MICHIGAN STATE UNIVERSITY | Usability/Accessibility Research and Consulting

To: Robert Van Rennes, Big Ten Academic Alliance
From: Grey L. Pierce, MSU Usability/Accessibility Research and Consulting
CC: Heidi Schroeder, MSU Libraries
Subject: EBSCO Academic Search High-Level Accessibility Evaluation for the Library
              Accessibility Alliance
Date: April 23, 2020

MSU Usability/Accessibility Research and Consulting (MSU UARC) conducted a high-level accessibility evaluation of the EBSCO Academic Search platform to evaluate its conformance with WCAG 2.1 AA Criteria. This evaluation did not include all functionality or content of the site or all WCAG 2.1 AA Success Criteria.

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

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

Individuals with visual impairments, including those that rely on screen readers, will also have problems using the site. Some content is not read out correctly and structural information (particularly headings) is not appropriately conveyed to users, making it difficult or impossible to understand content and organization in places. Some form inputs are not appropriately labeled and errors are not appropriately announced, 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 to understand and use. Most images have inappropriate or missing alternative text, significantly impacting users with visual impairments.

The PDF has not been tagged for accessibility and no structural information is provided to assistive technologies, making it extremely difficult to use and navigate for users with disabilities. Additionally, no title or language is provided to assistive technologies.

Other issues were found that will make it difficult for users with a variety of disabilities to effectively use the system, including insufficient color contrast for text and user interface elements, unexpected changes due to modifying inputs, inability to appropriately dismiss hover content, session time limits that cannot be extended, content disappearing when the page is resized or zoomed, problems bypassing repeated navigation, and inappropriate page titles.

To improve access for users with disabilities, MSU UARC recommends a full WCAG 2.1 AA evaluation and that the problems discovered be remediated.

Note: Results for "disabilities in literature" were used as an example of a Search Results page, and "Defectives in the Land: Disability and American Immigration Policy, 1882-1924" was used as an example of an Article, PDF Viewer, and Cited References page.

For reference, a screenshot of the Advanced Search page at the time this evaluation was completed has been included at the end of this memo.

High-Level Findings

Document Structure

- Headings are not appropriately structured throughout the site. [WCAG 2.1 SC 1.3.1]
  - On most pages, invisible, inappropriate headings (h1s and h2s that don't organize content) are present, particularly near the start of pages
  - On the Advanced Search page, "Choose Databases" should not be tagged as a heading
  - On the Advanced Search page, "Search Options" should be tagged as an h2, not an h3
  - In the Choose Databases lightbox on the Advanced Search page, "Choose Databases" should be tagged as a heading (h1)
  - On the Search Results page, "Current Search" should be tagged as a heading (h3)
  - On the Search Results page, "Find all my search terms:" should be tagged as an h4, not an h3
  - In the Create Alert lightbox on the Search Results page, "Create Alert" should be tagged as a heading (h1)
- PDF is untagged, and provides no structural information to assistive technologies. [WCAG 2.1 SC 1.3.1]
- The language of the PDF is not defined. [WCAG 2.1 SC 3.1.1]

Keyboard Support

- On the Advanced Search and Search Results pages, "+" and "-" buttons cannot be activated via keyboard (hitting the Enter key incorrectly submits the search form). [WCAG 2.1 SC 2.1.1]
- In the Choose Databases lightbox on the Advanced Search page, database info tooltips cannot be reached via keyboard. [WCAG 2.1 SC 2.1.1]
- On the Search Results page, PlumX Metrics tooltips cannot be reached via keyboard. [WCAG 2.1 SC 2.1.1]
- On the Search Results page, selections in the Sort dropdown cannot be changed using the arrow keys. [WCAG 2.1 SC 2.1.1]
- In the PDF Viewer, expanders (e.g., "Full Text Contents", "Choose Another Issue") cannot be reached via keyboard. [WCAG 2.1 SC 2.1.1]
- Focus does not move to the main menu expander immediately when it is opened. [WCAG 2.1 SC 2.4.3]
- The main menu expander incorrectly receives focus at the end of the page. [WCAG 2.1 SC 2.4.3]
- Focus incorrectly goes to the page behind the main menu expander when it is open. [WCAG 2.1 SC 2.4.3]

