



Using the Power of Social Media to Promote Assistive and Learning Technologies

THE WORLD IS CHANGING RAPIDLY

Just a few years ago, social media—blogging, text messaging, wikis, and Facebook--were on the fringes, the domain of early adopters. Today, they've gone main stream. Colleges and universities are posting lectures on YouTube and establishing alumni social networking sites. General Motors Vice Chairman Bob Lutz has been blogging for several years finding it "...a way for GM to be culturally relevant" and allowing the company to "...be on the leading edge of technology while getting our strong views out there..."¹ Dell is using blogs to turn around slipping customer satisfaction.² What these traditional economy executives will understand is that their customers are in the blogosphere and they need to be as well.

We are witnessing a fundamental shift in the ways and means that people communicate, connect and engage with each other. Fueling this profound shift are emerging technologies that have spawned an explosion of online communication and collaboration tools from text messaging, to blogging, to social networking sites like Facebook and LinkedIn that facilitate the growth of online communities of interest. Consider that, as of September 2006, there were more than 106 million registered users of MySpace.³ If MySpace.com were a country, it would be the 11th largest in the world between Japan and Mexico.

What does this mean for young people with disabilities, the educators who teach them and the developers of technologies for this market? An exciting new world of opportunities that should and must be seized. For young people with disabilities, "social media" offers ways to learn about and connect with the world in ways that have not been possible before. For the assistive technology field, social media offers opportunities to make better products and to get those products to the marketplace more easily on a global scale. As social media and the underlying technologies continue to grow, the market will expand as well. There is an unprecedented opportunity before the field of assistive and learning technologies. There are also numerous barriers. Educators and leaders from the assistive and learning technologies field must come together to address these barriers to take advantage of the opportunities of social media. The time is now.



National Center for Technology Innovation

Advancing Technology Innovations for All Students

OVERVIEW OF THIS BRIEF

The National Center for Technology Innovation (NCTI) advances learning opportunities for all students by fostering the development of technology innovation. NCTI promotes collaboration between researchers, developers, and innovators of assistive and learning technologies that reach into the lives of children with disabilities to improve their chances for academic success. In 2005, NCTI conducted a landmark study consisting of discussion with more than 100 key thought leaders in the United States about technology innovation and the future of technology in education for all students.⁴ In all of those extensive discussions, the subject of social media and other collaborative tools never surfaced, indicating that the application of these tools to assistive technology was under the radar.

Fast forward two years and the explosive growth of online communities and the use of blogs and wikis, and it is very much on people's minds. The evolution of this new, collaborative online environment has been rapid and pervasive, and people are struggling to understand and keep abreast of new developments. As a result, NCTI developed this brief to: 1) provide a primer on social media and how it works; 2) highlight the benefits of the new social media to enhance the educational experience of all students and especially youth with disabilities; and 3) explore the barriers to use of social media and the ways that developers and educators might overcome them. This document is not an exhaustive report on social media and the implications for the field. Instead, it is meant to bring the issues to the field and spark further discussion, research and action.

WHAT IS SOCIAL MEDIA AND WHAT ARE PEOPLE DOING WITH IT?

Social media is a term for a broad spectrum of technologies that allow users to serve as active participants on the Internet. Those who use social media tools are able to create, contribute to, or edit content, participate in online communities, and create and participate in collaborative projects. This explosion in participation of online content creation and distribution by millions of people has led some to call our times "The Golden Era of Participation" or "The Conversational Era."⁵ In 2006, the Pew Internet & American Life Project found that large numbers of Americans go online not just to receive content such as downloading music or getting information but also to interact with other people by reading and/or creating blogs, sharing their own creations such as original content, creating Web pages, and remixing and sharing files.⁶ In addition to blogs, social media also include social



networking sites, discussion boards, vlogs, news aggregation, photo sharing, social book marking, video sharing sites, virtual reality, and gaming (see the Glossary).

