result of their struggle helping their son, they wanted to help other parents in similar situations.

The website provides information about identifying and managing LDs, and connecting with others. It provides publications at no cost, as well as a message board and a column for expert advice. The site is also available in Spanish. In addition, parents can sign up for an online weekly newsletter. Every week the newsletter presents the results of the poll posted on the website. Below are a few of the polls conducted in the past:

"Is homework a family affair in your household? Who is best at helping your child?"

85% You or your spouse
6% Other
3% An older sibling
3% A grandparent

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Book Review: *Art History Through Touch and Sound: A Multisensory Guide for the Blind and Visually Impaired*

Art Education for the Blind (AEB) was established in 1987 with a goal of making publications in art history available to people with no or limited sight. Blind and visually impaired individuals have long been denied the opportunity to have access to books in art history. Having access to art history for blind individuals means having fuller comprehension of the physical world around them. This translates to understanding architecture, world history, and concepts commonly understood by sighted individuals. Some of those concepts include how things appear in space, light and shade, compositional dynamics, commonly known famous structures, as well as works and styles of art. Participating fully in society means having awareness of how the world fits together and knowledge of important concepts with a full depth of understanding.

AEB has created an exemplary resource in translation of art history in a tactile and audio format that is packaged in a book form. The quest for the best translation of complicated works of art and the art concepts that are fundamental for their comprehension involved a lengthy process. Extensive research in materials and concept translation lead to the creation of prototypes that were tested by groups of blind individuals. All volumes went through clinical trials with blind advisors for content, clarity, and accuracy. Advances in technology and nine years of research that involved bringing together experts from many fields throughout the world made the production of this series of books possible.

Art History Through Touch and Sound consists of a collection of six books that cover the periods in art from prehistoric to contemporary works. Each volume consists of a bound book of tactile diagrams and a companion audio narrative. Color and black and white photographs accompany the tactile illustrations. The diagrams utilize seven standardized patterns, enabling the reader to acquire a familiarity with the tactile vocabulary. The narrative guides the reader through the diagrams of works of art, providing historical information as well as richly detailed descriptions of the works. Additionally, interpretive sound compositions offer alternative ways of understanding a work of visual art's thematic essence or compositional dynamic. For example, a sound tape of Marcel Duchamp's painting *Nude Descending a Staircase* found in European Modernism combines the sounds of people walking downstairs with the sounds of machinery to illustrate the mechanical feeling of the figure and the artists interest in depicting movement. Each volume includes art-appreciation activities and a short bibliography.

The Building Blocks of Art, which is included in this series, introduces the reader to the world of art in making suggestions for how to begin to engage in the ideas and concepts found in fine art.

Throughout the series, detailed diagrams carefully illustrate essential features. For example, architecture is explored through diagrams that illustrate ground plans, elevations, sections, decorative orders, and structural elements. For complex paintings, a sequence of diagrams is used to illustrate figures, background, and composite views, as well as details. By separating the visual information into layers, or stages, the

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diagram sequence allows the reader to assemble, piece by piece, an image of a highly complex work of art.

Volumes currently available are *European Modernism 1900 –1940, The Art of Ancient Egypt, The Building Blocks of Art, Greek Art of the Bronze and Iron Age*, and *Native Arts of Africa, South Pacific and the Americas. Baroque Art in the 17th Century* will be available soon. The series is suitable for senior citizens, college students, young adults, and independent learners. Early versions of *Art History Through Touch and Sound* have been used in courses at The Museum of Modern Art, New York, and Drew University, New Jersey. Sighted readers also benefit from the method used in the series.

Art Education for the Blind, Inc., a nonprofit organization, provides access to visual art through a range of educational materials and programs. All profits from the sale of books are invested into product development and programming, fulfilling Art Education for the Blind's mission of providing full intellectual access to the history and culture of our world.

ART HISTORY THROUGH TOUCH AND SOUND: A Multisensory Guide for the Blind and Visually Impaired

Volumes Available:
EUROPEAN MODERNISM 1900-1940
ISBN: 1-890116-07-6
THE ART OF ANCIENT EGYPT
ISBN: 1-890116-09-2
THE BUILDING BLOCKS OF ART
ISBN: 1-890116-08-4

Focusing on Digitized Curricula

In his testimony to the Committee on Appropriations (Subcommittee on Labor, Health and Human Services and Education-Hearing on Education Technology) several months ago David Rose, the Co-Executive Director of the Center for Applied Special Technology (CAST) provided illustrative examples of ways in which assistive technology helps children overcome learning barriers. Examples included the child who has involuntary motor movement and uses switches to move his wheelchair and control his computer, the child who is blind and uses screen reading technology to access the curriculum, and the child who does not speak but uses an augmentative communication device to verbalize what he wants to say.