- In the Choose Databases lightbox on the Advanced Search page, focus cannot be moved backwards from the start of the lightbox to reach the bottom (i.e., focus does not wrap backwards). [WCAG 2.1 SC 2.4.3]
- On the Search Results page, the Refine Results section should be reached before the list of search results. [WCAG 2.1 SC 2.4.3]
- On the Search Results page, Related Information links are incorrectly broken into two links (e.g., "Cited References" and "(37)" are reached separately, instead of "Cited References (37)" being a single link). [WCAG 2.1 SC 2.4.3]
- On the Search Results page, focus incorrectly goes to the page behind the Sort, Page Options, and Share lightboxes when viewport width is narrow and page content is not visible. [WCAG 2.1 SC 2.4.3]
- On the Cited References page, focus incorrectly goes to the page behind the Page Options lightbox when viewport width is narrow and page content is not visible. [WCAG 2.1 SC 2.4.3]
- On the Cited References page, invisible "PlumX" graphics receive focus. [WCAG 2.1 SC 2.4.3]
- On the Advanced Search, Search Results, Article, and Basic Search pages, focus is not sufficiently visible on the Search button. [WCAG 2.1 SC 2.4.7]
- On the Advanced Search, Search Results, and Article pages, focus is not sufficiently visible on the "+" and "-" buttons. [WCAG 2.1 SC 2.4.7]
- On the Advanced Search page, focus is not sufficiently visible on radio buttons, checkboxes, or multiple-select boxes. [WCAG 2.1 SC 2.4.7]
- On the Search Results, Article, and PDF Viewer pages, focus is not sufficiently visible on "<<"/">>" buttons (to expand or collapse sidebars). [WCAG 2.1 SC 2.4.7]
- On the Search Results and Cited Reference pages and in the Choose Databases lightbox on the Advanced Search page, focus is not sufficiently visible on checkboxes. [WCAG 2.1 SC 2.4.7]
- On the Advanced Search, Search Results, and Article pages, dropdown and text input widths change unexpectedly when moving through options in "Select a Field (optional)" and boolean dropdowns. [WCAG 2.1 SC 3.2.2]
- On the Search Results page, the page unexpectedly refreshes when Refine Results inputs are modified. This is particularly noticeable and problematic when trying to change both Publication Date limits (start and end) to set a range of years via text inputs. [WCAG 2.1 SC 3.2.2]

Navigation
- The title of the Cited References page and the Image Preview popup (Search Results page) do not describe page contents. [WCAG 2.1 SC 2.4.2]
- The PDF is not titled. [WCAG 2.1 SC 2.4.2]
- On the Search Results and Article pages, incorrect h1 placement (invisible h1s at the start of the page) interfere with the ability to bypass repeated content. [WCAG 2.1 SC 2.4.1]

Forms and Data Submission
- On the Advanced Search page, the "Create Alert" error ("Please enter search term(s).") is not programmatically associated with inputs, and is not read out when it appears. [WCAG 2.1 SC 3.3.1]
- On the Advanced Search page, "Published Date" input labels are not sufficiently specific (e.g., should be "Start Month" and "End Month"). [WCAG 2.1 SC 3.3.2]

- On the Search Results page, contents of the Page Options dropdown are not programmatically associated with grouping labels (e.g., "Standard" with "Result Format:"). [WCAG 2.1 SC 3.3.2]
- On the Search Results page, dropdowns in the Create Alert lightbox are not programmatically labeled. [WCAG 2.1 SC 3.3.2]
- In the Save section on the Article page, dropdowns are not programmatically labeled. [WCAG 2.1 SC 3.3.2]
- In the Save section on the Article page, inputs are not programmatically associated with grouping labels (e.g., "Include when saving:"). [WCAG 2.1 SC 3.3.2]

Images

- "EBSCOhost " image at top of pages does not have appropriate alternative text. [WCAG 2.1 SC 1.1.1]
- On the Search Results page, image previews do not have appropriate alternative text (e.g., "Chart" is not appropriate alternative text for a picture of a book cover). [WCAG 2.1 SC 1.1.1]
- On the Search Results page, the Academic Journal icon is decorative, and should have a null alt attribute (the alternative text is identical to the text that immediately follows the image). [WCAG 2.1 SC 1.1.1]
- On the Search Results page, images in the Image Preview popup do not have appropriate alternative text. [WCAG 2.1 SC 1.1.1]
- On the Article page, "Transaction" publisher logo does not have appropriate alternative text. [WCAG 2.1 SC 1.1.1]

Color and Visual Characteristics

- Grey symbols and graphics on light grey background (e.g., "+" and "-" buttons on Advanced Search, Search Results, and Article pages) have insufficient contrast. [WCAG 2.1 SC 1.4.11]
- White text on light grey background (e.g., "Search" button on mouse hover), black text on dark grey (e.g., "Share" button when focused on Search Results page), dark grey text on dark grey (e.g., buttons throughout the site when focused; including "Save" and "Cancel" in Save section on Article page; "Related Records" on Cited References page; "Save Alert", "Cancel Alert", "Save Alert and Create Another" in Create Alert lightbox on Search Results page; "OK" and "Cancel" in Choose Databases lightbox on Advanced Search page), white text on light blue (e.g., "Add to folder" icons on Search Results and Cited References pages) have insufficient contrast. [WCAG 2.1 SC 1.4.3]

