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Helping Our Children With Disabilities Succeed:

What's Broadband Got To Do With It?

"What would school be like if I couldn't use information technology? It would be like locking my mind in a prison because I couldn't communicate my ideas and I couldn't show that I understand the material in any way that would be presentable to an instructor or to a faculty member."

— Steven Steele, a student with disabilities¹

For children and youth in today's world, broadband,* or high-speed Internet, is not simply a luxury; it is an essential tool for success. Research shows that all children can use Information and Communications Technology (ICT) and broadband to enhance their education, prepare for the workforce, receive health care services, and connect with others.² In addition, many applications are especially effective at creating meaningful opportunities and more equitable environments for the approximately nine percent of children in the United States who have disabilities.³

The use of broadband, particularly when combined with other types of technology,[†] can remove barriers that keep children with disabilities from fully participating in everyday activities alongside their peers and becoming independent, integral members of their communities.

* The term "broadband" is generally used to describe Internet connections at speeds high enough to allow voice, data and video transfer. Broadband service is defined by the Federal Communications Commission as "data transmission speeds exceeding 200 kilobits per second (Kbps), or 200,000 bits per second, in at least one direction: downstream (from the Internet to your computer) or upstream (from your computer to the Internet)." But experts believe a much faster speed is needed today to meet global industry standards.

† For the purposes of this brief, the word technology encompasses all computer technology, including accessible technology and assistive technology.

While increasing numbers of Americans are gaining access to and using the Internet, the most recent data show significant gaps remain for those with disabilities: people with disabilities are only half as likely as those without disabilities to use the Internet.⁴ The gap is even greater for people with disabilities who live in rural areas. There is little to no qualitative research that explains the reasons for these gaps. In addition, there is a lack of consistent longitudinal research tracking Internet access and use by people with disabilities, particularly children.⁵

Broadband, or high-speed Internet, is not simply a luxury; it is an essential tool for success.

Disabilities vary in type and severity, and there is a range of technology tools, varying in complexity and expense, to help children meet their different needs. Many applications that can significantly transform the lives and opportunities of children with disabilities already exist, but policies and practices to ensure that all children have access to these tools and the training to use them are lagging behind, leaving many children with special needs without these life-changing tools.

The Children's Partnership is a national nonprofit organization with over ten years of experience advocating for access to technology-related resources that benefit the nation's youth, particularly those who are low-income or at risk of being left behind.

This Issue Brief is one in a series designed to inform policy-makers, parents, and children's advocates about the important role broadband plays in allowing all children to reach their full potential. This Issue Brief, focused specifically on children with disabilities, also provides recommendations for action along with resources for policy-makers and other leaders for children.

We issue this report at a critical stage in the evolution of digital tools and telecommunications policy in order to draw greater attention to this under addressed area of opportunity for young people. We recognize that there is still much to learn about how technology's applications can most benefit children—especially those with disabilities—and we hope this report will spur further research and research-based action.

Disabilities in the U.S.

- 8.4 percent of children under 15 years old have a disability, and 10.5 percent of young people ages 15 to 24 have a disability.⁶
- A person is defined as having a disability if he or she has difficulty performing certain functions (such as seeing, hearing, talking, walking, climbing stairs, and lifting and carrying), performing activities of daily living, or fulfilling certain social roles.⁷
- Of 72.3 million families counted in Census 2000, almost one third had at least one family member with a disability by these definitions.⁸
- Roughly 6.6 million children, or 13.7% of students enrolled in public schools nationwide, are served under the Individuals with Disabilities Education Act (IDEA).⁹
- It is estimated that almost half of all children who receive services through IDEA have a specific learning disability.¹⁰

Children with Disabilities Face Unique Challenges

As any child does, children with disabilities need love, attention, education, guidance, and care in order to grow into capable and self-sufficient adults. Most children with disabilities who receive the proper support and education become independent, contributing members of society and the workforce. However, their journey is laden with significant obstacles beyond the already considerable challenges of growing up.

Disabilities and Access to Technology:

According to the most recent data, of those surveyed who were 15 years of age or older:

- Only 44% with disabilities had a computer at home, compared to 72% of those without disabilities;
- Only 38% of those with disabilities had access to the Internet at home, compared to 64% of those without disabilities; and
- Only 24.3% of those with disabilities use the Internet at home, compared to 50.5% of those without disabilities.¹¹

In school, children with special needs may be segregated from their peers, sometimes unnecessarily, through placement in Special Education classes or separation on the playground. They may miss days of school because of illness, medical complications, or doctor appointments. Further, they may also require the assistance of others to perform necessary daily tasks other children can perform on their own.

This separation limits interaction between children with and without disabilities. As a result, unease can arise when those without disabilities interact with those who have disabilities. Sometimes, children who look or act differently are ridiculed, taunted, or excluded. This can take a toll on children's self-esteem, sometimes leaving them feeling lonely, ostracized, and isolated. These feelings can persist into adulthood.



