Developing Online Community Accessibility Guidelines for Persons With Disabilities and Older Adults

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As online communities have become an important means of social interaction and community participation, ensuring their universal accessibility is essential for social inclusion. Although accessibility standards have been developed to make information-oriented Web sites more inclusive to users with disabilities and older adults, similar efforts have not been devoted to accessibility standards tailored specifically for online communities that are primarily communication oriented. Existing guidelines for Web site accessibility can be used as the starting point in designing accessible online communities for persons with disabilities and older adults, and public policy needs to play a significant role in ensuring the accessibility of the Web 2.0 environment. To ensure full accessibility of the online environment, however, it is necessary to move beyond guidelines that focus on one-way transfer of information and to develop guidelines for multidirectional communication. This article explores the social, policy, and developmental issues of the accessibility of online communities.

Keywords: policy; telecommunications; assistive technology/AT; civil rights

In the United States, 54 million people have a disability, while the number of persons with disabilities worldwide is more than 550 million, and that number will continue to grow as the baby boom generation ages (Jaeger & Bowman, 2005). Similarly, the number of Americans age 55 or older is increasing rapidly as a percentage of the total population (U.S. Census Bureau, 2000). At the same time that the numbers of older adults and persons with disabilities are increasing, the Internet has become an important—even essential—new platform for information and communication (Fox, 2006; Fox & Madden, 2005).

Persons with disabilities and older adults can be limited in their access to and use of this new information and communication platform by a wide range of factors from lack of ability to afford the hardware to accessibility problems with Internet service providers to Web browsers that are not compatible with vital assistive technologies (Fox, 2004; Fox & Madden, 2006; UCLA, 2003). As a result, persons with disabilities and older adults are much less likely to regularly use the Internet than many other populations (Jaeger & Bowman, 2005; Loges & Jung, 2001; Xie, 2003). This article will consider the issues in terms of both persons with disabilities and older adults because of the related barriers to access they face in the online environment and because the policy and technical solutions for removing barriers for both groups are interrelated.

Accessibility is the equal access to information and communication technologies (ICTs) for individuals with disabilities and older adults, and it is of utmost importance in the networked society. Accessibility allows users, regardless of the type of disability or age-related limitations they have, to interact with ICTs and their applications, such as Web sites, in a manner that is equal to the use enjoyed by individuals without disabilities or younger people. For ICTs to be accessible, they should (a) provide equal or equivalent access to all users and (b) work compatibly with assistive technologies such as narrators, scanners, enlargement, voice-activated technologies, and other assistive devices (Jaeger, 2008).

The U.S. federal government has created numerous laws related to the accessibility of ICTs and the online information environment in particular (Jaeger, 2004a, 2004b). Resulting government and industry accessibility standards have been developed to make relatively static Web sites more inclusive to users with disabilities and older adults so that these users can have easier access to information. However, similar efforts have not been devoted to accessibility standards tailored specifically for more interactive online communities where these users could easily communicate with each other.

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Online communities, or virtual communities, are social groups or networks that interact primarily or exclusively through ICTs. Although online communities can be non-Web-based (e.g., Usenet/mailing list–based online communities), this article focuses on Web-based online communities, which are linked through the Internet and often involve use of text, chat, social software, and other media to communicate and interact. Prominent online communities currently include Facebook, LinkedIn, MySpace, Flickr, Mixi, YouTube, and The WELL. “In June 2007, the world’s top three social sites (YouTube, MySpace, Facebook) attracted more than 350 million people to their Web sites” (OCLC, 2007, p. vii).

As online communities have become an important means of engaging in civic and community affairs and social interaction, particularly for persons whose interactions may otherwise be limited by disability or age (e.g., limited mobility), ensuring the universal accessibility of online communities will become essential for social inclusion. There are currently no identified best practices or directly relevant guidelines for accessible online communities, as existing Web site guidelines target primarily the information dissemination function of Web sites. The primary objective of these guidelines is to ensure that persons with disabilities and older adults can have equal access to the information presented on (information-oriented) Web sites.

