

A Case for Making Web Accessibility Guidelines Accessible: Older Adult Content Creators and Web Accessibility Planning

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ABSTRACT

This paper presents our experiences supporting web accessibility planning among a group of older adult online content creators. We highlight challenges we encountered meeting the web accessibility informational needs of our partners and helping this group of creators become aware and put in place measures to address accessibility issues. Our reflections highlight opportunities for future efforts to improve web accessibility support for everyday content creators and support for helping those less familiar with web accessibility options.

CCS CONCEPTS

• **Human-centered computing** → **Empirical studies in accessibility**; • **Social and professional topics** → **Seniors**.

KEYWORDS

web accessibility, older adults, content creators, lay web users, participatory research

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1 INTRODUCTION

Ensuring equitable access to online content for older adults and people with disabilities is important for addressing disparities in the availability of online information and resources. Yet, much of the web is not accessible. Every day individuals use the Internet to address basic information needs, engage in work tasks, or connect with others; however, inaccessible content continues to be a barrier for some [24]. Creating accessible online content can be difficult [2, 3, 7, 11, 34], especially for everyday content creators (or prosumers) [9, 20]. For example, Yesilada and colleagues note that it is often difficult for those outside the accessibility community to

"understand, budget, plan, enact policy or conform" to accessibility guidance and requirements [34]. While guidance such as WCAG [14] exists for making online content more accessible, much of it is geared to expert users such as developers, designers, or computing students [11]. Therefore, it can be challenging for everyday content creators to understand how to provide accessible content to web consumers.

In this paper, we share our experiences partnering with a group of older adult content creators responsible for crafting and managing online content shared with their peers in independent living. Following an initial six-month formative design study of an internal resident website, we partnered with a group of older adults and staff to discuss strategies for addressing the accessibility concerns raised. We discuss our involvement in supporting web accessibility planning and reflect on the challenges we encountered meeting their web accessibility informational needs and helping this group of creators become aware and put in place measures to address accessibility issues. We discuss open opportunities to better support everyday content creators and web users in meeting web accessibility needs.

2 BACKGROUND AND RELATED WORK

Creating guidance to ensure that the web is accessible to all has been extensively studied in the accessibility community. For example, researchers have developed and examined the usefulness of web accessibility guidelines for addressing the concerns of people with disabilities [2, 3, 7, 11, 24, 34]. Several researchers have noted that accessibility policies and regulations are often not enough to ensure accessible websites [11] and even if a website meets the guidelines, some users can still encounter usability challenges [24]. While web accessibility guidelines often cater to web designers and developers, there have also been some efforts to also provide guidance to content creators [9, 17, 20]. Martín García and colleagues define these content creators as prosumers or the group of users that may not be formally trained in web design or development but are responsible for crafting user-generated content that is shared on the web [20]. For everyday content creators developing accessible web content can present additional challenges as they may not be formally trained in either web development or accessible design practices [20].

Like other web users, older adult users are also generating online web content for entertainment, social purposes, and in support of civic engagement [6, 8, 10, 18, 25–27, 31]. For example, Brewer and colleagues find that older adults are using online blogs to craft and create audiences for self-expression, engagement, and embracing growing older [6]. Waycott and colleagues found that older users of

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a photo-sharing application saw sharing photos in their network as a way of eliciting social interaction and promoting self-expression and social engagement [31]. Therefore, more and more older adults are crafting user-generated content to actively engage or share with their communities or peers. In this experience report, we introduce a case study of older adult content creators redesigning a resident website and our experiences partnering with them to improve the accessibility of the website for themselves and other residents in the community.

3 CASE STUDY: PARTNERING WITH OLDER ADULT CONTENT CREATORS FOR WEBSITE REDESIGN

For this case study, we partnered with staff and a group of older adults who volunteered to redesign an internal resident website used by other residents and staff to disseminate information about other residents, services, and resources in their independent living community. Residents conceptualized the website and manage it themselves as part of their civic participation in their community. The website serves as one way to help themselves and other residents acclimate to the community. For example, different resident committees create reports from meetings and share information with residents in the community on the website. The community newsletter is also created by residents and disseminated through the website, and residents upload the newsletter and other content to the website through a content management system provided by a vendor. However, as the website has become a more integral part of residents' daily activities over time, usability and accessibility challenges make it difficult for some to use, which led to the design partnership discussed in this paper.

3.1 Initial Study Findings: Usability and Accessibility Challenges Experienced By Residents

To explore the challenges with the current website, we partnered with the staff and residents to evaluate and redesign the resident website. We conducted a set of online surveys and on-site focus groups (pre-COVID-19) and followed with ongoing participatory design and exploration of potential solutions as in the accessibility planning presented in this paper. In total, 144 participants shared feedback across online surveys or focus groups/interviews.

