Implementing Screen Readers in Public Libraries: A Necessary Step in Accessibility

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Visually impaired individuals experience disadvantages in various facets of their lives, including when they interact with digital and printed materials. Assistive technologies help the visually impaired by adapting visual information into a format that they can effectively understand, allowing the individual to interact with the information (Mishra, 2023). There are various assistive technologies that visually impaired individuals utilize daily, including screen readers, Optical Character Recognition (OCR) technology, screen magnifiers, braille displays, voice assistants such as Amazon's Alexa and Apple's Siri, and various mobile applications (Mishra, 2023; Southwell & Slater, 2013). Assistive technologies, specifically screen readers, should be accessible on public computers at public libraries. Many libraries already offer screen reading resources to patrons via the library's public computers (Jrose, 2024), however this practice needs to be adopted by *all* public libraries to allow the visually impaired equitable access to library collections and other resources.

Those with visual impairments must interact with computers differently than the sighted population. They do this through the use of screen readers. Screen readers are software programs that use a speech synthesizer, a braille display, or both to read text from the computer screen to the user (American Foundation for the Blind [AFB], n.d-b). A speech synthesizer is the device or software that converts the text into audible speech (AFB, n.d-c). A braille display, sometimes called a refreshable braille display, is similar in size to a traditional computer keyboard. It has different "braille cells" that raise and lower different combinations of pins to create various character combinations (AFB, n.d-a). In essence, a braille display is a dynamic tool that allows the user to 'read' what is on the computer screen using their fingertips, similarly to reading a braille book. The characters displayed on a braille display constantly refresh as the user moves

their cursor across the computer screen (AFB, n.d-a).

Rather than relying on a monitor and mouse to primarily interact with a computer, a visually impaired person uses a traditional keyboard or a braille display to input commands, telling the screen reader what to read aloud from the screen, or what actions to take to get the results the user is seeking (AFB, n.d-b; Southwell & Slater, 2013). Common simple commands include asking the speech synthesizer to read selected text from the screen, finding text on the screen, and locating the cursor on the screen and announcing it to the user. More complex commands include locating highlighted text or text of a certain color, reading on-demand from a predetermined part of the screen, interacting with website menus, using spell-check, and reading cells from a spreadsheet. There are various screen readers available for multiple operating systems (AFB, n.d-b). Use of a screen reader allows a visually impaired individual to interact with a computer in much the same way a sighted person would, providing them with more access to the world around them.

According to the International Federation of Library Associations and Institutions (IFLA), libraries serve as a "portal" for patrons to access information. In libraries, "lack of access to information is the biggest barrier" for those with print disabilities, including the visually impaired (IFLA Governing Board, 2012, p. 1). This is where public libraries come in. One way libraries fulfill this role as a portal is by providing patrons with access to computers and the internet. Although a somewhat outdated statistic, in fiscal year 2012, 99.5% of American public libraries provided patrons with public computers that could access the internet. At that time, there were a total of 271,146 public computers in public libraries across the nation (American Library Association [ALA], 2015). Public libraries already have the infrastructure and a majority of the hardware to provide screen readers for the visually impaired; they simply

need to invest in the software. This is a necessity for public libraries, as the prevalence of vision impairment continues to grow in the United States.

In 2018, more than 21 million U.S. adults were considered visually impaired, a number that has and continues to increase yearly (Kim, 2018). Alarmingly, as of 2014, a mere seven percent of the world's published material and less than five percent of books had been converted to a format digestible by those with visual impairments (Marlin, 2014; Tripathi & Shukla, 2014). Research on how visually impaired individuals access library services has found that these individuals are missing "total accessibility to electronic resources" when interacting with information service institutions (Abutayeh & Garcia-Orosa, 2021, p. 3). Although various guidelines have been put in place via the Americans with Disabilities Act (ADA), IFLA, and the United Nations Educational, Scientific, and Cultural Organization (UNESCO) to guarantee rights and equity to individuals with disabilities, there is still a "gap" in making technology accessible (Abutayeh & Garcia-Orosa, 2021, p. 3). The ability to use screen readers on public library computers would make resources more accessible for this population. A study done on visually impaired university students found that 75% of them experienced difficulty with using the academic library "due to the lack of computers with screen reader software" (Fatima & Kumari, 2017, p. 11). Although this study was done in an academic library, its findings show the importance of access to screen readers for library patrons, and has real implications for public libraries.

The World Health Organization (WHO, 2023) estimates that distance vision impairment is four times more prevalent in areas of low- and middle-incomes than in high-income areas. Those who are visually impaired and need assistive technologies may not be able to afford them, and their public library may be one of the few places where they can access free or reduced-cost

resources. Given that in 2015, 52% of individuals with an annual household income of $30,000 to $50,000 and 41% of individuals with an annual household income of less than $30,000 visited a library (Horrigan, 2015), it is quite likely that the visually impaired subset of the low- and middle-income population utilized a library that could have provided them access to an assistive technologies.

