



Column: Innovation in Libraries

Innovation During the COVID-19 Pandemic: Activating Student Employees for ETD 508 Remediation in a Remote Environment

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ABSTRACT

Sacramento State's electronic thesis and dissertation (ETD) collection faces a common problem: how to achieve 508 compliance, ensure accessibility for all users, and promote principles of universal design. Providing electronic collections and resources that are accessible to all users is an important part of promoting equity, diversity, and inclusion for our students and end users. In Spring 2020 we launched a new initiative to hire and train a single student employee focused on 508 remediation for approximately 600 previously digitized theses and projects, prior to their ingest in the institutional repository. When our campus closed due to the COVID-19 pandemic in March 2020 we made the decision to expand this opportunity to more library student employees and provide a project they could work on remotely. By converting this to a remote work project, we were able to keep all student assistants employed who were interested in remote work, from nearly every department in the library. We were able to expand the scope of our remediation efforts, with the original project growing from all retrospectively digitized theses (approximately 1,000 in all) to all ETD content in the institutional repository (an additional 3,500).

KEYWORDS

Accessibility, remote work, 508 compliance, institutional repositories, student employees

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Accessibility Pre-Pandemic

The University Library at Sacramento State has faced challenges with adopting and enacting policies supporting 508 compliance/accessibility in our institutional repository (IR). The phrase 508 compliance refers to Section 508 of the Rehabilitation Act of 1973, a federal law requiring agencies to guarantee their electronic content is accessible to people with disabilities (Section508.gov, 2020). Like most academic libraries surveyed by Anderson and Leachman (2020, p. 10) and Waugh et al. (2020, p. 8) we had no institutional or local policy regarding the accessibility of content in our institutional repository. Furthermore, there has been a lack of centralized policy at the consortial level, Sacramento State being one of 23 campuses in the California State University system. As noted in Anderson and Leachman's (2020) IR accessibility review, court cases involving the accessibility of university websites and web content prompted institutions to conduct web accessibility audits (p. 3). Sacramento State University Library likewise began a systematic review of web pages and technology access, however the review excluded content produced and hosted by the Library in our IR.

Accessibility of university-produced content, such as theses, had largely relied on self-reported 508 compliance by the depositors and remediation upon request. The University Library took the initiative to address the accessibility of content deposited in ScholarWorks, the institutional repository, which consists primarily of electronic theses and dissertations (ETDs). When users add items, including theses, to ScholarWorks they sign a distribution license that includes a statement of compliance with 508 accessibility standards. However, there are no provided guidelines or instructions on remediating files for accessibility. Within the context of primarily text-based theses, our 508 compliance work is heavily focused on making content accessible to people who use screen readers. We believe that the Library has a responsibility to proactively make our ETD materials 508 compliant, rather than relying on users to agree to accessibility requirements they may not understand and that are conveyed within a much larger deposit agreement.

Why the Pivot

To test accessibility workflows in order to determine what policies and guidelines would best suit the needs of our faculty and students, as well as evaluate staffing needs and training, an accessibility project was initiated by the Library to review and remediate approximately 600 retrospectively digitized theses. The project manager created documentation based on the Worldwide Web Consortium (W3C) Web Content Accessibility Guidelines (WCAG) 2.0 (Web Accessibility Initiative, 2021) and the U.S. Department of Health and Human Services, Section 508 Compliance Guide (U.S. Department of Health and Human Services, 2020). The Accessibility Technology Coordinator at the campus' Information Resources and Technology (IRT) department held a brief training on PDF remediation for the project manager and an additional library staff member. The project manager hired and onboarded a work study student

employee in February 2020 to work exclusively on the review and remediation tasks for these scanned theses.