Through online surveys and focus groups/interviews, we found that residents appreciated being able to access information and services online and felt the website was useful for facilitating communications, social interactions, and civic participation within the independent living community. However, over time, the website's navigational structure had become complex, causing interactions to become more challenging (See Table 1). Many of the residents providing content for the portal did not have expertise in interface or accessible design. Because of the limited access they had for reorganizing the website's structure, some usability and accessibility issues emerged for residents with and without disabilities. One resident with a limited vision shared, *"When I first heard about the website, which was fairly recently, I looked at it, and I could not read one thing because I'm [legally] blind, and my vision is very limited. I*

know the things I would love to have on it, but I cannot see it, and unless there's an audio accompaniment, it does me absolutely no good." Another resident, P2, shared, *"Your accessibility people. This is not an accessible website ... It doesn't comply with any accessibility models. None. Because the homepage is so big, if you zoom on the homepage, it becomes totally unusable. There has to be something else to do."* A member of the accessibility working group who advocates for accessibility and accommodations within the community shared: *"My main issue is that I am legally blind, as I was expressing to these ladies before. For starters, the information that they're presenting on the screen and so on is not visually accessible to me. They are aware of that, and I harangued them with that, whatever it may be, and I also gave them a sheet pointing out some of the concerns of some of our residents who have visual issues. Maybe some not quite as extreme as mine, but maybe worse. A need for larger type font print, good contrast, black on white, white on black, good font size, a minimum of 16 to 18, but to use enlarged print and spacing should not be congested and crowded to the extent possible. Hopefully, on the website, I believe there is more room for that."* P31

Other groups of residents that did not self-report diagnosed disabilities also shared accessibility concerns, particularly with being able to view content. For example, some residents with and without disabilities discussed challenges related to selecting items on menus (e.g., hand-mobility changes) that made using the website more challenging. Residents also discussed sometimes it was difficult to view text and we learned through our interactions with residents that they were also unaware of the built-in accessibility features in the browser or in supporting software (e.g. using CTRL ++ to magnify text or using the zoom feature in PDF software) that might address some of their concerns. For example, in one focus group, participants who did not self-report a disability inquired about increasing the font size of text presented in the browser.

P32: Is it possible to enlarge the font or blow it up for a person watching or looking at it?

Researcher 2: As for home page and as for the website the only thing that is currently available are these two zoom in and zoom out buttons. So if you press on-

P32: How effective is that?

Researcher 2: [researcher demonstrating built-in zoom in and out in browser] If you press on the plus sign it will zoom in and then if you press on the minus sign it will zoom out. Every browser that you use will have if you go on the top right, the three dots are settings in any browser, and if you click on that they do have an optional zoom in and zoom out. So even with yours, you can zoom into the website or zoom out of the website. Current options are these two.

P29: Again, I know about that, but I suspect that a lot of people are pretty unaware about that.

P32: Yeah, I didn't know about that.

In summary, we found that while the website was useful for many residents, it was difficult to use overall, but particularly for some residents with disabilities. Therefore, following surveys and focus groups, we, in partnership with a small resident committee of about ten older adults and technical staff, begin to explore solutions for the accessibility challenges discussed by residents in the initial study.

Table 1: Usability and Accessibility Mentions from Thematic Analysis

Phase	Usability and Technical Issues	Finding Information	Interface Design	Out-of-Date Information	Accessibility
Questionnaire	70	79	22	29	7
Focus Groups/Interviews	45	144	72	17	24

3.2 Web Accessibility Planning: Exploring and Recommending Potential Solutions

As a first step in the planning phase (Phase 2), we reported and presented the issues found in surveys and focus group/interviews and findings from initial walkthroughs of the website conducted in preparation for the study. We also provided recommendations based on the Web Content Accessibility Guidelines (WCAG) [14] to help residents express their concerns to the vendor that provided the content management system for the website. We provided a description of participants’ experiences while highlighting our findings that some participants were unaware of built-in accessibility features, that some participants with visual disabilities may not use screen readers, and that there were both participants with disabilities and limited digital literacy that would like to use the website. We also discussed the specific challenges raised by participants with vision impairments who participated in focus groups. Based on their feedback, we made suggestions for focused investigations with different subgroups of residents to better understand specific barriers and concerns. Our final group of recommendations focused on PDF accessibility challenges highlighted by consumers and residents that provided content for the website.

