California Open Online Library for Education & Accessibility

COOL4Ed (the California Open Online Library for Education) was created so that faculty can easily find, adopt, utilize, review and/or modify free and open etextbooks for little or no cost. The COOL4Ed accessibility open textbook evaluations can inform faculty, staff, and students how the free and open etextbooks meet 15 accessibility "checkpoints" that could impact the learning of learners with a range of disabilities.

SUMMARY OF ACCESSIBILITY EVALUATION:

Textbook: **Forall X: An Introduction to Formal Logic**
Format of Textbook: **PDF**

Assistive Technology (AT) Evaluation Score: Overall	6.6 (Maximum score = 10)
Assistive Technologies (AT) Evaluations applies specialized tools and software in the accessibility evaluation process. These specialized assistive technologies, see list below, are typically not used or available by the general public into the accessibility evaluation process. • Accessibility features of desktop operating systems (e.g. high-contrast display themes, settings from the Keyboard and Mouse control panels) • Accessibility-related software included with desktop operating systems (e.g. VoiceOver, Microsoft Narrator) • Third-party accessibility software and hardware: • Screen readers (e.g. JAWS, Window Eyes) • Magnification software (e.g. ZoomText Magnifier/Reader, MAGIC Pro with Speech) • Reading software for users with learning disabilities (e.g. Read and Write Gold, Kurzweil 3000) • Refreshable Braille displays	
Non- Assistive Technology (NAT) Evaluation Score: Overall	6.1 (Maximum score =10)
Non-Assistive Technologies (NAT) Evaluations applies only native or basic tools and software such as the keyboard and Narrator in the accessibility evaluation process. These non-assistive technologies are readily available and used by the general public.	

COOL4Ed Accessibility Evaluation Methods:

The California State University Accessible Technology Initiative and MERLOT (Multimedia Educational Resources for Learning and Online Teaching) developed the rubric or "checkpoints" for the accessibility evaluation. CAST, a nationally recognized organization with expertise in accessibility and UDL, reviewed and affirmed the appropriateness and value of the accessibility evaluation rubric and contributed the references and support resources to help people learn how best to design, evaluate, and remediate the learning materials to maximize the accessibility of the learning resources for all. The "checkpoints" have been built upon the Section 508 technical standards and has been organized and tailored to the typical characteristics of digital resources used in higher education courses.

The accessibility evaluations were performed by the Center for Usability in Design and Accessibility at California State University, Long Beach; faculty and graduate students with expertise in human factors, usability, and accessibility performed the evaluations of over 150 free and open etextbooks. COOL4ed.org has published the accessibility evaluation rubric and provides a detailed description of the methodology used to evaluate the accessibility of the etextbooks in COOL4ed.

LOOKING FOR DETAILED ACCESSIBILITY REPORTS?

See Detailed Accessibility Evaluation Report using Assistive Technologies

See Detailed Accessibility Evaluation Report using Non-Assistive Technologies

DETAILED ACCESSIBILITY EVALUATION REPORT using
Assistive Technologies

Assistive Technologies (AT) Evaluations applies specialized tools and software in the accessibility evaluation process.   These specialized assistive technologies, such as Kurzweil and NVDA, are typically not used or available by the general public into the accessibility evaluation process.

1. Accessibility Documentation

A. The organization providing the online materials has a formal accessibility policy.	**Fail**
Additional Information:	**Did not find information on forallx's formal accessibility policy.**
B. The organization providing the online materials has an accessibility statement.	**Fail**
Additional Information:	**Did not find any information on forallx's accessibility statement.**
C. An Accessibility Evaluation Report is available from an external organization.	**Fail**
Additional Information:	**Did not find information on forallx's accessibility evaluation report.**

2. Text Access

A. The text of the digital resource is available to assistive technology that allows the user to enable text-to-speech (TTS) functionality.	**Pass**
Additional Information:	**3/5 pages were read properly in a logically order with no content skipped (Pg. 20, 60, 87). The remaining pages had equations that were skipped or pronounced incorrectly (Pg. 40, 100). Greek letters and symbols were skipped and the tables were not read properly. Besides the equations the rest of the content was read properly.**

3. Text Adjustment

A. Text is compatible with assistive technology.	**Pass**
Additional Information:	**5/5 pages were able to properly zoom in and out (Pg. 20, 40, 60, 87, 100). However, in order to read everything when zoomed in, the reader would have to horizontally scroll.**
B. The resource allows the user to adjust the font size and font/background color (or is rendered by an application such as a browser, media player, or reader) that offers this functionality).	**Pass**
Additional Information:	**2/5 pages were able to properly adjust font and background color (Pg. 60, 87). The remaining pages had tables with lines that remained black against a black background (Pg. 20, 40, 100).**