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Technology Can Help Children Overcome These Challenges

Many children with disabilities, whether cognitive, physical, or learning-related, develop skills to function independently and interact confidently with others, and often they learn these skills by using accessible technologies.[‡] Accessible technology can be likened to a wheelchair ramp; a ramped entrance is accessible to people who are walking, using a wheelchair, or using leg braces. Ramps are also useful for the elderly or small children who may have difficulty climbing stairs. When technology is designed to be accessible, it is easier for everyone to use. An example of accessible computer technology is the zoom function on a word processor program, a feature standard to this type of software. It enables people who have low vision to use the program and also improves readability and reduces eyestrain for everyone.

[‡] Accessible technology is often designed using principles of “universal design”: Creating products, services, or environments that are accessible to the greatest number of people regardless of ability, age, or circumstance. Features creating accessibility are built into the design of the product, service, or environment and do not require additional equipment.

Similarly, broadband has the potential to offer anyone with a connection the access to information and services that can greatly improve children’s lives. The Internet, whether conventionally accessed or used in conjunction with assistive technologies[§] such as voice-activated software, overcomes barriers of distance, geographic location, ability, and language and can create opportunities that otherwise would not exist. Likewise, Internet with high bandwidth (that is, greater speed and capacity for transmission of data) enables education and communication methods that slower connection speeds simply cannot handle.

Computer technology holds so much promise because it can be made accessible for people with many different abilities. A Web site that includes streaming video, which requires the speed of broadband, can be designed with closed captioning so people with limited hearing can receive the same information as any other user. Web sites can also offer text-only versions that are easier for some people to read. With accessible computer technology and high-speed Internet, information can reach the widest audience possible.

Sometimes children with disabilities need to use assistive technologies to take advantage of some computer tools. These technologies provide an alternate way of performing a task so disabilities are compensated for.¹² Just as a person who cannot walk may use a wheelchair, a child who needs reading support may use a screen reader[¶] to search the Internet for a newspaper article and to read its contents. Assistive technology depends on the type and severity of disability and can be expensive, but many low-cost options are available. Furthermore, government programs and services, including public schools, are required to utilize accessible technology and to provide access to assistive technology and the training to use it when needed and when possible.¹³

Although several federal laws exist requiring equitable access, they are often not put into practice and are difficult to enforce. This can be due to the cost of accommodations, or lack of knowledge of legal requirements and compliance options as well as lack of concern for people with disabilities. In addition, when accessible and assistive technology is made available, it is often underutilized due to lack of teacher and parent/caregiver training.

[§] Assistive technology (AT) is defined by Section 508 of the federal Rehabilitation Act as “any item, piece of equipment or system, whether acquired commercially, modified, or customized, that is commonly used to increase, maintain, or improve functional capabilities of individuals with disabilities.” Assistive technologies are products created specifically for people with disabilities.

[¶] A screen reader is a software program that reads text and describes other visual contents of a computer screen aloud in a synthetic voice output or by controlling a Braille display.

Overview: Disability Laws Pertaining to Technology

For more information, *A Guide to Disability Rights Laws* can be found at <http://www.usdoj.gov/crt/ada/cguide.htm>.

Rehabilitation Act of 1973:

<http://www.usdoj.gov/crt/ada/cguide.htm>

Section 504 of the Rehabilitation Act:

<http://www.hhs.gov/ocr/504.html>

- Section 504 states that “no qualified individual with a disability in the United States shall be excluded from, denied the benefits of, or be subjected to discrimination” under any program or activity that either receives federal funding or is conducted by any Executive agency or the United States Postal Service.

Section 508 of the Rehabilitation Act (amended 1998):

<http://www.section508.gov/>

- Section 508 establishes requirements for electronic and information technology developed, maintained, procured, or used by the federal government. It requires all federal electronic and information technology be accessible to people with disabilities, including employees and members of the public.

Individuals with Disabilities Education Act of 1990

(formerly P.L. 94-142 or the Education for all Handicapped Children Act of 1975): <http://idea.ed.gov/>

- The Individuals with Disabilities Education Act (IDEA) requires public schools to offer all eligible children with disabilities a free appropriate public education in the least restrictive environment appropriate for their needs. IDEA also requires public school systems to create an appropriate Individualized Education Program (IEP) for each child with disabilities. According to the Act, “[t]he IEP Team” shall... consider whether the child needs assistive technology devices and services.”

Americans with Disabilities Act of 1990 (ADA):

<http://www.ada.gov/>

- The ADA prohibits discrimination on the basis of disability in employment, state and local government, public accommodations, commercial facilities, transportation, and telecommunications. Title II requires state and local governments to provide people with disabilities equal opportunities to benefit from governmental programs, services, and activities. This includes voting, public education, transportation, employment, recreation, and health care.