If the vehicle is social media, the highway is higher-speed broadband connections and the spread of mobile Web applications. Broadband allows for more powerful uses of the Internet to do things such as upload and download pictures and music tracks and stream audio, videos and movies – simultaneously. The following Pew data demonstrates the many uses of home broadband by Internet users.

Percent of internet users who <u>ever</u> engage in the following online activities (from any location)			
	All Internet Users	Home Dialup	Home Broadband
Send or read email	91%	90%	95%
Look for information about a hobby or interest	83	78	89
Get news	72	61	79
Do any type of research for your job	51	42	57
Look for information on Wikipedia	36	26	42
Look for religious or spiritual information	35	34	37
Read someone else's online journal or blog	29	21	34
Take material you find online and remix it into your own artistic creation	17	11	19
Create or work on your own online journal or blog	12	12	13
Make a phone call online	9	3	11
Create an avatar or online graphic representation of yourself	9	5	11

Source: Pew Internet Project February-March 2007 survey of 2,200 adults; 966 were home broadband users

In 2007, nearly one-half of all Americans have broadband access at home. ⁷ Forrester Research predicted that nearly 71 million households – over 67 percent - in the U.S. will have broadband access by 2010. Along with this rise in broadband access, digital content is expanding at a rapid pace into the mobile, wireless arena with the cellphone emerging as the device of choice for Internet access – creating “the connected age.”⁸

In the U.S. there are over 200 million cellphone subscribers, 40 percent of whom use text messaging, in fact, there were 32.5 billion text messages sent in the last half of 2005. A recent report⁹ documents that



National Center for Technology Innovation

Advancing Technology Innovations for All Students

more than 34.6 million people accessed the Internet via their wireless devices in June 2006. By 2009, every U.S. mobile subscriber will be able to send and receive short text messages and 98 percent of phones will be Web-enabled. With the growth of the mobile Web, developers of assistive and learning technologies, as well as other NCTI stakeholders, must recognize that products and technologies developed without a mobile interface will quickly become obsolete.

THE SHIFT ONLINE

For professionals in all fields, including educators, new social media technologies are emerging at such a rate that it is becoming difficult to stay ahead of the full range of online communication and collaborative tools. Even those who are developing these technologies find it difficult to keep up with new applications. A prominent researcher observed that, “The pace of change in the technology marketplace challenges scholars and practitioners to maintain their currency in the discipline of special education technology.” He identifies the central challenge of “managing the information explosion.”¹⁰

Most relevant to youth with disabilities and the educational community is the reality that the Web is now a participatory environment that permits engagement of all youth in community building without geographical boundaries. Use of the Internet has become the norm in American life. Today, an overwhelming number of youth and adults are online, and the Internet is a vast communications exchange that is dominated by social media used by youth, adults, and seniors.¹¹ A recent study by the Pew Internet & American Life Project (referenced in the text box below) noted that online social networking sites where users can create profiles and build personal networks that connect them to other like-minded users have “rocketed from being a niche activity into a phenomenon that engages tens of millions of Internet users.”

YOUTH WITH DISABILITIES NOT ENGAGED WITH SOCIAL MEDIA

Unfortunately, not enough young people with disabilities have been able to participate in the use of social media. As the text box below (“Disabilities in the U.S.”) indicates, the millions of youth with disabilities in the U.S. have less access to Internet resources at home than their peers without disabilities. The reasons for this digital divide are not well-documented but clearly reflect the employment and income gap among youth and adults with disabilities and the lagging accessibility of much of the Web.



Social media facilitates the building of social networks where users build and interact online with people who share interests and activities. Those in the field of assistive and learning technology need to understand the power of social media in reaching young people with information, services, or products. Social media opens a whole new world of increased interaction and learning for youth with disabilities.

EDUCATORS HAVE NOT TAPPED SOCIAL MEDIA FOR LEARNING

Despite the fact that most schools already have in place the basic technology to promote access to rich online experiences, based on data gathered by the U.S. Department of Education,¹² the educational system has been reluctant to take full advantage of the trend.