Sacramento State is a regional campus of a public university system serving many non-traditional, first-generation, low-income, and parenting students. The University Library at Sacramento State is one of the largest employers of student employees on the campus. In 2018 it was reported that 47% of Sacramento State students struggle with food insecurity and 12.6% have experienced homelessness at least once while in college (Reid, 2018). These statistics illustrate the necessity of retaining employment for the University Library's student employees. To retain our student employees during the library closure we needed a tangible project that could be done remotely. This project did not require access to physical materials, and the technical nature of the training enabled this project to be scaled and transitioned to a remote work environment in the wake of campus closures due to the COVID-19 pandemic. By converting this to a remote work project, all student employees from every library department that wanted to continue employment were able to do so. To address the work needs of 45 student employees, this project was scaled to include all works deposited in the IR, not just retrospectively digitized works produced by the University Library. In addition, one staff member, whose normal job duties did not transition well to a remote environment, began fully recreating approximately 60-scanned theses that could not be run through the accessibility software.

Training Student Employees

Our initial approach to remediation was to focus on basic remediation of PDF documents. This basic remediation primarily focused on evaluating the existing accessibility of documents in Adobe Acrobat and remediating file structure and content using the built in reading order window. Tasks included running the Adobe Action Wizard or Autotag functions to automatically enhance file accessibility; manually ensuring that documents contained the appropriate heading structures; checking that figures, tables, and lists were either tagged sufficiently by the Adobe software or by updating the content types in the reading order window; and adding alternate text for figures and formulas. The accessibility of remediated files was validated using the Ally tool, an accessibility checker integrated into Canvas (the university's learning management system).

This basic approach to remediation was necessitated by the incredibly quick transition and rapid scaling of this project. As students needed to be immediately onboarded, there was no efficient way to conduct any assessment of their technical proficiencies, and student's access to reliable internet was ever-evolving. Focusing on basic remediation allowed for the quick onboarding of student employees, and eased the review process for additional staff who were assigned to the project. The training process was almost entirely asynchronous, including pre-recorded tutorials created in Zoom and shared through Teams. The existing training manual was enhanced to include more examples as well as short video tutorials for specific steps and

functions; a comprehensive training video demonstrating the entire workflow was distributed to students.

The project manager provided one-on-one training for students upon request and held periodic open forums to discuss common issues and questions. She also facilitated online training in basic remediation to staff reviewers. This enabled staff to assist with student questions and fix basic issues during review.

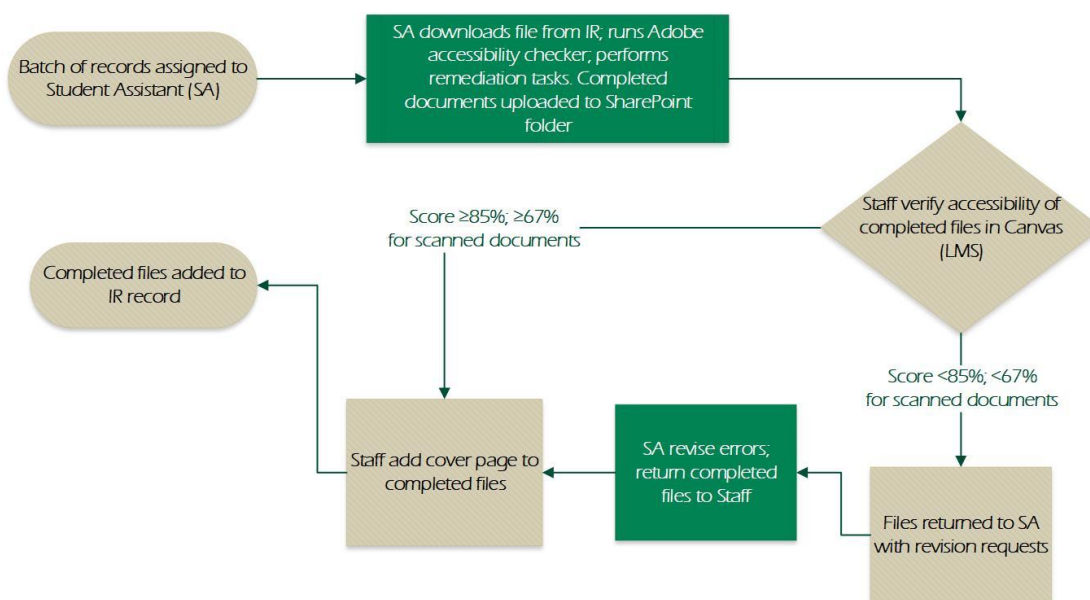
In September of 2020, the project manager conducted a brief assessment of the project. After participating in an enhanced remediation training conducted by California State University, Chico, staff revised training manuals and procedures to incorporate advanced remediation tasks. The documentation revisions centered around using Adobe's Tag tree to update and add tags instead of exclusively using Reading Order. This process proved to be significantly more tedious than the basic remediation tasks. The project manager conducted three-day training courses over Zoom to review the new remediation methods with student employees and staff reviewers.