*** An IEP Team is defined as a group of people who are responsible for developing, reviewing, and revising the IEP and generally consists of the following people: one general education teacher, one special education teacher, a representative of the local education agency, the parents/guardians, the student as appropriate, someone who can interpret instructional implications of evaluation results, and other people whom the parents or school choose to invite.*

Telecommunications Act of 1996:

<http://www.fcc.gov/telecom.html>

Section 255 and Section 251(a)(2):

<http://www.fcc.gov/cgb/consumerfacts/section255.html>

- Sections 255 and 251(a)(2) of the Communications Act of 1934, as amended by the Telecommunications Act of 1996, require telecommunications equipment manufacturers and telecommunications service providers to ensure all equipment and services are accessible to and usable by persons with disabilities, if readily achievable. If not readily achievable, manufacturers and service providers are required to make devices and services compatible with common peripheral devices, if compatibility is readily achievable.

Section 254: Universal Service:

<http://www.fcc.gov/learnnet/254.html>

- Universal service provisions mandate the availability of equitable, reasonable, and affordable advanced telecommunications services throughout the country and require telecommunications service providers to contribute to federal universal service. The Act also mandates federal and state mechanisms to safeguard and advance universal service.

Enhancing Education Through Technology Act of 2001

(EETT): <http://www.ed.gov/policy/elsec/leg/esea02/pg34.html>

Section 2402 (a)(1-8): Purposes and Goals:

- The purposes of EETT are to assist states and localities in the implementation of a comprehensive system that effectively uses technology in elementary and secondary schools to improve student academic achievement by encouraging initiatives involving public-private partnerships, assisting acquisition of educational technology infrastructure, enhancing professional development of school staff, developing electronic networks, evaluating programs, and promoting involvement of parents and families.

Section 2402 (b)(2)(A): Additional Goals:

- The goals of improving educational achievement include assisting all students in crossing the digital divide by ensuring they are technologically literate by the time they finish the eighth grade regardless of any student’s race, income, gender, geographic location, or disability.



Ways Broadband-Enabled Technology Can Help Children with Disabilities

Broadband and broadband-enabled technologies enable youth, and particularly those with disabilities, to overcome three of the most challenging barriers to success: physical distances, the ability to communicate, and attitudinal limitations. When assistive technology tools are used with a broadband connection, youth can more easily connect with their schools, workplaces, communities, and one another.

Broadband's speed enables users to access a variety of ways to communicate and exchange information through text chat, sound, video, closed captioning, and speech recognition, removing barriers and allowing youth to pursue experiences to which they otherwise would not have access. In some instances, having access to broadband speeds higher than the current Federal Communications Commission definition is even more crucial for people with disabilities due to the nature of these applications and their bandwidth requirements.



EDUCATIONAL ACHIEVEMENT

Youth with or without disabilities who face geographic barriers or time limitations can take online courses, interact with tutors by videoconference, and experience hard-to-reach destinations through virtual reality by connecting via broadband at home, in the classroom, or anywhere else they have broadband access.

Using assistive technology allows children with disabilities to participate in classroom discussions, presentations, and projects they might not otherwise be able to. A student who has limited speech and mobility can use a special wireless

keyboard device with text-to-speech functionality to offer her opinions to the class, to access Web-based resources, and to communicate with her project partners. This device and broadband Internet give her a voice in the classroom and potentially in the professional world in the future. Such technology allows for greater autonomy by reducing the need for an adult or student aide. "If they have access to their own computers, they can take their own notes," says Sheryl Burgstahler, director of DO-IT (Disabilities, Opportunities, Internetworking, and Technology). "They can take their own tests; they can write their own papers; they can use the Internet and do their own research."¹⁴

"Through it all, adaptive technology and my Macintosh has [sic] been my key to inclusion."

— John, student with disabilities at California Institute of the Arts

ECONOMIC OPPORTUNITY

Some youth with disabilities acquire job skills by enrolling in distance learning courses to prepare for and receive certification in careers that utilize their intellectual faculties and computer savvy, such as Information Technology (IT) or other technology-based fields. Young adults with severely limited mobility can use their computer and a broadband connection to work from home, sending and receiving work files or using videoconferencing to communicate with co-workers. The removal of distance, mobility, and other obstacles to working or pursuing job training can be beneficial for all youth. It is broadband's speed that makes distance learning and videoconferencing possible, whereas a dial-up connection is too slow to allow the data transfer required for these services.

Some distance learning programs are even specifically designed to benefit people with disabilities. For example, an Iowa-based distance-learning program called ASSIST Online¹⁵ digitally delivers computer training to people who are blind or who have visual impairments, helping to increase their educational opportunities and employability in the IT field. Participants can complete the online program from home—or anywhere they have a broadband connection—and receive Microsoft Office certification, preparing them for entry-level IT positions.

For Shoshana Brand, a special keyboard with large buttons and the Internet have made it possible for her to create her own business, Blue Rose Videos With a Voice, a video rental service for people who have visual impairments.¹⁶ "I'm getting ready to rent out videos that are described... [I]n the 'quiet' places of the movie, it describes the scenery, costumes, facial expressions."