A groundbreaking study conducted by Grunwald Associates, in cooperation with the National School Board Association,¹³ observed that 96 percent of students with online access say that they have used any social networking technologies and that it is a part of their educational experience. Among those surveyed who use social networking, almost 60 percent report talking about education topics online, and more than 50 percent talk specifically about schoolwork. In addition, teachers routinely assign homework that requires use of the Web. Yet, the Grunwald report finds, “school policies indicate that many are not yet convinced about the value of social networking as a useful educational tool or even as an effective communications tool.” The report recommends that educators explore and find ways to harness the educational value of social networking, reexamine social networking policies, and encourage social networking companies to increase educational value by developing services that are explicitly educational in nature.

According to Former U.S. Education Secretary Richard Riley, the 10 jobs most in demand in 2010 did not exist in 2004. What this means is that our educational system has to prepare young people for careers using technologies that have yet to be invented. They will have to solve problems that we do not know yet are problems.¹⁴ A recent businessweek.com article noted that educators in American public schools are becoming aware that children may not be adequately prepared to compete in a global economy. The article cites the 2003 Trends in International Mathematics and Science Study which says that eighth graders in the US ranked 14th in math and eight in science out of 35 countries listed in the study. As one superintendent noted in this article, her students aren’t just competing with



other school systems around the state, they are competing with India, China, Japan and other countries around the world.¹⁵

These trends hold great import to NCTI stakeholders. These technologies can be great equalizers. Youth with disabilities, already at risk for being left on the educational and social sidelines, can, through social media and these new communications technologies, connect with the world in ways that have not been possible before. Consider Brigadoon, an island developed in Second Life by a researcher, as a haven and virtual support group for users with Asperger's Syndrome (see <http://braintalk.blogs.com/brigadoon/>) or the collaborative efforts to make multi-user games accessible to gamers who are visually impaired (see www.game-accessibility.com). Despite these strong signs of possibilities, the potential for youth with disabilities has yet to materialize for most.

Disabilities in the U.S. (Text Box)

According to data gathered by The Children's Partnership:

- 8.4 percent of youth under 15 years old have a disability, and 10.5 percent of young people ages 15 to 24 have a disability¹⁶
- Of 72.3 million families counted in Census 2000, almost one third had at least one family member with a disability¹⁷
- Roughly 6.6 million youth, or 13.7percent of students enrolled in public schools nationwide, are served under the Individuals with Disabilities Education Improvement Act (IDEA)¹⁸
- It is estimated that almost half of all youth who receive services through IDEA have a specific learning disability¹⁹

Disabilities and Access to Technology:

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

- Only 44percent with disabilities had a computer at home, compared to 72 percent of those without disabilities;
- Only 38percent of those with disabilities had access to the Internet at home, compared to 64 percent of those without disabilities; and
- Only 24.3 percent of those with disabilities use the Internet at home, compared to 50.5 percent of those without disabilities.²⁰

Source: "Helping our Youth with Disabilities Succeed: What's Broadband Got to Do with It (2007, July), The Children's Partnership, Digital Opportunity for Youth, Issue Brief No. 2.



National Center for Technology Innovation

Advancing Technology Innovations for All Students

Nearly Half of All Americans Have a Home Broadband Connection (Text Box)

In a survey of 2,200 adult Americans conducted in February and March of 2007, the Pew Internet and American Life Project found that:

- 47 percent of all adult Americans have a broadband connection at home as of early 2007.
- Among individuals who use the Internet at home, 70 percent have a broadband connection while 23 percent use dial-up.
- Home broadband adoption in rural areas, now 31 percent, continues to lag high speed adoption in urban centers and suburbs.
- Internet usage in rural areas also trails the national average; 60 percent of rural adults use the Internet from any location, compared with the national average of 71 percent.
- 40 percent of African Americans now have a broadband connection at home, a nine-percentage point increase from early 2006.
- Since 2005, the percentage of African American adults with a home broadband connection has nearly tripled, from 14 percent in early 2005 to 40 percent in early 2007.