Providing patrons with access to screen readers would benefit not only the individual patrons, but also the public libraries providing these resources. At their core, public libraries are customer service institutions, and they cannot exist without patrons who utilize their services. The more patrons who utilize a resource, the more evidence a public library has that the resource is needed, and the higher likelihood the library will continue to receive funding for the resource. Moreover, screen readers can benefit a wide variety of patrons. They can be used by anyone who has sight difficulties, those who have a hard time looking at a screen for an extended period of time, and those who are neurodivergent or have different learning styles. By providing access to screen readers, public libraries show their patrons that the library is an open, accepting, and accessible environment for all patrons, regardless of their abilities or inabilities (Mishra, 2023).

Possibly the biggest argument against the use of screen readers in public libraries is the cost. Although most public libraries already possess the infrastructure to support screen readers, they may not have the budget to maintain a subscription to screen reader software (Mishra, 2023). Thankfully, there are options for free and open-source screen readers, such as Orca and Thunder Free. Additionally, some operating systems come with a screen reader standard, such as Apple's VoiceOver (AFB, n.d-a). There are multiple grant opportunities for public libraries who may wish to explore screen reader subscriptions, such as the Improving Access to Information Grant Program through the Library of Michigan and the Digital Humanities Advancement Grant

and the National Leadership Grants for Libraries from the Institute of Museum and Library Services (Institute of Museum and Library Services [IMLS] n.d.-a; IMLS n.d.-b; Library of Michigan, 2024). Taking advantage of free options and applying for grants make these vital resources more accessible for public libraries with limited funding.

There are also concerns about poor design of screen readers. Even if the software provides more accessibility for the visually impaired, it does not necessarily provide them with good usability (Kim, 2018). Software and websites are considered accessible if a disabled person "can equally perceive, understand, navigate, and interact" with them. This is not equated to the software or website having usability - being "effective, efficient, and satisfying" as the user interacts with it (Web Accessibility Initiative [WAI], 2016). Those who design screen reader software tend to focus on users *without* disabilities, despite the software mainly being used by disabled individuals. There tends to be a lack of user manuals or guides for this software that are accessible to the visually impaired. Typically these guides are created with "sighted users" in mind, although visually impaired individuals are primarily the ones using the software (Kim, 2018, p. 132).

There are known issues of screen readers being incompatible with websites and other technologies. Research has found that this is often due to delays in system updates (Kim, 2018). Often, screen readers will not integrate with websites because websites are not being created with accessibility in mind (Abutayeh & Garcia-Orosa, 2021). Although websites are often compliant with Section 508 of the United States Rehabilitation Act, they lack "user-friendliness" (Southwell & Slater, 2013, p. 36). In 2014, it was estimated that less than 20% of websites were usable by those with vision impairments (Marlin, 2014). This should not be a deterrent to providing this software to the visually impaired, and does not negate the need for these

accessibility aids. Simple adjustments to these tools, including easy-to-locate accessibility features, user-friendly manuals created with visually impaired individuals in mind, consistent user interfaces, and easily-followed troubleshooting steps can make a world of difference in making screen readers more user-focused (Kim, 2018). Seeing these areas for improvement in screen readers should be a call to action, rather than a discouragement, for software and web developers to make websites and assistive technology more accessible and usable for the visually impaired.

Despite concerns about the usability of screen readers, public libraries would be putting the visually impaired at an even greater disadvantage by not providing access to these resources. Vision impairment costs the United States alone an estimated $411 billion in lost productivity annually (WHO, 2023). If visually impaired individuals do not have quality resources and accommodations to help them fully participate in society, they will struggle to develop independence (Kim, 2018), and ultimately experience a lower quality of life. Indeed, current screen reader software is not perfect. However, as stated before, developers need to shift their focus to both accessibility and usability of this software and the websites with which it interacts. Although this software has its drawbacks, that should not deter public libraries from providing these vital resources.

Implementing screen readers in public libraries presents challenges and drawbacks. Despite this, public libraries are obligated to provide patrons with the tools that allow them to fairly and equitably access information and interact with the library's collection. Principle one of the ALA's Code of Ethics states "we provide the highest level of service to all library users through appropriate and usefully organized resources; equitable service policies; *equitable access* [emphasis added]; and accurate, unbiased, and courteous responses to all requests" (ALA,

2021). IFLA also provides guidance to libraries by encouraging them to "put in place services, collections, equipment, and facilities, which will assist individual users with a print disability to access and use resources to meet their particular needs for information" (IFLA Governing Board, 2012, p. 1). By making an intentional effort to embrace, encourage, and accept the visually impaired, public libraries can ensure that these individuals feel supported and honored in their quests for information (Tripathi & Shukla, 2014). It is a public library's duty to provide this life-changing technology to their visually impaired patrons, no matter the cost.

Screen reading technology, despite its possible drawbacks, offers countless benefits not only to individuals with visual impairments, but to a wider range of people who may experience eye strain from looking at a screen for too long, individuals with neurodivergence and differing learning styles, and more. If offered in public libraries, this technology has the potential to open doors that were previously closed for countless individuals. There are valid concerns about the usability and affordability of this technology. Thankfully, there are simple adjustments that can be made to improve the usability of screen reader technology, and it is available at nearly every price point. Public libraries are in a perfect position to offer this life-improving technology to those who need it most, and to improve not only the lives of those who directly use the technology, but also society as a whole.

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