Workflow

This project was a first attempt at a large-scale remote work project and the workflow has been refined through trial and error. To start, students began working on two types of PDFs: scanned and born digital ETDs. They each required slight modifications to the remediation tasks in order to maximize their accessibility. The following diagram outlines the general staff and student roles in the workflow:

Figure 1

508 Compliance/Remediation Workflow Chart



Note. For a text version of this workflow chart, see Appendix.

The initial project used Microsoft OneDrive for file sharing, however the platform proved insufficient for the project needs. The project was transferred to Microsoft SharePoint to facilitate better file sharing and prevent extensive duplication of files. In its current iteration the project is hosted on Microsoft Teams, and uses the SharePoint Teams site to add file properties and other workflow related notes.

Using spreadsheets, students recorded their progress through the various workflow tasks to facilitate management by staff reviewers. Students were divided among four staff members who reviewed the remediated files, made basic corrections or returned files to the student if more intensive work was required, finalized documents by adding a cover page, and stored completed files on SharePoint. To facilitate review, the Ally tool in Canvas was used to determine a basic accessibility score, which was recorded in the student's spreadsheet. When the staff reviewer completed the documents, a cover page was added to the document indicating that the PDF has undergone 508 compliance review and provided contact information for any additional enhancement requests. File description metadata was added that noted an accessibility review was conducted, and student spreadsheets were regularly incorporated into the master tracking spreadsheet. As this iteration of the project winds down with the return to onsite work, the remaining students have been trained to perform the final review steps and add completed files to their parent record in the IR.

Communication channels were created to ensure students' questions and issues could be answered and resolved in a timely manner, including a dedicated Slack channel and a distribution email list that included all staff reviewers. The Slack channel proved to be exceptionally helpful as students provided peer support during off hours and weekends. Currently, the chat and post functions are used on Microsoft Teams to maintain communication with students.

Challenges and Lessons Learned

Communication, technology issues, and technical skills have posed the biggest challenges to this project. As mentioned, there were several dedicated lines of communication set up to ensure that students' questions were answered in a timely fashion. However, library staff are not accessibility content specialists and the vast majority of the questions were directed to the project manager, which required a lot of attention and diversion from other responsibilities. In addition, emails to students were often overlooked and this affected overall project management. In a very few cases we had to deal with unresponsive students.

Technology has been another challenge to this project running smoothly. Students have had varying levels of reliable technology or internet access. Onboarding students to various software platforms and ensuring appropriate credentials are in place posed many challenges and required workarounds to maintain student access. For example, student employees' campus

accounts were granted temporary expanded access to Adobe; when this license expired, students lost access to the remediation software. Provisional student accounts had to be quickly created to prevent disruptions to student work. These provisional accounts affected their campus logins, and more workarounds needed to be implemented to prevent further loss of access to required software.

The final piece that proved challenging was the students' own technical abilities. Only one dedicated student was originally hired for this project; remaining students all transitioned from predominately on-site, user services-centered work. Therefore, the skill set and technical aptitude of student employees varied greatly. Many students were highly successful in learning not only a new software system, but also the nomenclature associated with 508 compliance and remediation. However, this extremely tedious and technical work did not suit all student employees. Open forums, one-on-one training, and regular check-ins with students helped, but did not alleviate issues with some students greatly underperforming. Remote support for students who were not tech savvy was challenging, especially since many of these students had come from other Library departments. The project manager and most student employees had never met in person and did not have any existing rapport.