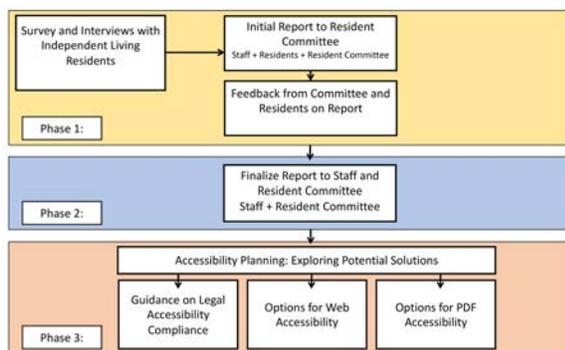


Figure 1: Accessibility Planning

Based on the recommendations provided, we decided on an initial three-prong approach for addressing usability and accessibility issues (Phase 3). We would partner with a small group of residents to redesign and address the usability and accessibility challenges that could be addressed through visual and interaction design (e.g., rethinking menu structure, button/link size, navigation, information presentation, color schemes). We acknowledged and discussed that visual and interaction design challenges alone would likely not

address all the accessibility challenges brought up by participants. Therefore, as a second step, we would assist in exploring strategies for meeting WCAG guidelines. Third, we explored options for PDF accessibility as many residents that were content creators relied on PDFs to share content.

4 REFLECTION OF CHALLENGES ENCOUNTERED

In this section, we reflect our experience partnering to put the initial plan into action and the specific challenges we encountered in supporting web accessibility planning efforts.

4.1 Challenge 1: Finding Comprehensive Web Accessibility Information Sources that Cater to Lay Individuals

After reviewing our report and recommendations, the resident committee and staff requested guidance for learning about web accessibility and the implications having an inaccessible website might have on residents more broadly. While our study included a good representation of residents with varying abilities, the committee and staff expressed interest in learning how it might impact other groups of residents that did not participate in the studies. To accommodate, the research team provided the staff and committee with links to publicly available resources that provide an introduction to web accessibility, including WebAIM (<https://webaim.org/>) and W3C’s Web Accessibility Initiative (<https://www.w3.org/WAI/>) that had summaries explaining the impact of web inaccessibility. We also provided additional information about the Web Accessibility Content Guidelines (WCAG), which we used to inform the recommendations we shared in the report at the request of one resident that had attended a workshop that discussed WCAG. However, residents requested a more summarized description in lay terms and a summary of policies related to web accessibility. Finding a comprehensive overview of web accessibility guidance that included both history and the basics of web accessibility in layman’s terms proved to be difficult. We, therefore, elected to create a customized summary created from a combination of materials used in the first author’s courses merged with the content provided previously. The updated summary seemed to meet our partners’ needs but raised questions of whether formal guidelines might be helpful in these situations in the future.

4.2 Challenge 2: Helping Residents Learn About Their Individual Web Accessibility Needs

To address some of the visual and interaction design challenges found, HCI students worked one-on-one in partnership with the resident team to iteratively redesign the website to integrate specific changes from the committee and other residents. Using this approach, we addressed some of the challenges with navigation and visual design that residents discussed in our studies. However, because the residents used a tailored content management system (CMS) provided by a vendor to manage the website, we also met to discuss options for ensuring that the website meets WCAG guidelines moving forward. Given that the residents providing and managing content may or may not have prior experiences as web designers or developers, in the end, the organization chose an automated accessibility tool that uses a hybrid artificial intelligence (AI) approach to apply WCAG guidelines. Our main contribution was to test the tools, provide our insights, and provide additional discussion about the potential limitations of such tools. In the discussions of the tools, we considered that some residents were not aware of built-in accessibility features, and some residents with disabilities did not use assistive technologies (e.g., screen readers). We also discussed that some residents, even with the tool, may not know how to select the best set of "options" or features from the list of offerings to meet their specific needs. Therefore, while the residents and staff ultimately chose a tool, we knew that the tool would not cover all accessibility concerns. Therefore, we discussed how we might assist residents many with age-related, non-diagnosed, or late-life disabilities in learning about their web accessibility needs and other solutions for meeting those.