Dr. Rose didn't stop there as he testified in support of continued funding in this area. Despite the progress made through the development and application of assistive technology, Dr. Rose indicated that reliance on AT alone still left the "emphasis of intervention on the individual rather than the learning environment." As a step in the direction of modifying learning environments, rather than just modifying the learner, Dr. Rose shared with the Committee information and support for the development of digital curricula. Digitized materials would mean that textbook material would be delivered through the computer rather than through printed textbooks. Using digital formats would permit traditional print materials to be accessed in various ways depending on student needs. Rather than having to take the child's printed textbook to have it converted into large print or Braille, a digitized version of the materials could be viewed via the computer using the child's own individual access

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"Most of the time, I visit Web sites to..."
91% Search for news, information, or resources.
4% Participate in online communities, such as message boards.
2% Buy products or use consumer services, such as online banking.
1% Seek entertainment and recreation.

"Do you help your child organize her homework and school projects? If so, which method works best?"
41% A daily organizer/planner
40% Folders and binders, clearly labeled and color-coded
11% A large monthly calendar, posted in a visible spot
4% Other
2% An electronic organizer/planner

"My child's favorite role model (outside his family) is..."
55% A teacher, coach, or other community leader.
30% A celebrity.
14% A teenager or college student he knows personally.

"What's your most useful resource for information about learning differences, child development, and education?"
49% Articles on the Internet
18% Books and magazines
14% Conferences sponsored by professional organizations
8% Local parent support groups
8% Online community (message boards, live chats, etc.)

The SchwabLearning.org Weekly Poll is not scientific and reflects the opinions of only those Internet users who have chosen to participate. The results cannot be assumed to represent the opinions of Internet users in general, nor the public as a whole. Yet the results do have the potential to maintain a community of parents of children with disabilities in sharing their opinions, perceptions, and experiences with others. A sample of other interesting sites that provide similar services as well as practical information are:

www.halftheplanet.org
www.ldonline.org
www.wemedia.com
www.nod.org
www.disabilityworld.org
www.npnd.org
www.atnet.org

References:
U.S. Department of Commerce. (2002). A Nation Online: How Americans Are Expanding Their Use of the Internet.

Taylor, Humphrey. (2000). How the Internet is Improving the Lives of Americans with Disabilities. Available: www.harrisinteractive.com/harris_poll/index.asp?PID=93

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method. With the touch of a button or the sound of a voice, one student could read his screen in large print or another student could hear it read aloud by the computer.

In a federally funded study conducted by CAST, a group of over 100 students with learning disabilities, with reading levels two years below grade level, demonstrated significant improvement in accessing reading materials, learning reading comprehension strategies, and performance scores on standardized reading tests when compared with a control group who received the same materials in print form only and demonstrated no significant progress.

Rose went on to discuss "universal design" or the concept of planning accessibility for a wide variety of users from the outset rather than having to backtrack and redesign. For example, curb cuts in sidewalks, added in after the ADA was passed, turned out to assist not only people with physical disabilities but adults pushing baby strollers, bikers, and senior citizens. If sidewalks had been designed for accessibility from the beginning, we wouldn't have needed a law or a redesign effort. The concept of universal design, according to Rose, should be infused into any new educational technologies or programs ensured by both programmatic and funding support of the federal government. For further information on CAST, digital curricula, the new CAST Universal Learning Center, or to see the full testimony made by Dr. Rose, you can check out their web site at www.cast.org.

ABOUT *EMPOWERMENT*

We are pleased to present this fourth issue of Empowerment, the newsletter that focuses on education, employment, technology, and policy for people with disabilities. Our goal is to empower professionals within the disability field with current information on relevant topics. Within the next year, we plan to expand our readership to professionals and parents outside the National Center for Disability Services, Abilities Inc., and the Henry Viscardi School. If you know of any organizations that might be interested in receiving this newsletter, or if you would like to contribute to future issues, please contact the Research and Evaluation Center. Thank you for your continued feedback and support.

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