Custom Elements and Dynamic Content

- "EBSCOhost" logo disappears when page content is zoomed or viewport width is reduced. [WCAG 2.1 SC 1.4.4]
- In the Choose Databases lightbox on the Advanced Search page, database info tooltips are not dismissable without moving the pointer. [WCAG 2.1 SC 1.4.13]
- On the Search Results page, PlumX Metrics tooltips are not dismissable without moving the pointer. [WCAG 2.1 SC 1.4.13]
- User sessions and pages time out without providing the opportunity to extend time limits. [WCAG 2.1 SC 2.2.1]

- The current value of the "Languages" dropdown (e.g., "English") is not available to screen readers (the value is skipped in the list) when the full navigation bar is visible (i.e., not when it is accessed via hamburger menu icon). [WCAG 2.1 SC 4.1.2]
- On the Advanced Search, Search Results, and Article pages, incorrect roles are provided for "Select a Field (optional)" and boolean dropdowns (i.e., they are incorrectly identified as buttons), and dropdown options (i.e., they are incorrectly identified as radio buttons). [WCAG 2.1 SC 4.1.2]
- On the Search Results page, incorrect roles are provided Page Options dropdown options (i.e., they are incorrectly identified as links, instead of radio buttons). [WCAG 2.1 SC 4.1.2]
- On the Search Results page, screen readers are not notified when "Add to folder"/"Remove from folder" buttons are activated. [WCAG 2.1 SC 4.1.2]

Usability Observations

- Returning to an Article page from a page other than Search Results (e.g., Cited References) breaks the search inputs at the top of the page (the "Search" button is visible, but search inputs are missing).
- On the Advanced Search page, the "Chose Databases" lightbox extends past underlying page background.
- On the Cited References page, users cannot undo "Add (1-37)" in a single action (they can add all in one action, but reverting the action requires removing each item individually).

Advanced Search Page Screenshot

Large Width

Medium Width

☰

Searching: **Academic Search Complete** | Choose Databases

EBSCOhost

	Select a Field (optional) ▾
AND ▾		Select a Field (optional) ▾
AND ▾		Select a Field (optional) ▾

⊕ ⊖ **Search** Create Alert

Basic Search   Advanced Search   Search History

Search Options

Reset

Search Modes and Expanders

Search modes ②
- ○ Boolean/Phrase
- ◉ Find all my search terms
- ○ Find any of my search terms
- ○ SmartText Searching Hint

Apply equivalent subjects
☑

Limit your results

Full Text
☐

References Available
☐

Scholarly (Peer Reviewed) Journals
☐

Published Date

Month ⌄ Year: _____ — Month ⌄ Year: _____

Publication

_____

Publication Type

| All |
| Periodical |
| Newspaper |
| Book |

Document Type

| All |
| Abstract |
| Article |
| Bibliography |

Language

| All |
| Afrikaans |
| Arabic |
| Azerbaijani |

Number of Pages

All ⌄ _____

Cover Story
☐

Image Quick View
☐

Image Quick View Types

☐ Black and White Photograph   ☐ Chart
☐ Color Photograph   ☐ Diagram
☐ Graph   ☐ Illustration
☐ Map

PDF Full Text
☐

Search

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Narrow Width

≡

Searching: **Academic Search Complete**
Choose Databases

		Select a ... ▾
AND ▾		Select a ... ▾
AND ▾		Select a ... ▾

⊕ ⊖　　Search

Create Alert

Basic Search　Advanced Search　Search History

Search Options

Reset

Search Modes and Expanders

Search modes ?
○ Boolean/Phrase
◉ Find all my search terms
○ Find any of my search terms
○ SmartText Searching　Hint

Apply equivalent subjects
☑

Limit your results

Full Text
☐

References Available
☐

Scholarly (Peer Reviewed) Journals
☐

Published Date
Month ▾ Year: [ ] —
Month ▾ Year: [ ]

Publication
[ ]

Publication Type
All
Periodical
Newspaper
Book

Document Type
All
Abstract
Article
Bibliography

Language
All
Afrikaans
Arabic
Azerbaijani

Number of Pages
All ▾
[ ]

Cover Story
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Image Quick View
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Image Quick View Types
☐ Black and White　☐ Chart
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☐ Diagram　　　☐ Graph
☐ Illustration　☐ Map

PDF Full Text
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Search

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