Source: Home Broadband Adoption 2007 (2007, June), JB Horrigan, Pew Internet & American Life Project, Washington, DC.

Social Networking: What are Our Youth Doing Online? (Text Box)

The Pew Internet and American Life Project reports that social networking services provide public and private and communication tools. This feature permits users of a social networking site to send private messages and to communicate in a public way within the social networking space. For instance, users can post to each other within the system – a sort of internal email – and fully 82 percent of social networking site users have used this feature. A user can post messages to a friend’s page or wall, send a bulletin or group message to a user’s network, post comments to a friend’s blog, or give e-props, “pokes” or kudos by posting small icons to a friend’s page. Posting a message to a friend’s profile, page, or “wall,” is the most popular way of communicating on a social networking site. More than 4 in 5 social network users (84 percent) have posted messages to a friend’s profile or page. The Pew data indicates that three out of four online social network users have posted a comment to a friend’s blog, and more than six in ten (61 percent) social network users have sent a bulletin or group message to all of their friends in their online social network.

Source: Social Networking and Teens: An Overview (2007), A. Lenhart and M. Madden, Pew Internet & American Life Project



National Center for Technology Innovation

Advancing Technology Innovations for All Students

SEIZING THE OPPORTUNITY BY OVERCOMING THE BARRIERS

Educational technologies are under attack with weak support and poor school system infrastructure to support their use and little reliable data to counter negative press. A [report to Congress](#)²¹ issued by the U.S. Department of Education found that the use of certain educational software programs to help teach reading and math did not lead to higher test scores after a year of implementation. While the report's authors said it was premature to draw any conclusions from the research, the ensuing publicity created a backlash against school technology in many communities. Challenges to the effectiveness of educational technologies, lack of champions for school technology programs, and inadequate support and funding at the school system level creates a range of difficulties. Vendors find it difficult to locate and present relevant assistive and learning technologies to appropriate decision makers in the school system. Without guidance, teachers and administrators must wade through and choose from a multitude of currently available applications with little evidence that their choices will enable students to access and maximize their use of online technologies.

An inadequate, "old school" paradigm that places decision making in the hands of teachers and administrators and fails to involve and engage youth – who are avid users and supporters of social networking technologies – in their use. The educational community has an opportunity to tap into a vast audience of students who already have an investment in and motivation to use innovative technologies. Currently, there is little support at the school system level and a dearth of programs to engage youth in social networking sites and in "communities of interest" that will permit them to participate in local, national and world affairs.²²

Technical issues ranging from inadequate software applications to lack of access to innovative technologies such as broadband required for students with disabilities for both general educational purposes and for access to social networking services. Many Web applications are inaccessible and thus limit participation by youth with disabilities. For example, currently most multi-user games are not compatible with assistive technology used by individuals with visual impairments or are captioned for the hearing impaired. On the technology access front, the Children's Partnership found that while technology can open new doors for youth with disabilities, these youth often lack the access and support they need to put the technologies to use, see the text box below for the recommendations from this report.²³



National Center for Technology Innovation

Advancing Technology Innovations for All Students

Children’s Partnership Champions Broadband Access for Youth with Disabilities

Key recommendations for using deployment of broadband to improve the quality of life for young people with disabilities through the wise deployment of these technologies include:

- Promote Access to Affordable Broadband Everywhere.
- Enforce Existing Laws and Educate the Public About Them.
- Deepen the Research on Broadband’s Value for and Impact on All Youth.
- Ensure Access to and Training with Accessible and Assistive Technologies.

Source: Helping our Youth with Disabilities Succeed: What’s Broadband Got to Do with It (July 2007), The Children’s Partnership, Digital Opportunity for Youth Issue Brief, No. 2.