"My dream and goal since middle school, when I was first fully included in regular classes, has been to work in the film industry as an animator or as a background artist... to be part of a creative team, creating movies that make people laugh and feel good about life," says John, who has multiple disabilities.¹⁷ After attending Santa Monica College for three years, John was accepted to the California Institute of the Arts experimental animation program. "Through it all, adaptive technology and my Macintosh has [sic] been my key to inclusion," he says. "I cannot use my hands and use a power wheelchair, which I drive with my chin. Most people find it difficult to understand my speech on first encounter." At Cal Arts, he wrote, directed, and produced his first student film, called "Sunday Breakfast."

CIVIC PARTICIPATION

Youth with disabilities can more easily communicate with others their own age through instant messaging, chat rooms, or Internet Protocol Relay,^{††18} and their family members can use these same technologies to connect with other families who have children with similar needs to share knowledge and support. Video relay services allow a student who is deaf to use sign language and an online interpreter to speak with a hearing person who is using a standard telephone.¹⁹ Similarly, teens who are deaf or hard of hearing can connect with one another and with hearing students more easily and independently by using broadband-enabled technologies such as video relay, instant messaging, and text messaging.²⁰

†† Internet Protocol Relay, or IP Relay, allows people who are deaf, hard of hearing, or have difficulty speaking to place telephone calls to hearing individuals without the need to use a teletypewriter (TTY). Instead, IP Relay service is accessed via a computer and Internet connection. Through a Web page, the caller connects to a communication assistant who relays the caller's typed communication to the called party via voice telephone.

Accessible, high-speed Internet makes possible online communities that create change in the real world. Disability activists join virtual communities, online chats, and e-mail forums that engage their communities in political discussion and action. Blogs, e-alerts, and online bulletin boards help inform and mobilize advocates around legislation and other issues important to their communities.

For example, *Inclusion Daily Express*²¹ is an online news and information source that is a powerful tool for people with disabilities throughout the world. It assembles news about advocacy, rights, and politics that is of interest to the disability advocacy community and often features in-depth stories about advocates who make a difference. Youth with disabilities can utilize these resources if they have access through broadband.

Furthermore, young people with disabilities can take advantage of many broadband technologies that were not specially designed just for them. Social networking sites such as Xanga, MySpace, and Facebook offer a way for young people to connect to one another, regardless of ability. These communications technologies allow youth who have disabilities the freedom to communicate with more autonomy.

Additionally, virtual reality (online) worlds like Second Life allow some youth with disabilities to explore, conduct business, and socialize without the need to travel or use additional accommodations. However, there are always risks involved when children use the Internet; for information on how to keep children safe online, refer to The Children's Partnership's resource, "A Parent's Guide to Online Kids," available at <http://www.childrenspartnership.org/TechProgram>.

HEALTH CARE

Another demonstration of broadband's power to help children live healthy, successful lives takes place in rural communities, where medical specialists may be few in number and reaching an appropriate provider can be difficult. Videoconferencing equipment and a broadband connection allow youth with complex medical needs to manage their health needs without traveling great distances to see specialists.

Instead, they can use telemedicine services, if available, at the nearest primary care physician's office or clinic to connect with specialists many miles away, thereby receiving diagnoses, treatment, regular checkups, and special consultations—without leaving their hometowns. This encourages consistent visits and follow-through with treatment plans. Internet connections at home can also allow parents to access health information and their children's medical records and allow youth to contact their health providers directly, providing the opportunity for them to be more active participants in their care and care decisions.

While these examples are inspiring and demonstrate the enormous benefits and potential of digital technology, the sad reality is that many youth and young adults with disabilities cannot afford or gain access to these tools or are unaware of the promise of broadband and assistive technologies. For example, although almost all public schools have students with disabilities, only about half actually provide assistive hardware/software for these students.²² Further, many schools with assistive technology do not use it to its full potential because it is too difficult to use or requires more teacher and staff training than is available. “Everybody doesn’t know that there is technology out there that can literally transform your life, that can give you the tools and the keys to employment, that give you the tools to participation in the world,” says Jackie Brand, founder of Alliance for Technology Access. “We have a long way to go.”²³



Broadband-Enabled Technology Is Essential for Youth with Disabilities

Here are some other ways in which broadband-enabled technology provides people with disabilities with opportunities in many aspects of their lives from birth through adulthood.

Pre-school: Birth to 6 Years

Within this age range, children and their families use broadband-enabled technologies primarily for health and educational improvements. Rural telemedicine is only one of many promising uses of broadband.

By age three, some children with disabilities can begin to use a computer to play online educational games, and this technology can be used by even younger children. Children who are deaf or hard of hearing can play games on PBS Kids²⁴ that were created for them. Parents often use the Internet to research information on disability issues and treatments and to access support groups. Without broadband, joining a video chat or listening to a streaming audio broadcast would not be an option for these parents.

