

To: Robert Van Rennes, Big Ten Academic Alliance  
From: Graham L. Pierce, MSU Usability/Accessibility Research and Consulting  
CC: Heidi Schroeder, MSU Libraries  
Subject: Rittenhouse R2 Digital Library High-Level Accessibility Evaluation  
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MSU Usability/Accessibility Research and Consulting (MSU UARC) conducted a high-level accessibility evaluation of the Rittenhouse R2 Digital Library ebook platform to evaluate its conformance with WCAG 2.0 AA Criteria. This evaluation did not include all functionality or content of the site or all WCAG 2.0 AA Success Criteria.

During this evaluation, a number of issues were found that will make the site and its content impossible to use for some individuals with disabilities, and difficult to use for many others.

Critically, no obvious means to pause, stop, or hide the rotator on the Home pages is provided. Rotators that cannot be stopped create significant issues for individuals with cognitive and visual impairments, as well as for screen reader users. Additionally, context menus have been disabled throughout the site and basic keystrokes have been unexpectedly repurposed. Issues of these types can interfere with the ability to use any part of a page for some users.

Keyboard users, including screen reader users and users with dexterity impairments, will be unable to access some site functionality. Some interactive elements cannot be reached or opened via keyboard. Many interactive elements that can be reached lack a sufficiently visible focus indicator, making it difficult or impossible for many keyboard-only users to effectively use them, as they cannot determine when they have reached the correct element. Focus order is also incorrect in places, further increasing the difficulty of using the site with a keyboard.

Individuals with visual impairments, including those that rely on screen readers, will have additional problems. Some content is read out incorrectly, and some structural information is not appropriately conveyed to users, making it difficult to understand content organization in places. Some form inputs are not appropriately labeled, making those inputs difficult or impossible to use for those that rely on screen readers. Custom elements do not correctly announce themselves to screen readers, making them difficult or impossible to understand and use. Many images lack appropriate alternative text, significantly impacting users with visual impairments.

Other issues were found that will make it difficult for users with a variety of disabilities to effectively use the system, including images of text being used in place of styled text and insufficient color contrast.

To improve access for users with disabilities, UARC recommends a full WCAG 2.0 AA evaluation and that the problems discovered be remediated.

*Note: For the purposes of this high-level review; results for "hemangioma" were used as an example of a Search Results page, "Browse by Discipline" was used as an example of a Browse Library page, "Health Policy and Advanced Practice Nursing: Impact and Implications" was used as an example of a Book page, and "Atlas of Vascular Medicine: 6:*

*Popliteal Artery Aneurysm: DEFINITION/BACKGROUND/EPIDEMIOLOGY" was used as an example of a Content page.*

## High-Level Findings

### Conformance

- On the Home page, no obvious means is provided to pause, stop, or hide rotating content. [[WCAG 2.0 CR 5](#), [WCAG 2.0 SC 2.2.2](#)]
- Context-menus (e.g., right-clicking on content) are blocked throughout the site, potentially interfering with a range of assistive technologies. [[WCAG 2.0 CR 5](#)]
- On the Book and Content pages, left and right arrow keys change pages, potentially interfering with a range of assistive technologies. [[WCAG 2.0 CR 5](#)]

### Document Structure

- On the Browse Library page, "Welcome to MICHIGAN STATE UNIVERSITY!" should not be tagged as a heading. [[WCAG 2.0 SC 1.3.1](#)]
- On the Content page, headings in lightboxes (e.g., Save Image) should start with h1, not h3. [[WCAG 2.0 SC 1.3.1](#)]
- On the Search Results page, book covers and "Full Text Available" are incorrectly read before the headings they are organized by. [[WCAG 2.0 SC 1.3.2](#)]

