

## Research In Focus: A Weekly Digest of New Research from the NIDILRR Community

### Logging In Can Be a Frustrating Task for Computer Users with Visual Impairments

*A study funded by the National Institute on Disability, Independent Living, and Rehabilitation Research (NIDILRR).*

An estimated 285 million people worldwide have a visual impairment, meaning that they have significant vision loss that cannot be corrected with glasses or contact lenses. To compensate for their vision loss when accessing computers, some people with visual impairments use assistive computer software such as screen-magnification software that allows users to enlarge text on the screen, or screen-reading software that reads text aloud. However, people who use assistive computer software may still have trouble accessing some websites or applications. For example, secure websites that require users to log in with a password may present navigational challenges for these types of assistive software. Those sites may use visual cues or input features that are not compatible with a screen reader or magnifier. In a recent NIDILRR-funded study, researchers observed people with visual impairments as they logged in to secure accounts on their computers and mobile phones. The researchers wanted to find out what challenges people with visual impairments experienced when logging in to secure accounts online, on their computers, or on mobile devices. They also wanted to find out what strategies users with visual impairments might have for making the login process easier.

Researchers from the [Disability and Rehabilitation Research Project on Inclusive Cloud and Web Computing](#) met with 12 adults with visual impairments for a study of how they use computer systems and authentication mechanisms like logins and passwords. All of the participants were between 40 and 80 years old. Four participants described themselves as having low vision, while the rest described themselves as blind. Most of the participants used screen-magnification software, screen-reading software, or both to access computers and mobile phones. The researchers met with each participant for 60-90 minutes at the participant's home, office, or a public library. The researchers first interviewed the participants about their experiences using technology in general. Next, they asked the participants to attempt to log in to their computer and then access various user accounts such as an email program or webmail, online banking or other commonly used E-commerce website, and social media. Finally, the participants were also asked to log into their mobile device. The researchers observed the participants' login attempts for each task as well as asked the participants to describe the process they used to access content on the web pages or programs and any problems they encountered when logging in.

The researchers found that the participants encountered several challenges when logging in to desktop and mobile devices as well as user accounts in programs and on websites. Some of the most common challenges included:

- Trouble finding the login area: Several of the participants reported difficulty finding the section of a webpage or program where they could enter their username and password. Sometimes this section was poorly labeled so that screen-reading software could not easily recognize it, or it was buried within other graphics and text on the page. Some of the participants also encountered problems if a website's format changed and the login area appeared in a different part of the site from previous sessions.
- Lack of feedback on login success: Some participants were unsure whether or not they had logged in successfully because the screen-reading software did not communicate when they had successfully logged in. Others found that they missed important error messages and were unsure why their login attempt had failed.
- Password masking: Some participants were frustrated when screen-reading software did not repeat the characters they typed because the password was automatically hidden by the website or program. For these users, the screen reader would not repeat the characters as they were typed, it would only say "star" for each character.

When asked how login systems could be made more accessible with modifications to devices, programs, and websites as well as to assistive software, the participants made the following recommendations:

- Make login areas easier to find: The participants suggested that login areas should be placed near the top of a webpage and properly coded, so they can be recognized by screen-reader software. They also recommended that screen-reading software developers add a keyboard shortcut command that a user can input to go directly to the login form on any webpage.
- Adding login verification alerts: The participants recommended adding code that prominently displays or announces a message when a user successfully logs in to a program or a website, or that alerts the user to specific login errors.
- Optional unmasking: A participant recommended having an optional box a user could check to unmask characters when typing in a password. This would enable the user to receive feedback of the typed characters from a screen reader or see them when using a screen magnifier, so they could quickly identify and fix any errors.

The authors noted that current login and authentication mechanisms can be difficult for people with visual impairments to use. Improving labelling and coding, providing confirmation messages, and creating keyboard shortcuts are examples of design solutions which could help address the difficulties observed in this study. The authors recommended that developers who focus on building secure systems should consider the accessibility challenges of users with visual impairments and how these difficulties correspond to the overall usability of login and authentication mechanisms. In addition, the authors noted that developers may wish to gather feedback from individuals with

visual impairments who use assistive software in order to evaluate the accessibility of new products and designs as they are developed.

#### [To Learn More](#)

The Great Lakes ADA Regional Center hosts a series of webinars on accessible technology. View archived presentations on a variety of technology-related topics: <https://www.accessibilityonline.org/ada-tech/archives/>

The Web Accessibility Initiative of the World Wide Web Consortium is an authoritative resource for designers, developers, evaluators, and advocates: <http://www.w3.org/WAI>

#### [To Learn More About this Study](#)

Dosono, B., Hayes, J., & Wang, Y. (2018) [Toward accessible authentication: Learning from people with visual impairments](#). IEEE Internet Computing, March/April 2018, 62-70. This article is available from the NARIC collection under Accession Number J78963.

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