Daycare and preschool, whether public or private, can offer young children with disabilities opportunities to experience a new environment, meet children their own age, and learn new things. Unfortunately, a parent or guardian’s inability to monitor their special needs child in such an environment can deter them from sending the child to school or daycare. Broadband creates a way for parents to stay in touch and let their child reap the benefits of the classroom.

The Computer Science and Telecommunications Board’s 2002 report *Broadband: Bringing Home the Bits* explains: “In a

“There is technology out there that can literally transform your life.”

— Jackie Brand, founder of Alliance for Technology Access

personal setting, telepresence^{##} may enable a parent to have a continuous window on a child at a daycare facility, thus enabling a closer ongoing relationship, even with working parents.”²⁵ While these new tools raise questions related to privacy and appropriate use that require thoughtful responses, when used properly, they hold a great deal of promise for children with disabilities.

School Age: Six Years to 22 Years

From kindergarten through young adulthood, people with disabilities can leverage broadband technology to enhance their health, relationships, academics, and independence. Global Positioning System (GPS) mapping tools assist with driving, while interactive online games teach students new skills and job search sites allow users to apply for jobs and even conduct work from home. These tools are just a few examples of how broadband technology can enrich lives in measurable ways.

High-speed Internet can help parents and caregivers of youth with disabilities, too. Videoconferencing equipment allows them to manage children’s learning plans more easily. According to a report from the National Association of the Deaf, “Telepresence potentially offers parents the privilege of ‘attending’ meetings to prepare Individualized Education Programs (IEPs), without having to travel to school at inconvenient times.”²⁶

A federally funded pilot project at University of California San Francisco Children’s Hospital shows how a child with disabilities can take advantage of new broadband technologies to keep up in school if she has to be hospitalized. The new robot system, loaned to UCSF Children’s Hospital through the federal PEBBLES program (Providing Education By Bringing Learning Environments to Students),

^{##} Telepresence describes technologies that allow a person to be “present” and interact at a location other than their true location. Applications include videoconferencing, remote surgery, and virtual tours.

connects hospitalized students to their classrooms with a pair of life-sized robots,²⁷ one present with the hospitalized student and the other creating the student's physical presence in the classroom. The child and the class, through the use of the robots,²⁸ can send video, audio, and documents to each other using broadband.

For college students with disabilities, Internet-based technologies like WebCT allow them to easily access class notes, PowerPoint presentations, and study guides. The Web portal also facilitates simple teacher-student and peer-to-peer communication. Students with disabilities such as blindness, vision loss, or dyslexia can more easily collect news and magazine articles for use in school reports and research by using a new Internet service that allows users to listen to audio files of newspapers and magazines via their computers or mobile smart phones.²⁹

Outside of the classroom, young adults with disabilities use broadband technology to develop greater autonomy. For example, a new technology called SWAN (System for Wearable Audio Navigation)³⁰ that was developed at the Georgia Institute of Technology uses GPS, cameras, and a laptop to send audio directional instructions to people with visual disabilities, assisting them to navigate city streets and other unfamiliar places.



Companies that invested in accommodations for employees with disabilities reported an average return of \$28 in benefits for every dollar spent.

Broadband and Technology Provide Substantial Returns on Investment

Programs providing services to assist people with disabilities are often paid for with taxpayer dollars—and are investments that can yield substantial returns. If these publicly funded activities provide job training to individuals with disabilities rather than just financial assistance, many individuals with disabilities can secure employment and begin contributing to the economy, paying taxes and indirectly giving back to federal and state budgets that funded the programs that helped them become financially self-sufficient.

There is early evidence that this return on investment can be substantial. According to a recent report by the Council of State Administrators of Vocational Rehabilitation, people who were employed through the federal Public Vocational Rehabilitation (VR) program pay an estimated \$930 million/year in taxes, and every \$1 invested in Public VR led to a \$5 return to the government in taxes paid.³¹

Even though focusing on training and equipping individuals with disabilities for employment can reduce the need for public dollars to support them in the long term, today only 37 percent of Americans with disabilities between the ages of 16 and 64 are employed, compared with 74 percent of Americans in the same age group who do not have a disability.³² Not surprisingly, disability also correlates with poverty—the percentage of Americans with disabilities who are 5 years of age and older and living below the poverty level is almost double the percentage for Americans without disabilities in the same age group.³³ Digital tools that help young people with disabilities become more financially independent could help address both the underemployment and disproportionate poverty these groups experience.

Additionally, employers may benefit from hiring people with disabilities. Companies that invested in accommodations for employees with disabilities reported an average return of \$28 in benefits for every dollar spent on those accommodations, according to a fact sheet of resources for employers from the DO-IT (Disabilities, Opportunities, Internetworking, and Technology) Web site.³⁴ DO-IT, a Washington state based nonprofit organization, aims to increase the successful participation of individuals with disabilities in challenging academic programs and careers such as those in science, engineering, mathematics, and technology.