### Keyboard Support

- Close buttons in lightboxes throughout site cannot be reached via keyboard (e.g., Advanced Search lightbox; Save Image lightbox on Content page). [[WCAG 2.0 SC 2.1.1](#)]
- On the Home, rotator title tooltips (e.g., "See What Librarians Say about the R2 Digital Library") cannot be reached via keyboard (e.g., only appears when mouse hovers over "R2 Testimonials"). [[WCAG 2.0 SC 2.1.1](#)]
- On the Search Results, Book, and Content pages, the "Print page" link under "Tools" cannot be reached via keyboard. [[WCAG 2.0 SC 2.1.1](#)]
- On the Search Results and Book pages, "This title is available in your collection" tooltips cannot be reached via keyboard (only appear when mouse hovers over "Full Text Available"). [[WCAG 2.0 SC 2.1.1](#)]
- On the Book page, Table of Contents sections cannot be expanded via keyboard. [[WCAG 2.0 SC 2.1.1](#)]
- On the Content page, the Save Image lightbox cannot be opened via keyboard (it immediately closes when opened). [[WCAG 2.0 SC 2.1.1](#)]
- On the Home page, focus incorrectly goes to invisible, non-interactive elements after "Advanced Options" and before "View details about this title". [[WCAG 2.0 SC 2.4.3](#)]
- On the Home page, focus incorrectly goes to both image and text links for "Watch a quick demo of the R2 Digital Library in action" separately. [[WCAG 2.0 SC 2.4.3](#)]
- On the Search Results page, focus incorrectly goes to both image and text links for results (book covers and result titles) separately. [[WCAG 2.0 SC 2.4.3](#)]
- On the Search Results page, focus incorrectly goes to non-interactive filter text (i.e., filters that are already applied). [[WCAG 2.0 SC 2.4.3](#)]
- On the Browse Library page, focus incorrectly goes to non-interactive "Discipline" link in the side navigation. [[WCAG 2.0 SC 2.4.3](#)]

- On the Content page, focus doesn't immediately go to lightbox contents, and reaches lightbox content only after all other page content. [[WCAG 2.0 SC 2.4.3](#)]
- Focus is not sufficiently visible for a variety of interactive content. [[WCAG 2.0 SC 2.4.7](#)]
  - Image links throughout site
  - "Log In" and "Search" buttons
  - "Browse", "A-Z Index", and "My R2" buttons
  - "Search" button, dropdowns, and checkboxes in Advanced Search lightbox
  - "Advanced Options" link (in Chrome)
  - Rotator items ("R2 Testimonials", "The Leading Publishers", "A Specialized Database", previous and next buttons) on the Home page
  - "Start a Free 30-Day Trial" button on the Home page
  - Page number links on the Search Results page
  - Checkboxes on the Search Results page
  - "Search" button (under "Search this Title") on the Book and Content pages
  - "Save Image", "Enlarge Image", and "Direct Link Image" buttons on Content page
  - "Copy Link to Clipboard" and "Cancel" buttons in Direct Link Image lightbox on Content page

## Forms and Data Submission

- In the Advanced Search lightbox, dropdowns are not programmatically associated with grouping label ("Publication Date"). [[WCAG 2.0 SC 3.3.2](#)]
- On the Search Results and Browse Library pages, the "Archive" checkbox is not programmatically labeled. [[WCAG 2.0 SC 3.3.2](#)]

## Images

- Appropriate alternative text is not provided for many images. [[WCAG 2.0 SC 1.1.1](#)]
  - Rotator images on Home page
  - Figures on Content page
  - "Springer Nature" is not appropriate alternative text for "Springer: The Language of Science" on the Home page
  - "Watch a quick demo of the R2 Digital Library in action" and "Code of Medical Ethics" images should have null alternative text on the Home page
  - Book covers should have null alternative text on the Search Results page
- On the Home page, rotator images include images of text. [[WCAG 2.0 SC 1.4.5](#)]

## Color and Visual Characteristics

- Blue text on light blue background (e.g., links in page footer), light grey text on white (e.g., placeholder text in inputs ["Enter username", "Search content for a drug...", etc.] in Chrome), orange text on white (current rotator item title and "the language of science" on Home page), and dark grey on black/dark blue (arrows in rotator on Home page when focused) have insufficient contrast. [[WCAG 2.0 SC 1.4.3](#)]

## Custom Elements and Dynamic Content

- Role and value (i.e., that it opens a lightbox/expander and whether it is expanded or collapsed) are not provided for the "Advanced Options" link, and screen readers are not notified when it is opened or closed. [[WCAG 2.0 SC 4.1.2](#)]
- Role and value (i.e., that it opens a menu/expander and whether it is expanded or collapsed) are not provided for "Tools" on Search Results page; "Search this Title", "Topics", and "Tools" on Book page; and "Browse/Search this Title", "Topics", and "Tools" on Content page; and screen readers are not notified when they are opened or closed. [[WCAG 2.0 SC 4.1.2](#)]
- On the Search Results, roles and values (i.e., that they expand/collapse and whether they are expanded or collapsed) are not provided for "see more..." and "see less..." links. [[WCAG 2.0 SC 4.1.2](#)]
- On the Search Results and Browse Library pages, screen readers are not notified when filters are applied or removed. [[WCAG 2.0 SC 4.1.2](#)]
- On the Book page, roles and values (i.e., that they expand/collapse and whether they are expanded or collapsed) are not provided for Table of Contents links. [[WCAG 2.0 SC 4.1.2](#)]

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