ACHIEVING THE PROMISE

Become part of the policy dialogue to make broadband widely available to youth with disabilities to ensure ease of use and accessibility and explore ways to improve access to educational technologies and social networking services on mobile devices. NCTI stakeholders should seize opportunities to educate and inform public and private funders and policymakers about technology trends and implications through public forums, dialogues, and participation in review boards and policy feedback sessions.

Seek opportunities to invest in public and private partnerships that support research, development, and marketing of innovative technologies to youth with disabilities for educational purposes. For NCTI stakeholders, there is a significant opportunity to approach foundations and other private sources of funding with emerging research and information about the importance of engaging youth in and giving them access to interactive online resources including social networking tools.

Engage the educational community in learning how teachers can use innovative technology tools to improve their own productivity and engage their students in learning. This task includes providing educators and support personnel with compelling and engaging sites designed to ensure sustainable utilization of online resources and tools. For examples of sites designed for teachers to share resources, see [Intellitools Teacher Exchange](#) and the [Community Learning Grids](#) that support Clicker5 from Cricksoft. See an example of schools using new media to address a common problem –



National Center for Technology Innovation

Advancing Technology Innovations for All Students

long commutes in rural districts – in the [Aspironaut Initiative](#) that equips school buses with wi-fi, laptops, and iPods for mobile learning and networking.

Build on successful interactive experiences that have proven successful as “kid-driven technologies” in appealing to the youth market. One approach is to engage youth directly in the classroom through using online technologies that involve youth through interactive games or active participation in educational process. For an example of the latter, see Generation Yes: Youth and Educators Succeeding at <http://genyes.org>. This organization provides youth the opportunity to improve their education through technology with a model for adding students to the school’s technology plan and promoting its Generation TECH program as a way of creating a sustainable student-run tech support program.

CONCLUSION

Social media are becoming mature technologies that provide NCTI stakeholders with significant opportunities to heighten the role of assistive and learning technologies in educational settings. Given the strong support of youth for use of technology tools and services, it is critical for leaders to address barriers via the collaborative development of technologies that will serve youth with disabilities in the classroom and in the school-based use of social networking services. Notably, social networking services provide new ways to engage students in rich, interactive learning experiences and in becoming active citizens and participants in local, national, and international affairs. Those who serve the educational community have a unique and historical opportunity to use new technologies to improve access by youth with disabilities to online resources and widely-adopted mobile devices; to promote and create visibility for assistive and learning innovations; and to equip teachers and caregivers to harness the power of “kid-driven” technologies and to share knowledge and experiences with others across the nation. The opportunities for the field of assistive and learning technologies have never been better. The challenge is to take advantage of them and seize the opportunities for the future.

This draft was prepared by Moira Saucer, Tracy Gray, Heidi Silver-Pacuilla, and Elizabeth Wainger.



Glossary – Social Media and Related Terminology

For the purposes of this review, “**Social Media**” or “**New Media**” is Internet media with interactive properties that enable users to participate directly in a wide array of online activities from creating, exchanging, and commenting on content.²⁴ The following are definitions of common terms, examples of social media applications with widespread use, and linked Web pages.

A **wiki** is computer software that allows users easily to edit, create and link Web pages. Wikis are often used to create collaborative Web sites and power community Web sites.²⁵ In schools teachers and students are using password protected wikis to create their own textbooks and resource sites.²⁶ **Example:** Wikipedia

A **social network service** focuses on the building and verifying of online social networks for communities of people who share interests and activities, or who are interested in exploring the interests and activities of others, and which necessitates the use of software. Most social network services are primarily Web based and provide a collection of various ways for users to interact, such as online chat, text messaging, email, blogging, and so on.²⁷ **Examples:** MySpace, Facebook and LinkedIn

Online chat can refer to any kind of communication over the Internet, but is primarily meant to refer to direct one-on-one chat such as a discussion between two people or text-based group chat using tools such as instant messaging applications.²⁸ **Example:** Yahoo Instant Messenger