In comparison, the primary focus of online communities is not information, but communication per se. Instead of relying on one-way information transfer, online communities feature primarily multidirectional interaction and information exchange among the users. As such, online communities can be considered as communication-oriented Web sites, rather than traditional information-oriented Web sites. Online communities are much like a “conversation,” in which “services are provided to individual users for them to build networks of friends and other groups (professional, recreational, and so on)” (Lankes, Silverstein, & Nicholson, 2007, p. 19). As a result, these existing policies and guidelines for Web site accessibility can be used as the starting point in designing accessible online communities for persons with disabilities and older adults, but they are insufficient to ensure the accessibility of online communities and their unique communication features.

Focusing on an area that has received surprisingly little attention, this article will first discuss the ways in which online communities can be beneficial to persons with disabilities and older adults. This article will then examine existing Web site accessibility policies and standards for persons with disabilities and older adults for lessons that can be relevant to the accessibility of online communities. The last section identifies key policy, social, design, and technical factors that should be taken into consideration as accessibility guidelines for online communities are developed. To ensure accessibility of the online environment, it is necessary to move beyond the information-oriented online environment that features mostly one-way transfer of information and to develop and implement guidelines for communication-oriented online environments that feature multiple-direction information flows. The primary goals of this article are to raise awareness of the unique issues of accessibility for persons with disabilities and older adults in online communities and to identify key considerations for future development and research.

**Potential Benefits of Online Communities to Persons With Disabilities and Older Adults**

The unique attributes of online communities and the forms of social interaction and networking that occur on them are attracting many users from diverse populations to create communities in the online environment (Maloney-Krichmar & Preece, 2005; Preece, 2000). The benefits of online communities can be present at the community, interpersonal, and individual levels (Xie, 2006). At the community level, online communities can have a positive impact on civic and political participation by facilitating civic and political discussions among citizens and between citizens and government officials in the online environment as well as involvement in voluntary organizations and community affairs in the physical world (Katz, Rice, & Aspden, 2001; Kavanagh & Patterson, 2001; Mack, 2004; Shah, Cho, Eveland, & Kwak, 2005; Weber, Loumakis, & Bergman, 2003; Wellman, Haase, Witte, & Hampton, 2001; Yang, 2003). At the interpersonal level, online communities can help individuals to develop and maintain social relationships and exchange various forms of social support, including emotional, instrumental, appraisal, and informational support (Lakhani & von Hippel, 2003; Preece, 1999; Ridings & Gefen, 2004; Turner, Grube, & Meyers, 2001). Research shows that active participation in online communities is associated with improved individual well-being (Chen & Persson, 2002; Furlong, 1989a, 1989b; Gross, Juvenen, & Gable, 2002; Shaw & Grant, 2002; Wright, 2000; Xie, 2007). An underlying notion of these social networking applications is personal trust among participants and a sense of value in receiving the opinions of others (Kelton, Fleischman, & Wallace, 2008).

These benefits of online communities are not limited to persons with disabilities and older adults, but they can be especially appealing to these individuals for a number of reasons:
First, online communities can help to form new relationships in new communities that would otherwise be physically impossible for many persons with disabilities and older adults as a result of physical limitations. Although many persons with disabilities and older adults may not be able to physically travel to get together, they can still interact in online communities (Guo, Bricout, & Huang, 2005).

Second, persons with unique disabilities may not know others with the same disability in their physical location. Online communities, however, provide the ability to build support networks with other people with the same condition, whether they are next door or thousands of miles away. Thus, online communities help to overcome not only physical but also geographical barriers. Also, the asynchronized feature enabled by online communities allows users to engage in social interaction and discussion at their own pace, which eases the burden on cognitive abilities (Kanayama, 2003).

Third, for persons with disabilities and for older adults, physical and cognitive limitations are not just physical and cognitive issues but social issues as well (Jaeger & Bowman, 2005). The support for dealing with these social issues can be found through the asynchronous and anonymous features enabled by online communities.