Numbers as of the End of Summer 2021

In August 2021, we evaluated the numbers to see what information they could provide about the work that had been performed. The following figures illustrate the high-labor, low-output nature of performing remediation retrospectively. Remarkably, despite the lack of experience student employees had going into this project, they were able to achieve an average accessibility score of 93% on remediated files (per the Ally tool in Canvas).

Between February and July 2020 approximately 1,600 theses, projects, and dissertations were reviewed for 508 compliance and remediated. Figure 2 shows the monthly student output across the two remediation projects: those retrospectively digitized by the library and existing content in the institutional repository. The initial months of the pandemic (April–August 2020) saw the highest completion rate, averaging over 200 remediated files per month; this was also when the project had its highest student employee number: 45. Despite losing students to graduation and other employment opportunities, our staff averaged 29 student employees working roughly 300 hours per week, completing an average of 114 files monthly.

Figure 2

508 Compliance Remediation Statistics

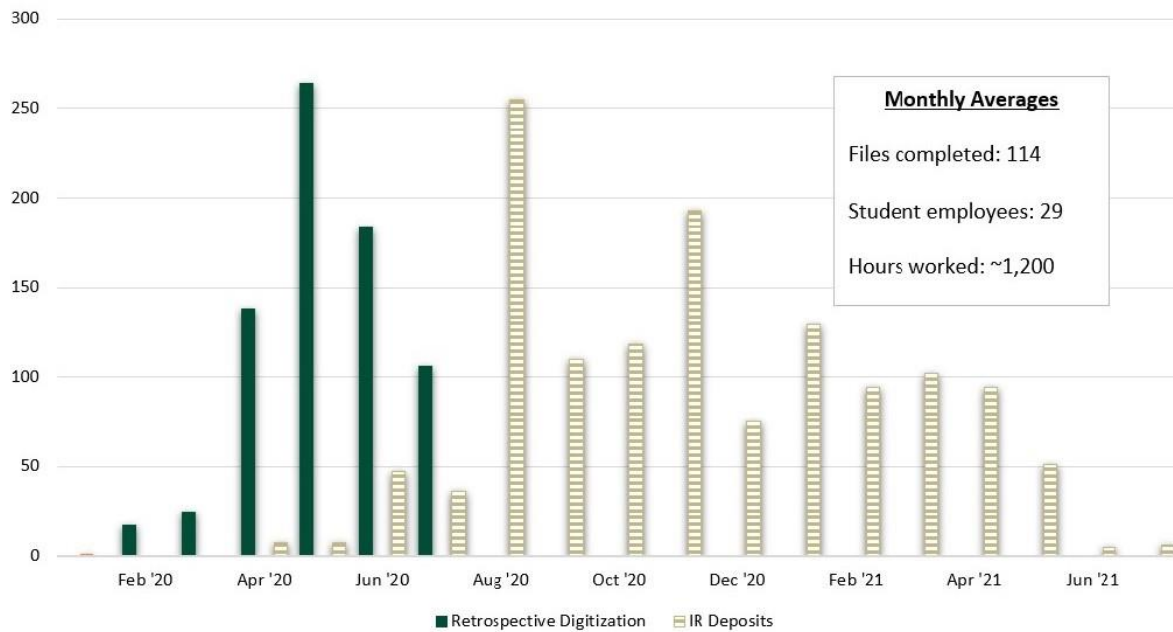
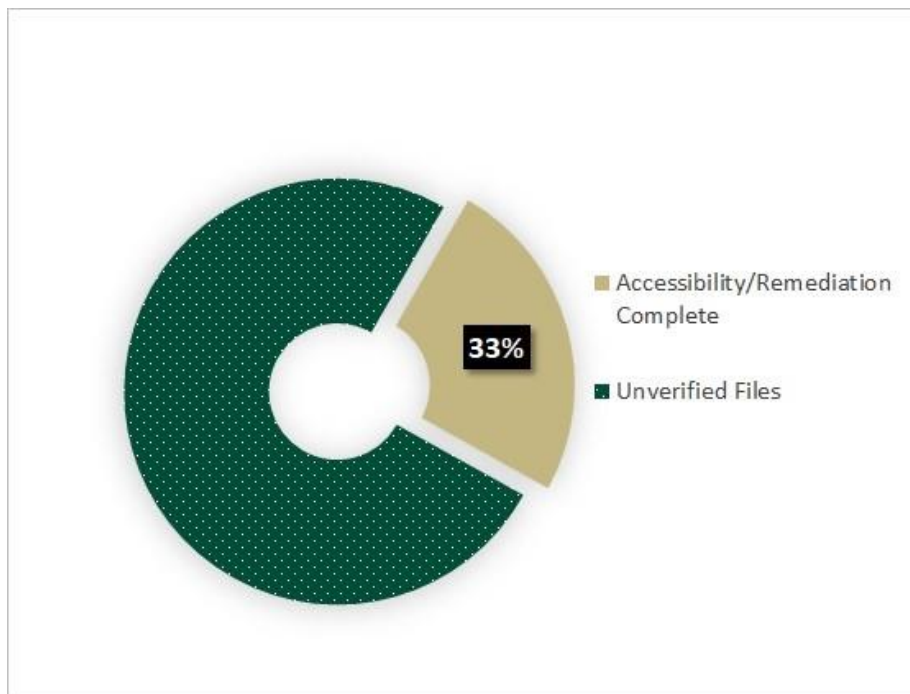