4.3 Challenge 3: Making PDFs Accessible

In the later part of the planning phase, we also discussed options for making the existing PDFs on the website accessible. Residents used PDFs to create and share a large amount of the content on the website. Some residents who managed the website felt that allowing them to add HTML directly would improve the overall usability and accessibility of the website. On the other hand, some residents were more comfortable using PDFs and felt they were an easily accessible option for those not familiar with editing or managing websites or content management systems. PDFs, therefore, allowed those residents to create their content using a more familiar platform. We discussed whether allowing residents to edit web pages directly would be feasible. Along with residents and staff, we decided that moving to HTML format was likely the best course of action. However, it would take time to transition and provide training to those involved in creating the web content. In the meantime, we also considered ways to support content creators in making more accessible content. One idea was to provide training on creating accessible PDFs. However, once we shared the instructions used for conference submissions such as ASSETS, there was hesitancy about the feasibility of applying these steps, and some felt it would be a steep learning curve for residents, especially for more complex PDFs (i.e., newsletter). Additionally, it did not solve the issue of the hundreds of archived PDFs that were available to residents on the website. Ultimately, the residents and staff decided to use a service

that could make PDFs created by the residents accessible to make it easier for residents to focus on content creation.

5 DISCUSSION AND CONCLUSION

Reflecting on our experience partnering in accessibility planning, we presented several challenges related to meeting our partners' information needs regarding accessibility and providing recommendations and potential solutions. While many of the challenges are ongoing concerns in the accessibility community, we highlight and discuss several opportunities to improve this process in the future. In particular, we highlight the need for improved web accessibility support that addresses the information needs of lay users to find strategies that help those less familiar with web accessibility find and learn about web accessibility adaptations.

5.1 Improving Web Accessibility Support for Everyday Content Creators

Many web accessibility guidelines are created for web designers or developers, and navigating and understanding these guidelines can be challenging even among expert audiences [11]. In our case, older adult residents were creating web content for their peers and, therefore, were interested in approaches for meeting and sustaining web accessibility as they move forward. While some earlier efforts have focused on supporting those that create user-generated content [20], we found it challenging to provide a comprehensive set of web accessibility guidelines that highlighted and summarized policies (that organizations use to make decisions) while also presenting recommendations that were easily digestible by lay users (that may be responsible for creating content). Some research suggests that providing training or educational content only in this area may not be sufficient [20, 24]. For example, García and colleagues offer a list of techniques including educational efforts such as disseminating accessible practices but also automated tools that can guide users in applying guidelines [20]. While our approach of piecing together and paraphrasing content seems to meet our partners' information needs, in the future, there may be additional opportunities to explore ways to improve informational and application support for web accessibility to everyday content creators.

In parallel, some content creators may be less familiar with the web but provide digital content through more familiar means such as PDF. For example, Reuter and colleagues note that more and more older adults are creating content online for civic engagement and not being able to participate actively raises questions of digital participation, and inclusion [26]. We encountered discussions about digital inclusion when navigating challenges related to finding options to help older adults residents learn about PDF accessibility. PDF accessibility is an open issue [1, 4, 16, 30], and efforts are being made among the accessibility community through training and tools to support more accessible PDF creation for academic research papers [4, 5, 16]. More recently, these open challenges have been raised for PDF content creators as well [15]. Our experiences also highlight the potential need to explore similar training efforts and tools for everyday content creators that sometimes rely on PDFs as a familiar way to develop and disseminate content on the web.

5.2 Web Accessibility Support for Web Users

In our discussions about addressing accessibility challenges, a recurring theme emerged around how to support older users with accessibility, but they may not be familiar with assistive technologies or techniques for meeting their needs via built-in tools or adaptations. For example, for older users that are experiencing gradual changes in ability due to aging or those with late-life disabilities who may not yet be familiar with the accessibility options available to them, adaptation strategies may exist but they may not know which to try or apply. We know that applying WCAG guidelines may not be enough to meet the diverse needs of users [7, 24]. However, even the emerging automated tools that apply WCAG guidelines automatically require users to have some prior knowledge of the adaptations they need, and sometimes, the options provided may not be straightforward. Some of this work is ongoing in the accessibility community. As an example, researchers have long-explored adaptive technologies to support older adults and others that may not be aware of changes in pointing ability to align needs with support [12, 13, 19, 21–23, 28, 29, 33]. Frameworks such as ability-based design also attempt to remove the burden from the users to find appropriate adaptations [32]. In the future, further investigations of approaches to help users learn about adaptations or other options available to them either automatically or manually might better help some users with accessibility needs identify complementary strategies.

5.3 Summary

In this experience report, we present our experiences partnering in design with a group of older adult online content creators to support them in web accessibility planning a resident website they manage. We highlight challenges we encountered meeting our partners' web accessibility informational needs and helping this group of creators become aware and put in place measures to address accessibility issues. Based on our reflection, we highlight opportunities for future efforts to improve web accessibility support for everyday content creators and support for helping those less familiar with options available for meeting their web accessibility needs.

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