In short, online communities can help to overcome physical, cognitive, and geographical barriers that often inhibit the civic and social participation of persons with disabilities and older adults. All of these benefits that online communities can provide for older adults and persons with disabilities demonstrate the importance of ensuring the accessibility of online communities.

The potential importance of online communities for older adults and persons with disabilities has received some attention during the past two decades (Furlong, 1989a, 1989b, 1997; Kanayama, 2003; Wright, 2000). Existing studies of online communities for older adults and persons with disabilities, however, tend to focus on a limited number of topics, and to date issues related to the accessibility of online communities have received little, if any, attention. For example, a recent report (Redish & Chisnell, 2004) on online access for older adults does not once mention “online communities” or “social networks” in a 67-page text.

Fortunately, government and industry groups have developed guidelines for Web site accessibility, which present basic/foundational requirements for building an accessible online environment and thus can be used as the starting point in designing online communities that are accessible to persons with disabilities and older adults. Without these existing Web site guidelines, users with disabilities and older users may not be able to reach an online community in the first place (Jaeger, 2008).

However, to ensure equal access to online communities for these users, it is important that online communities are designed to offer ample opportunities for communication and social interaction among the users. Ultimately, to keep users, an online community must go beyond meeting the basic criteria as outlined by the existing guidelines for Web site accessibility.

Web Site Guidelines for Accessibility for Persons With Disabilities and Older Adults

The three most widely used sets of guidelines for Web site accessibility may be the Section 508 guidelines, the National Institute on Aging (NIA)/National Library of Medicine (NLM) guidelines, and the World Wide Consortium’s Web Accessibility Initiative (WAI) guidelines. The first two are guidelines developed by U.S. federal government agencies, while the third was developed by the private sector. Although some of these were developed specifically for persons with disabilities and others were developed specifically for older adults, these guidelines overlap and can be used to try to ensure Web site accessibility for both persons with disabilities and older adults.

These different sets of guidelines created to improve accessibility in the online environment were greeted positively when introduced, and at the time they dealt with the majority of then-current issues of online accessibility. For example, when the Section 508 guidelines for Web accessibility were announced, the National Council on Disability (NCD), the chair of the Federal Communications Commission, disability rights advocates, legal scholars, and even the president lauded Section 508 (Access Board, 2002; Kennard & Lyle, 2001; McLawhorn, 2001; NCD, 2001). Table 1 compares these different guidelines, their approaches, and the lessons for the development of accessibility standards for online communities. Individually and collectively, these guidelines can help build more accessible online communities to facilitate multidirectional interaction and communication.

Section 508 of the Rehabilitation Act, a federal law, focuses directly on making information accessible. The requirements of Section 508 for Web sites value content over presentation to ensure that all users can get to the information and service content on a Web site (Mueller, 2003). These technology-centric standards address the online needs of persons with visual, auditory, mobility, neurocognitive, and learning disabilities as well as the needs of persons with very specific conditions, such as seizure disorders. Nearly concurrently to the U.S. federal government beginning to develop the guidelines for
Table 1

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Section 508, the nongovernmental World Wide Web Consortium (W3C) began to establish its WAI. The WAI (http://www.w3.org/WAI) originated in 1997 and “represented a broad, international consensus among industry representatives, academic researchers, and members of the disability community” (Slatin & Rush, 2003, pp. 4-5).

The Section 508 guidelines and the WAI guidelines are the two most thorough and most commonly used sets of rules for creating accessible Web sites worldwide (Lazar, Beere, Greenridge, & Nagappa, 2003; Slatin & Rush, 2003; Witt & McDermott, 2004). The Section 508 requirements generally are more specific than the WAI checkpoints. However, with its checkpoints and self-assessment tools, the WAI may be much more user-friendly for those trying to implement accessible Web sites and likely offers better guidance to those trying to follow the standards (Slatin, 2001; Slatin & Rush, 2003).