Figure 3
Accessibility Statistics in IR



Note. Despite the incredible number of staff and student hours devoted to this project, only 33% of the institutional repository contents were reviewed for accessibility and remediated. This number continues to decrease as ETDs are accepted into the repository on an ongoing basis.

Assessment and Next Steps

The COVID-19 pandemic afforded us a unique opportunity to leverage vast amounts of staff and student staffing time and resources to address an issue that we had only been able to allocate minimal time and effort towards previously. Even though our initial response to a rapid campus closure was reactionary, we were successful given the circumstances, and have been able to continually assess and improve the remediation project over the lengthy library closure (March 2020–August 2021). One of the most important outcomes of this project is that, because we had a meaningful remote project, it has allowed us to keep student employees hired throughout the library closure and during a time of budget constraints. All students who wanted to stay employed at the library were able to do so, with up to 45 students assigned to this project at its peak.

This project gave us invaluable data on the true cost of library-remediated accessible content of legacy materials including: staffing, technical skills and training requirements, and software and technology support. Along with testing and refining remediation workflows and project management, this data can now be used to assess a 508 compliance policy that is feasible and reasonable to implement when the library reopens with normal staffing levels. While the Library culture is now more meaningfully committed to accessibility, it is evident that we will not be able to maintain the scale and scope of this project. Developing a sustainable model of 508 compliance and accessibility standards will require consideration of all the lessons learned from this project.

Beyond the University Library, we see introducing student employees to accessibility work as a part of creating a university culture that values accessibility work. We have been introducing accessibility concepts to undergraduate and graduate students who will be submitting work to the institutional repository and providing more resources and guides to empower students to create accessible documents. Outreach and instruction efforts on accessibility for student authors have included creating LibGuide-based tutorials, creating class- and project-specific guides, and providing instruction in classes. Initial audiences have included graduate students submitting ETDs, art history students submitting senior theses and other projects, and students participating in the Fall Poster Symposium hosted by the Student Research Center.

Broader Outcomes

Even though this project came from a very particular set of circumstances, we think that it can be useful information to many university libraries exploring 508 remediation projects. Improving accessibility in documents is a task that student employees can be trained in, and this work can be scaled to a variety of situations. Another important outcome is that we have tangible evidence that accessibility projects can be conducted successfully by remote library

employees; this may be of interest to libraries as they explore hybrid and flexible work arrangements following the experiences of the COVID-19 pandemic.