Barriers to Access Still Exist for Many Children and Young Adults

While the benefits of using assistive technology and broadband are well documented, many children and their families have difficulty accessing or using these tools and services. Three significant barriers to technology adoption are awareness, availability, and cost:

1) Awareness: The lack of awareness of these tools and services, their uses, and the opportunities they present is pervasive. In addition, those who interact with youth with disabilities—including teachers in the classroom, service providers, health professionals, community technology center staff, and parents—often lack the technology literacy, training, and access to ongoing technical support to successfully use broadband and broadband-enabled technologies, including assistive technologies. Moreover, many parents are unaware of public programs and schools' obligations to students. Some school, government, and community personnel lack knowledge of or have difficulty interpreting, implementing, and enforcing the laws and regulations requiring them to provide services to children with disabilities.

2) Availability: Many communities, especially rural, low-income, and underrepresented communities, lack broadband access. People with disabilities are disproportionately represented in low-income, ethnically diverse, and rural communities.^{§§ 35} When broadband is available, the speed may still be too slow to handle the types of services most useful for children with disabilities. In addition, equipment that is available to youth with disabilities while in school is too expensive for some families to purchase, and thus is often unavailable for their use at home and when they age out of the public school system. Moreover, not all public services and products online use universal design principles to make them accessible to the greatest number of people possible.

3) Cost: While the price of equipment and services is becoming more affordable, it is a cost that families and schools must shoulder on top of many other expenses needed to support their children. Since a disproportionate number of parents whose children have disabilities live in poverty, the cost of broadband and the technology that enables its use is a major deterrent. Finally, budgets for programs that fund schools and other public entities to incorporate technology and training into schools, like the federal Enhancing Education Through Technology Act of 2001 (EETT),³⁶ have been under-funded or cut over the last few years.

§§ U.S. Census Bureau, Survey of Income and Program Participation, June-September 2002, issued May 2006, shows that disability rates vary by race, and are more prevalent in American Indian, Alaskan Native, African American, and Hispanic Families than in White or Asian families. The Census also shows that disability rates are higher in the South and in rural areas, and that families with members who have disabilities have lower median incomes than other families.

Recommendations

Many people with and without disabilities can benefit from accessible and assistive technology. In California for example, more than 6 million people with disabilities (approximately 17 percent of California's population) could realize daily benefits from assistive technology, according to an Alliance for Technology Access report.³⁷ And throughout the country, it is estimated that 101.4 million adults (60 percent of the population) between the ages of 18 and 64 are "likely" or "very likely" to gain benefits from using accessible technology *regardless of ability*.³⁸

Leaders for children throughout the country cannot afford to miss out on the opportunity to improve the lives of all children, including those with disabilities, by harnessing the benefits of broadband and its partner technologies. The following is a four-point plan to significantly improve the quality of life for young people with disabilities through the wise deployment of these technologies.

1) Promote Access to Affordable Broadband Everywhere.

- Ensure revisions of the Telecommunications Act of 1996 maintain universal service principles.
- Encourage build-out of broadband infrastructure into all communities and ensure competition keeps costs low.
- Provide publicly accessible maps of broadband availability and build-out progress at the Census tract level.
- Define broadband speed in a manner consistent with global industry standards.

2) Enforce Existing Laws and Educate the Public About Them.

- Enforce compliance with the disability rights and technology access laws summarized in this brief at all government levels and by all public entities and services.
- Educate parents, teachers, and caregivers about legal requirements and how to advocate for children with disabilities.



3) Deepen the Research on Broadband's Value for and Impact on All Children.

- Fund longitudinal research on how broadband shapes the lives of all youth.
- Support research to determine which applications of broadband are most effective for children with disabilities and promote them through public policies and outreach.
- Fund research on barriers that prevent youth with disabilities from using broadband-enabled technologies and explore ways to overcome them.

4) Ensure Access to and Training with Accessible and Assistive Technologies.

- Fund programs at all levels of government that provide equipment in community, school, and home settings.
- Incorporate basic technology training into currently required in-service and pre-service courses for all teachers and caregivers.
- Adequately fund and provide ongoing technical assistance for programs such as the Enhancing Education Through Technology Act of 2001 (EETT).
- Support digital literacy programs and the creation and expansion of relevant, multi-language content and on-line services that embrace universal design principles.
- Support organizations that train parents and provide them with technical assistance.

The Children's Partnership looks forward to working with civic and corporate leaders, policy-makers, philanthropies, and all organizations concerned with children to better understand how digital tools can enhance the lives of young people living with disabilities and to make sure all children can benefit from these powerful new breakthroughs.

Resources

The Children's Partnership has created a valuable list of resources that can be accessed on our Web site at: <http://www.childrenspartnership.org/Report/SpecialNeeds/Resources/>.