Guidelines developed by the NIA and NLM (2001) are based on empirical research examining how age-related changes in cognitive, physical, and perceptual abilities affect computer use. Following these guidelines can lead to senior-friendly Web sites that accommodate the special needs of older adults (Morrell, 2005). Specifically, the four major requirements—providing readable text, presenting information in a way that is easy to understand, incorporating context-based media to facilitate information transfer, and organizing the Web site in a way that is easy to navigate—all help to facilitate the online information seeking and use of persons with disabilities and older adults. The research-driven approach that led to the NIA/NLM guidelines has an additional advantage over the Section 508 and WAI guidelines, as the NIA/NLM guidelines put the emphasis on the work that must be done by designers and developers instead of users and thus do not burden older adult users or those who have certain disabilities (Sloan, 2006).

From these different approaches to creating guidelines, six major lessons can be extrapolated for the development of effective, communication-focused accessibility standards. The guidelines developed should

- include users with a range of different disabilities and impairments;
- present very specific guidance for providing accessibility;
- be built on the broad consensus of developers, policy makers, and users;
- have an international focus, as Web site users come from around the world;
- be based on research; and
- emphasize building accessibility primarily built into sites.

As Table 1 demonstrates, these lessons are derived from the different areas of success of each set of information-focused standards.

Toward Accessible Online Communities

The key issue in designing online communities so that they are universally accessible to persons with disabilities and older adults is simply a matter of awareness. Many webmasters simply are not that concerned about or aware of the ways in which to make Web sites accessible (Lazar, Dudley-Sponaugle, & Greenridge, 2004). However, online communities will be truly inclusive communities only if they are designed to be accessible to persons with disabilities and older adults.

Building on Existing Policies and Guidelines

Existing policies and guidelines for Web site accessibility lay out the basic requirements for designing online communities that are accessible to persons with disabilities and older adults. The Section 508 guidelines emphasize
technical dimensions, whereas the NIA guidelines emphasize usability. The flexibility provided by the WAI guidelines might prove to be the most helpful for the jump from information accessibility to communication accessibility.

There are some key points in existing Web site accessibility guidelines that clearly remain important in the context of online communities. For example, it is as important for an information-oriented Web site as it is for a communication-based online discussion forum to work with the range of assistive technologies used by persons with disabilities and older adults and to incorporate features that allow users to adjust the size of the font or of the entire site and to control for contrast between font and background. Furthermore, the provision of content in multiple formats (text, audio, or even video) and ease of navigation are extremely important in any online context, as is ensuring that color is not used as the only means to convey content.

However, existing guidelines for Web site accessibility alone are insufficient to ensure the accessibility of online communities, as the focus of online communities is more on multidirectional communication than on one-way information provision. With the emphasis on communication, interactivity, and social networking, online communities present new frontiers in accessibility and unique challenges to universal accessibility for persons with disabilities and older adults.

Table 1 identifies six significant lessons from the information-focused accessibility standards that can be used to ensure effective communication-focused accessibility standards: thorough inclusion of all disabilities, very specific requirements, design based on consensus, international perspective, design based on research, and built-in accessibility of sites. Along with these major lessons, some specific accessibility concepts from the current guidelines can be expanded to meet the needs of persons with disabilities and older adults in online communities. These concepts include time, asynchronicity, multimedia, and built-in accessibility.

Time. The Section 508 guidelines, for example, note the need to allow sufficient time for users to complete forms to avoid negatively affecting users who are working slowly as a result of a disability. In an online community, the concept of not timing users out of forms needs to be expanded to cover all aspects of interaction so that users can take their time to complete site registration, compose a message to initiate or respond to a discussion, or simply enjoy being present.

Asynchronicity. Online communities should always incorporate asynchronous interaction formats so that users can have the option of participating in ways other than in real time. Features such as chat that occur in real time can be very difficult for users with a range of disabilities or with slower cognitive capacities. Synchronous discussions can be difficult for some types of assistive technologies, such as screen readers, to keep pace with. For individuals with cognitive impairments, keeping up with a synchronous discussion, much less participating in one, can still be quite difficult. In comparison, asynchronous discussions allow users to participate in the discussion at their own pace (Kanayama, 2003).