Text messaging, or **texting** is the common term for the sending of "short" (169 characters or fewer) text messages, using the Short Message Service, from mobile phones. It is available on most digital mobile phones and some personal digital assistants with onboard wireless telecommunications.²⁹

Blogs are online content that provide commentary or news on a particular subject; others function as more personal [online diaries](#). "Blog" can also be used as a verb, meaning *to maintain or add content to a blog*.³⁰

Rich Site Summary (RSS) is a technology that allows educators to subscribe to “feeds” of the content that is created on the Internet, whether it is written in a Web log or more traditional newspapers and magazines.³¹

A **vlog** (video log) is a blog that comprises video. Regular entries are typically presented in reverse chronological order and often combine embedded video or a video link with supporting text, images, and other metadata. Vlogs also often take advantage of Web syndication such as RSS to allow for the distribution of video over the Internet.³²

Peer-to-peer video sharing is a basic service used for video sharing that allows one Internet user to share with others a video stream or photos or files.³³ **Example:** YouTube and Teacher Tube



An **aggregator** provides a consolidated view of the content in a single browser display or desktop application. A news aggregator collects syndicated Web content such as news headlines for easy viewing.³⁴

Examples: Digg, Reddit and Stumbleupon

Online games are computer or video games played on the Internet or over a computer network. They are typically multiplayer games, the largest comprising of thousands of people from across the world; however many single player Web games do exist.³⁵ **Example:** World of Warcraft

Photo sharing is the publishing or transfer of a user's digital photos online, thus enabling the user to share them with others (whether publicly or privately). This functionality is provided through both Web sites and applications that facilitate the upload and display of images.³⁶ **Example:** Flickr and Zoomr

Virtual reality (VR) is a technology which allows a user to interact with a computer-simulated environment, be it a real or imagined one. Most current virtual reality environments are primarily visual experiences, displayed either on computer screen or through special stereoscopic displays, but some simulations include additional sensory information, such as sound through speakers or headphones.³⁷ **Example:** Second Life

Social book marking is a way for Internet users to store, organize, share and search bookmarks of Web pages; users save links to Web pages that they want to remember and/or share, often using informal tags to organize their bookmarks. Social book marking sites allow teachers and students to build specific subject resource lists that they can easily share when using RSS.³⁸ **Examples:** del.icio.us, Furl.net