Here, you will find resources for:

- People with Disabilities, Caregivers, and Parents
- Policy-Makers
- Advocates
- Direct Service Providers
- Educators

For more information about what you can do, contact The Children's Partnership at 310.260.1220 or visit <http://www.techpolicybank.org/>.

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Endnotes

- 1 *Accessible Information Technology in Education: Building Toward a Better Future*, streaming video, Access-IT and University of Washington 2002, 15 Dec. 2006 (<http://www.washington.edu/accessit/betterfuture.php>).
- 2 Wendy Lazarus and Andrew Wainer, *Measuring Digital Opportunity for America's Children: Where We Stand and Where We Go From Here* (Santa Monica, CA: The Children's Partnership, 2005).
- 3 United States Dept. of Commerce, Economics and Statistics Administration, Bureau of the Census, "Survey of Income and Program Participation: June-Sept. 2002," *Americans With Disabilities: 2002*, May 2006, 12 Dec. 2006 (<http://www.census.gov/prod/2006pubs/p70-107.pdf>).
- 4 U.S. Bureau of the Census, Current Population Survey Supplement, October 2003. Analysis conducted by Dobransky and Hargittai, "The Disability Divide in Internet Access and Use." *Information, Communication & Society* Vol. 9, Issue 3 (June 2006): 331-334, as reported by Enders and Bridges, "Disability and the Digital Divide: Comparing Surveys with Disability Data," *Ruralfacts*, Research and Training Center on Disability in Rural Communities, The University of Montana Rural Institute, June 2006, 27 Mar. 2007 (<http://rtc.ruralinstitute.umt.edu/TelCom/Divide.htm>).
- 5 United States Dept. of Commerce, National Telecommunications and Information Administration, *A Nation Online: Entering the Broadband Age*, Sept. 2004, 28 March 2007 (<http://www.ntia.doc.gov/reports/anol/NationOnlineBroadband04.htm>).
- 6 op. cit. (3).
- 7 op. cit. (3).
- 8 United States Dept. of Commerce, Economics and Statistics Administration, Bureau of the Census, "Disability and American Families: 2000," *Census 2000 Special Reports*, July 2005, 7 Dec. 2006 (<http://www.census.gov/prod/2005pubs/censr-23.pdf>).
- 9 United States Dept. of Education, National Center for Education Statistics, "Number and percentage of children served under Individuals with Disabilities Education Act" *Digest of Education Statistics: 2005*, April 2005, 16 Mar. 2007 (http://nces.ed.gov/programs/digest/d05/tables/dt05_052.asp).
- 10 United States Dept. of Education, *Twenty-fourth Annual Report to Congress*, (Washington, D.C.: GPO, 2002).
- 11 op. cit. (4).
- 12 R.B. Lewis, "Assistive Technology and Learning Disabilities: Today's Realities and Tomorrow's Promises," *Journal of Learning Disabilities*, Vol. 17, 1998.
- 13 Individuals with Disabilities Education Act, 20 U.S.C. § 1414.
- 14 Diane Curtis, "Assistive Technology: Enabling Dreams," *Edu-topia*, 2 Feb. 2005, 13 Nov. 2006 (<http://edutopia.org/1241>).
- 15 "About ASSIST Online," ASSIST, Iowa Department for the Blind, 2002, 13 Nov. 2006 (<http://www.blind.state.ia.us/assist/assistonline.htm>).
- 16 *Freedom Machines*, dir. Richard Cox, Janet Cole, and Jamie Stobie, VHS recording, Public Broadcasting System, 2004.
- 17 "John: The Making of 'Sunday Breakfast,'" *ATA Community Success Stories*, The Alliance for Technology Access, 2001, 2 Feb. 2007 (<http://www.ataccess.org/community/successes/successes.html#John>).
- 18 Federal Communications Commission, "IP Relay Service," *FCC Consumer Facts*, 8 Feb. 2007, 28 Mar. 2007 (<http://www.fcc.gov/cgb/consumerfacts/iprelay.html>).
- 19 *Working Together: Computers and People with Learning Disabilities*, prod. DO-IT, streaming video, DO-IT, 2000, 30 Nov. 2006 (http://www.washington.edu/doit/Video/wt_learn.html).
- 20 "Modern Gadgets Offer Bridge to Deaf Community," 28 Nov. 2006, *LA Daily News*, 30 Nov. 2006 (http://www.dailynews.com/ci_4726436).
- 21 *Inclusion Daily Express*, (<http://www.inclusiondaily.com/info.htm>).
- 22 United States Dept. of Education, National Center for Education Statistics, *Internet Access in U.S. Public Schools and Classrooms: 1994 – 2001*, 17 Sept. 2002, 1 Dec. 2006 (<http://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=2002018>).
- 23 op. cit. (16).
- 24 "Fox and Crow Games," NCAM/Cornerstones, PBS Kids, 2005, 4 Dec. 2006 (<http://pbskids.org/lions/cornerstones/fox/games/>).
- 25 Computer Science and Telecommunications Board, National Research Council, *Broadband: Bringing Home the Bits*, 2002, 14 Dec. 2006 (<http://books.nap.edu/html/broadband/>).
- 26 Frank G. Bowe, *Broadband and Americans With Disabilities*, The National Association of the Deaf, 2004, 15 Dec. 2006 (<http://www.newmillenniumresearch.org/archive/disability.pdf>).
- 27 Associated Press, "Robot Rep Goes to School," *Wired News*, 4 June 2006, 28 Mar. 2007 (http://www.wired.com/news/wire_service/0,71078-0.html?tw=wn_index_7).
- 28 *PEBBLES Classroom Project*, Specialized Services, UCSF Children's Hospital, 2004, 1 Jan. 2007 (<http://www.ucsfhealth.org/childrens/special/p/41751.html>).
- 29 Aaron Marks, "Now Users Can Listen to Newspapers and Magazines," *Axistive Assistive Technology News Portal*, 2 Oct. 2006, 28 Mar. 2007 (<http://www.axistive.com/17576/now-users-can-listen-to-newspapers-and-magazines.html>).
- 30 *SWAN: System for Wearable Audio Navigation*, Sonification Lab, Psychology Department, Georgia Institute of Technology, 14 Dec. 2006 (<http://sonify.psych.gatech.edu/research/swan/>).
- 31 *Investing in America: The Gateway to Independence: Public Vocational Rehabilitation – A Program that Works*, Council of State Administrators of Vocational Rehabilitation, 2005, 15 Dec. 2006 (http://www.rehabnetwork.org/investing_in_america.htm).
- 32 United States Dept. of Commerce, Economics and Statistics Administration, Bureau of the Census, *2005 American Community Survey*, 2005, 13 Dec. 2006, keyword: "disability characteristics," (<http://factfinder.census.gov>).
- 33 Ibid.
- 34 "Resources for Employers," DO-IT, University of Washington, 2002, 15 Dec. 2006 (<http://www.washington.edu/doit/Careers/employers.html>).
- 35 op. cit. (3).
- 36 Enhancing Education Through Technology Act of 2001, 20 U.S.C. §6751-6754 and subparts 1-4.
- 37 "Assistive Technology Connections: A Summary of Meeting the Needs of Californians with Disabilities," Alliance for Technology Access, September 2001, 16 Dec. 2006 (<http://www.ataccess.org/resources/attraining/ATConnectionsSummary.pdf>).
- 38 "The Wide Range of Abilities and Its Impact on Computer Use and Accessible Technology in Computing□Examining Awareness, Use, and Future Potential," Forrester Research, Inc. for Microsoft Corporation, 2003, 12 Dec. 2006 (<http://www.microsoft.com/enable/research>).