4. Reading Layout

A. Text of the digital resource is compatible with assistive technology that allows the user to reflow the text by specifying the margins and line spacing (or is rendered by an application such as a browser, media player, or reader that offers this functionality).	**Pass**
Additional Information:	**5/5 pages had proper reflow of text (Pg. 20, 40, 60, 87, 100) because the text did not adjust when zoomed in or out.**
B. If the digital resource is an electronic alternative to printed materials, the page numbers correspond to the printed material.	**N/A**
Additional Information:	**No printed material available.**

5. Reading Order

A. The reading order for digital resource content logically corresponds to the visual layout of	**Pass**

the page when rendered by assistive technology.	
Additional Information:	**3/5 pages were read properly in a logically order with no content skipped (Pg. 20, 60, 87). The remaining pages had equations that were skipped or pronounced incorrectly (Pg. 40, 100). Greek letters and symbols were skipped and the tables were not read properly. Besides the equations the rest of the content was read properly.**

6. *Structural Markup/Navigation*

A. The text of the digital resource includes markup (e.g. tags or styles) that allows for navigation by key structural elements (chapters, headings, pages) using assistive technology (or is rendered by an application such as a browser, media player, or reader that offers this functionality).	**Fail**
Additional Information:	**0/8 pages were properly navigable using the NVDA hotkeys (Pg. 20, 40, 60, 7, 100, 110, 120). Headers, lists, and tables were not found.**
B. The text of the digital resource includes markup for bullets and numbered lists that is compatible with assistive technology (or is rendered by an application such as a browser, media player, or reader that offers this functionality).	**Fail**
Additional Information:	**0/10 lists were properly navigable using the NVDA hotkeys (Pg. 5, 20, 21, 45(2), 46(3), 80(2)). The NVDA reader could not find any lists even though lists were present on the page.**
C. If the text of the digital resource is delivered within an ebook reader application, a method is provided that allows users to bypass the reader interface and move directly to the text content that is compatible with assistive technology.	**N/A**

Additional Information:	**Not using eReader application.**

7. Tables

A. Data tables include markup (e.g. tags or styles) that identifies row and column headers in a manner that is compatible with assistive technology (or are rendered by an application such as a browser, media player, or reader that offers this functionality).	**Fail**
Additional Information:	**0/10 tables were properly navigable using the NVDA hotkeys (Pg. 21, 23, 39(3), 44, 47, 110(2), 120). The NVDA reader could not find the tables and therefore was not able to read them properly.**

8. Hyperlinks

A. In-book links take you to a location within the textbook. For example, the table of contents would be considered in-book links and embedded links take you to the correct location in the book.	**Pass**
Additional Information:	**29/30 hyperlinks properly connected the reader to the appropriate place in the textbook (Ch. 1(10), 2, 3, 4(7), 5(5), 6(5)). The remaining hyperlink stated that it would go to page 115, but instead it went to page 112.**
B. Live hyperlinks take you to any website or webpages external to the book.	**Fail**
Additional Information:	**Only 3 live hyperlinks were found. 3/3 hyperlinks connected the reader to the appropriate webpages (Pg. 2(2), 76). 0/3 hyperlinks were properly described (Pg. 2(2), 76). These hyperlinks were described as urls.**
C. Live links take you to the correct webpage that is functioning properly.	**Pass**

Additional Information:	**Only 3 live hyperlinks were found. 3/3 hyperlinks connected the reader to the appropriate webpages (Pg. 2(2), 76).**
D. Live links are descriptive enough for the users to know where it should take them.	**Fail**
Additional Information:	**Only 3 live hyperlinks were found. 0/3 hyperlinks were properly described (Pg. 2(2), 76). These hyperlinks were described as urls.**

9. Color and Contrast

A. All information within the material that is conveyed using color is also available in a manner that is compatible with those that do not perceive color, and information conveyed by color is also conveyed in other ways.	**Pass**
Additional Information:	**8/8 pages had consistent color redundancy (Pg. 20, 40, 60, 7, 100, 110, 120). Headers, links, text was consistently black against a white background. However, since links were the same color as normal text, it made it hard to distinguish between norml text and links unless you used the NVDA hotkeys.**
B. Information is conveyed from the sub-categories for contrast.	**Pass**
Additional Information:	**Headers were black against a white background. Text and links were black against a white background. However, since links were the same color as normal text, it made it hard to distinguish between norml text and links unless you used the NVDA hotkeys.**
C. Contrast for headers passed WCAG AA standards for large texts (contrast ratio 3:1).	**Pass**
Additional Information:	**Headers were black against a white background.**
D. Contrast for text passed WCAG AA standards for normal texts (contrast ratio of 4.5:1).	**Pass**
Additional Information:	**Text and links were black against a white background. However, since links were the same color as normal text, it made it hard to distinguish**

	between norml text and links unless you used the NVDA hotkeys.
E. Contrast for simple images (for example, images of atoms) passed WCAG AA standards (contrast ratio of 4.5:1).	**N/A**
Additional Information:	**No images found.**