Endnotes

- 1 Information Week, July 11 2005
- 2 <http://www.businessweek.com> Oct 17 article
- 3 Shift Happens video, <http://thefischbowl.blogspot.com/2006/08/did-you-know.html>, 2007
- 4 National Center for Technology Innovation (2006, January) , Moving Toward Solutions: Assistive and Learning Technology for All Students. (Washington D.C.: American Institutes for Research.
- 5 Steve Rubel is credited with the term the "Golden Era of Participation." For a goldmine of perspectives on the current online environment, see <http://www.micropersuasion.com>. Robert Scoble and Shel Israel refer to the "Era of Conversation " in their book Naked Conversations: How Blogs are Changing the Way Businesses Talk with Customers (Hoboken, New Jersey: John Wiley and Sons, Inc: 2006), For a broad overview on the significant impact of social media on business in America, see :Wikinomics: How Mass Collaboration Changes Everything by Don Tapscott.and Anthony D. Williams (Portfolio, New York: New York City, 2006)
- 6 Pew Internet & American Life Project, "Internet Activities (http://www.pewinternet.org/trends/Internet_activities_4.26.06.htm)
- 7 Pew Internet & American Life Project, Home Broadband Adoption 2007 (2007 June), by John B. Horrigan, Washington, DC.
- 8 See Communities Dominate Brands by TT Ahonen and A Moore (London, futuretext Ltd, 2005).
- 9 See www.telephia.com
- 10 2003 in review: A synthesis of the special education technology literature, by D. Edyburn (2004)., Journal of Special Education Technology, vol 19, (4), 57-80.: <http://jset.unlv.edu/19.4/edyburn/first.html>
- 11 How the Internet is Changing Consumer Behavior and Expectations Rainie, L. (May 2006), Speech to SOCAP Symposium (Society of Consumer Affairs Professionals in Business) Washington, DC.
- 12 Internet Access in U.S. Public Schools and Classrooms: 1994-2005" (Washington, D.C., U.S. Department of Education, 2005). This report provides trend analysis on the percent of public schools and instructional rooms with Internet access and on the ratio of students to instructional computers with Internet access. Included are data on the types of Internet connections, technologies and procedures used to prevent student access to inappropriate material on the Internet, and the availability of hand-held and laptop computers to students and teachers. The report also provides information on teacher professional development on how to integrate the use of the Internet into the curriculum, and the use of the Internet to provide opportunities and information for teaching and learning.
- 13 Grunwald Associates, LLC, in cooperation with the National School Boards Association, (2007), CREATING & CONNECTING//Research and Guidelines on Online Social — and Educational —Networking.
- 14 Shift Happens video, <http://thefischbowl.blogspot.com/2006/08/did-you-know.html>, 2007
- 15 Back To School 2.0 Businessweek.com Sept. 5, 2007
- 16 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>).
- 17 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>).
- 18 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).
- 19 10 United States Dept. of Education, Twenty-fourth Annual Report to Congress, (Washington, D.C.: GPO, 2002).
- 20 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>).
- 21 U.S. Department of Education, Institute of Education Sciences (2007) Effectiveness of Reading and Mathematics Software Products: Findings from the First Student Cohort, Washington, D.C.
- 22 Helping our Youth with Disabilities Succeed: What's Broadband Got to Do with It, The Children'sPartnership, Digital Opportunity for Youth Issue Brief, No. 2, July 2007.
- 23 Helping our Youth with Disabilities Succeed: What's Broadband Got to Do with It, The Children'sPartnership, Digital Opportunity for Youth Issue Brief, No. 2, July 2007.
- 24For a discussion of social media vs. traditional media (newspapers, magazines, books, television, radio) see Robert Scoble's "Scobilizer": <http://scobleizer.com/2007/02/16/what-is-social-media/>
- 25 See "Wiki," in Wikipedia: <http://en.wikipedia.org/wiki/Wiki>
- 26 See Blogs, Wikis, Podcasts and other Powerful Web Tools for Classrooms, W. Richardson (Thousand Oaks, California: Corwin Press: A SAGE Publications Company, 2006)
- 27 See "Social network service," in Wikipedia: http://en.wikipedia.org/wiki/Social_network_service



National Center for Technology Innovation

Advancing Technology Innovations for All Students

28 See "Online chat," in Wikipedia: (http://en.wikipedia.org/wiki/Online_chat)

29 See "Text messaging," in Wikipedia: http://en.wikipedia.org/wiki/Text_message

30 See *Blogs, Wikis, Podcasts and other Powerful Web Tools for Classrooms*, W. Richardson (Thousand Oaks, California: Corwin Press: A SAGE Publications Company, 2006)

31 See *Blogs, Wikis, Podcasts and other Powerful Web Tools for Classrooms*, W. Richardson (Thousand Oaks, California: Corwin Press: A SAGE Publications Company, 2006)

32 See "Video Log," in Wikipedia: <http://en.wikipedia.org/wiki/Vlog>

33 See "Peer-to-Peer Video Sharing," in Wikipedia: http://en.wikipedia.org/wiki/Peer-to-peer_video_sharing

34 See "Aggregator," in Wikipedia: <http://en.wikipedia.org/wiki/Aggregator>

35 See "Online Games," in Wikipedia: http://en.wikipedia.org/wiki/online_games

36 See "Photo Sharing," in Wikipedia: http://en.wikipedia.org/wiki/photo_sharing

37 See "Virtual Reality," in Wikipedia: http://en.wikipedia.org/wiki/Virtual_reality

38 "Social Bookmarking," in Wikipedia: http://en.wikipedia.org/wiki/Social_bookmarking