Other Resources on Youth and Technology From The Children's Partnership

Digital Opportunities Research and Resources:

-  *E-Health Snapshot: Harnessing Technology to Improve Medicaid and SCHIP Enrollment and Retention Practices* (May 2007)
-  *Helping Our Children Succeed: What's Broadband Got To Do With It? Number 1. 2nd Edition* (March 2007)
-  "A Digital Opportunity Action Plan - California Competes: Deploying Technology to Help California Youth Compete in a 21st-Century World" (May 2006)
-  "Digital Opportunity for America's Youth: State Fact Sheets" (September 2005)
-  *Measuring Digital Opportunity for America's Children: Where We Stand and Where We Go From Here* (June 2005)
-  *Impacts of Technology on Outcomes for Youth: A 2005 Review* (June 2005)



Available at: <http://www.techpolicybank.org>

Content By and For Underserved Communities:

-  *The Search for High-Quality Online Content for Low-Income and Underserved Communities: Evaluating and Producing What's Needed – An Issue Brief and Action Plan with Research Appendices* (October 2003)
-  *Online Content for Low-Income and Underserved Americans: An Issue Brief* (June 2002)
-  *Online Content for Low-Income and Underserved Americans, The Digital Divide's New Frontier: A Strategic Audit of Activities and Opportunities* (March 2000)

Available at: <http://www.contentbank.org>

Parents Guides and Child Safety on the Internet:

-  "Parents Guide to Online Kids: 101," PowerPoint Presentation (February 2006)
-  *The Parents' Guide to the Information Superhighway: Rules and Tools for Families Online 2nd Edition* (May 1998)

Available at: <http://www.childrenspartnership.org>

The Children's Partnership is a national non-profit organization that advocates for digital resources to benefit the nation's children and youth, particularly those who are low-income or lack opportunities to succeed. For more than a decade, The Partnership has undertaken original research to understand the impact of digital technology on children and has advocated for needed data, resources, and public policies to ensure that the digital economy and society includes opportunities for all of the nation's children. The Children's Partnership's newest program, "Defining and Promoting an E-Health Agenda for Children," aims to harness information and communications technology to improve the health of America's children. Please see www.childrenspartnership.org for more information.



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