References

- Anderson, T., & Leachman, C. (2020). Centering accessibility: A review of institutional repository policy and practice. *Journal of Librarianship and Scholarly Communication*, 8(1). <https://doi.org/10.7710/2162-3309.2383>
- Reid, D. (2018, November 5). *Reducing hunger, homelessness is the focus of University efforts*. Sacramento State News. <https://www.csus.edu/news/articles/2018/11/5/Sac-State-seeks-to-solve-student-hunger-and-homelessness-.shtml>
- Section508.gov. (2020, July). *IT accessibility laws and policies, section508.gov*. General Services Administration. <https://www.section508.gov/manage/laws-and-policies/>
- U.S. Department of Health & Human Services. (2020, June 30). *Accessibility @ HHS*. Retrieved September 20, 2021 from <https://www.hhs.gov/web/section-508/index.html>
- Waugh, L., Lyon, C., Shelton, A., Park, K., Hicks, W., & Lindsey, N. (2020). *Accessibility in institutional repositories. (Report 1)*. Texas State University Digital Collections Repository. <https://digital.library.txstate.edu/handle/10877/12389>
- Web Accessibility Initiative. (2021, April 29). *Web Content Accessibility Guidelines (WCAG) overview*. World Wide Web Consortium (W3C). <https://www.w3.org/WAI/standards-guidelines/wcag/>

Appendix

508 Compliance/Remediation Workflow

The following steps are visually outlined in Figure 1.

1. Batch of records assigned to Student Assistant (SA): Student assistants were assigned 25 documents at a time. A SharePoint folder was created for each SA, where files and individual tracking spreadsheets were managed. Tracking spreadsheets included author information, title of work, and handle or filename. SAs used the spreadsheet to note when tasks were completed (remediation completed, embedded file information added, date completed). This helped library staff reviewers to gauge progress and know when files were ready for review. Additionally, a column was added to the SharePoint document library for students to add status updates or other notes.
2. There were two remediation projects being conducted simultaneously, one involving the remediation of files created by the library from retrospective digitization; the other involving the remediation of content in the Institutional Repository that had been deposited directly by Masters' and Doctoral students. SAs accessed their assigned files differently depending on the project: Retrospectively digitized files were already stored on SharePoint so assigned files were simply moved to the SA folder; IR content was accessed by the SA via the handle in their tracking spreadsheet. These files were downloaded directly from the DSpace (our institutional repository platform) folder; SAs would upload in progress/completed files to their SharePoint folder. All files were remediated in Adobe Acrobat Pro, then uploaded to their SA SharePoint folder.
3. Three Library Staff and the Project Manager divided the SAs into groups based on additional workload (of staff). Completed files were downloaded from SharePoint, then uploaded into the University's Learning Management System, Canvas. Canvas contains an accessibility tool called Ally, which assigns an accessibility score to uploaded files and notes any issues that are present. In collaboration with the University's Information Resources and Technology Department (IRT), 85% was established as the threshold for what was considered a passing score, i.e., no further remediation work was needed. For scanned pdfs (i.e., those digitized by the library) the highest score the Ally tool can register is 67% which for the purposes of this project we considered to be passing for these file types.
 - a. Files scoring less than 85% (or less than 67% for scanned documents) were returned to SAs to review with notes regarding errors to correct. Minor fixes were performed by library staff reviewers for efficiency purposes.
 - b. Once files scored 85% or higher (or 67% for scanned documents) library staff reviewers inserted a cover page onto the document noting that 508 remediation

work had been undertaken, and providing contact information if errors or additional remediation was needed.

4. Completed files were then added to the IR record, with descriptive metadata added to inform users of the accessibility of completed documents. For files that were original student submissions in the repository, the original document was closed.
 - a. A master tracking spreadsheet was updated with the individual student assignments as files were completed. This master tracking spreadsheet was used for statistics and served as the basis for SA assignments.