Multimedia. Despite technological developments that enable online audio and video interactions, existing online communities still rely predominantly on a text-based approach to communication and interaction. Although this approach can be an obvious advantage to, for instance, persons with hearing disabilities, relying on this approach alone can present a challenge to persons with some other disabilities that make it difficult to input or read the text. To overcome these input/output barriers, online communities can be designed with speech/text recognition features and can make use of audio and even video recording techniques so that users have the option of engaging in online discussions by using voice or image.

Built-in accessibility. If these accessibility features are built directly into online communities, then persons with disabilities and older adults will be able to be more actively involved in the community regardless of the assistive technologies that they are able to afford or install. For instance, if an online community has built-in voice-to-text and text-to-voice features, then users can convert the content into a more optimal format without having to use an expensive external screen reader or voice synthesis device. Although this requirement might at first add additional work for developers, it will also help to avoid potential technical problems involved in making the online communities compatible with assistive technologies.

Participatory Design and Developing Best Practices

Iterative design and testing that incorporates the participation of users is essential to the creation of an online information and communication tool that will be functional, usable, and accessible (Bertot & Jaeger, 2006). In terms of persons with disabilities and older adults, such input is particularly important because their special access needs are much harder for designers to identify and understand without the guidance of actual users (Jaeger, 2006a, 2008). Regardless of how they test the sites, designers are not likely to be able to anticipate all of the experiences and potential difficulties of diverse
users, particularly persons with disabilities (Gibbons, Peters, & Bryan, 2003). Designers should embrace inclusive values from the outset of design and create opportunities for users to participate in the creation of the online community from the outset. Without universal design, universal access cannot be achieved, as universal access inherently means designing, developing, and implementing ICTs to meet the needs of all users (Buhler, 2001; Goggin & Newell, 2000; Jacko & Vintense, 2001).

The first important element for guidelines for the development of universally accessible online communities is participatory design, which will not only ensure that the online communities are more accessible but also will empower users with disabilities and older users. Such input from users should be a continual process through the existence of the online community. The Web site should offer easy-to-find and easy-to-use mechanisms for providing feedback directly to designers and getting assistance in using the site if users encounter barriers to access.

Another major benefit to participatory design of online communities is that it will allow persons with disabilities and older users a direct voice in the development of best practices for online communities. As there are no established best practices in universal access to online communities, persons with disabilities and older adults can be directly involved in the creation of accessible sites that can serve as the basis for identifying and formulating best practices.

**Fostering User Trust**

To facilitate the use of online communities by persons with disabilities and older adults, it is important to build the online community in ways that can enable the formation and development of a sense of trust. People will be more likely to join and be involved in online communities that they trust. Individuals seek information mostly from within their established social networks, even when using communication technologies, because there is already a sense of trust of the information that will be provided (Burnett, Besant, & Chatman, 2001; Burnett, Jaeger, & Thompson, 2008). Altruism, social recognition, giving and receiving support, and simple enjoyment of social interaction are other strong reasons that people enjoy participating in online communities (Constant, Sproull, & Kiesler, 1996; Moreland & Levine, 2000; Wasko & Faraj, 2000, 2005).

To facilitate trust and other elements that build community, it will be important for the online communities not to be too intrusive when collecting information about members when they register and when developers are working with users or helping them through an access problem. Many persons with disabilities and older adults will be hesitant to disclose too much personal information that might reveal their impairments or infirmities. Building trust will also foster participation in the online community by persons with disabilities and older adults. Some people may wish to reveal aspects of their disability while remaining anonymous, whereas others may want to be openly identified as a person with a disability. People with disabilities will have different levels of comfort in sharing details about their disability with general communities and with communities comprised of persons with disabilities (Jaeger & Bowman, 2005). Designing online communities with options for whether to provide anonymity to users will facilitate trust and usage for many persons with disabilities and older adults.

**Addressing Public Policy Imperatives**

There are a great number of significant issues for persons with disabilities and older adults in relation to commonly used ICTs, with many of these issues being the result of a development process that did not account for the needs of all users (Jaeger, 2006b). A range of more proactive policy approaches, such as including public accolades, tax credits, and even negative incentives, could be used to encourage the development of more accessible ICTs generally (Jaeger, 2006b). However, considering the significant social benefits they can provide to persons with disabilities and older adults, access to online communities merits special attention in the arena of public policy.

As online communities become a more important forum for communication and social networking, the provision of equal access to online communities will grow in importance as an issue of public policy and social justice. As equal access to the information and services available on the Internet has come to be seen as a moral imperative requiring the implementation of laws, policies, and guidelines, equal access to online communities can be seen in a similar light. Online communities that do not provide equal access to persons with disabilities and older adults are effectively creating discriminatory practices about who has the ability to communicate online through social networks and online communities. Public policy clearly must work to ensure that online communication is equally accessible to all users.

Although the importance of the Internet for building communities and creating connections between persons with disabilities has been recognized for a number of years (Kennard & Lyle, 2001), little thought has been
given to these goals within public policy. Given the tremendous potential benefits for persons with disabilities and older adults offered by online communities and other forms of online communication, incorporating the ideas discussed above into policy and guidelines for design and implementation of online communities would be a significant step toward online inclusion. A good start would be a new version of the Section 508 policies and guidelines that have been updated for the Web 2.0 environment. However, as ICTs become increasingly essential to everyday activities, public policy needs to be created in a more proactive manner so that new developments in ICTs are designed to be accessible from the outset, rather than made accessible later. The Web 2.0 environment, perhaps, offers a good opportunity to begin reassessing the nature of disability policy about technologies and encouraging a shift in policy-making processes to focus on equal access in initial design and implementation of ICTs.

Conclusions and Future Research Directions

In learning from and building on the existing guidelines for online accessibility in the Web 2.0 environment, the key transition will be shifting from a focus on providing equal access to information to a focus on providing equal access to communication. Without equal access to the communication features of the Internet, there will be little equality in terms of meaningful access to opportunities and resources available via new technology. As Table 1 reveals, there are major lessons that can be learned from the greatest strengths of the current guidelines.

In moving forward, the most fundamental lesson is for policy makers and developers to be cognizant of the access needs of persons with disabilities and older adults and to try to account for these needs in the development, maintenance, and refinement of online communities and the accompanying polices and guidelines related to access to online communities. Bringing the perspectives of users with disabilities and older users into the process of development and policy making will greatly improve the provision of universal accessibility to all users.

There are also opportunities for researchers to help in the process of creating universally accessible online communities. The first important area of research is clearly the development of accessibility guidelines for online communities and other aspects of the Web 2.0 environment. Scholars can conduct studies of persons with disabilities and older adults to find out what barriers they currently face in accessing and participating in online communities as well as the features or requirements that they feel would help to provide equal access. Research can also explore what could be done to online communities to make participation more inviting to persons with disabilities and older adults.

The development of new features and technologies will help to ensure equal access for persons with disabilities and older adults. As noted above, there are certain types of features that could be built into online communities to greatly expand accessibility and could be an area of focus for developers who wish to expand the accessibility of online communities. There are also problems with existing technologies that need to be resolved. Live chat, for example, can be very difficult for users who rely on screen readers. Resolving these extant technical issues will be vital to bringing equal access to the Web 2.0 environment.

The process of making the online environment accessible has taken a great deal of time, and it is clearly unfinished work. Many corners of the Internet still have not come to terms with accessibility for online information even with existing guidelines to refer to. One of the most galling examples is e-government Web sites, which are supposed to comply with Section 508 guidelines yet still have very high levels of inaccessibility (Jaeger, 2006a, 2006b, 2008). And few e-government sites have any communication or social networking features like online communities. Clearly, the simple existence of policies and guidelines is not enough to ensure accessibility.

Ultimately, an Internet filled with online communities and other means of communication and social networking will need to focus on accessibility for persons with disabilities and older adults anew. Although the Web environment has been far from successful in providing universal accessibility to this point, there are many steps that can be taken by policy makers, developers, researchers, and users to ensure that online communities provide equal access to persons with disabilities and older adults.

References


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