10. Language

A. The text of the digital resource includes markup that declares the language of the content in a manner that is compatible with assistive technology.	**N/A**
Additional Information:	**Do not have the Adobe Pro/Complete version.**
B. If the digital resource includes passages in a foreign language, these passages include markup that declares the language in a manner that is compatible with assistive technology.	**N/A**
Additional Information:	**Do not have the Adobe Pro/Complete version.**

11. Images

A. Non-decorative images have alternative text that is compatible with assistive technology (or is rendered by an application such as a browser, media player, or reader that offers this functionality).	**N/A**
Additional Information:	**No images found.**
B. Decorative images are marked with null alternate text or contain markup that allows them to be ignored by assistive technology.	**N/A**
Additional Information:	**No images found.**
C. Complex images, charts, and graphs have longer text descriptions that are compatible with assistive technology (or are rendered by	**N/A**

an application such as a browser, media player, or reader) that offers this functionality).	
Additional Information:	**No images found.**

12.Multimedia

A. A synchronized text track (e.g. open or closed captions) is provided with all video content.	**N/A**
Additional Information:	**No multimedia content found.**
B. A transcript is provided with all audio content.	**N/A**
Additional Information:	**No multimedia content found.**
C. Audio/video content is delivered via a media player that is compatible with assistive technology. This includes support for all criteria listed in Section 15 below.	**N/A**
Additional Information:	**No multimedia content found.**

13.Flickering

A. The digital resource content does not contain anything that flashes more than three times in any one-second period.	**Pass**
Additional Information:	**No flickering content.**

14.Science, Technology, Engineering, and Math (STEM)

A. STEM figures have appropriate markup that indicates that the image is a figure.	**N/A**
Additional Information:	**No STEM content found.**
B. STEM graphs have appropriate markup that indicates that the image is a graph.	**N/A**
Additional Information:	**No STEM content found.**
C. STEM equations have appropriate markup that indicates that the image is an equation.	**N/A**

Additional Information:	No STEM content found.
D. STEM tables have appropriate markup that indicates the image is a table.	N/A
Additional Information:	No STEM content found.
E. STEM figures have appropriate notation markup that conveys both the notation (presentation) and meaning (semantics) of the STEM content.	N/A
Additional Information:	No STEM content found.
F. STEM graphs have appropriate notation markup that conveys both the notation (presentation) and meaning (semantics) of the STEM content.	N/A
Additional Information:	No STEM content found.
G. STEM equations have appropriate notation markup that conveys both the notation (presentation) and meaning (semantics) of the STEM content.	N/A
Additional Information:	No STEM content found.
H. Assistive technology used can access the content from the STEM tables.	N/A
Additional Information:	No STEM content found.

15. Interactive Elements

A. Each interactive element (e.g. menu, hyperlink, button) and function (e.g. annotations) allows keyboard-only operation both with and without assistive technology.	N/A
Additional Information:	No interactive elements found.
B. Each interactive element conveys information to assistive technology regarding the element's name, type, and status (e.g. "Play, button, selected").	N/A
Additional Information:	No interactive elements found.

C. All instructions, prompts, and error messages necessary to complete forms are conveyed as text to assistive technology (or are rendered by an application such as a browser, media player, or reader that offers this functionality).	**N/A**
Additional Information:	**No interactive elements found.**

DETAILED ACCESSIBILITY EVALUATION REPORT using Non-Assistive Technologies

Non-Assistive Technologies (NAT) Evaluations applies only native or basic tools and software such as the keyboard and Narrator in the accessibility evaluation process. These non-assistive technologies are readily available and used by the general public.

1. Accessibility Documentation

A. The organization providing the online materials has a formal accessibility policy.	**Fail**
Additional Information:	**No Content Found.**
B. The organization providing the online materials has an accessibility statement.	**Fail**
Additional Information:	**No Content Found.**
C. An Accessibility Evaluation Report is available from an external organization.	**Fail**
Additional Information:	**No Content Found.**

2. Text Access

A. The text of the digital resource is available to assistive technology that allows the user to enable text-to-speech (TTS) functionality.	**Pass**

Additional Information:	**Pgs 5-10 were checked. The text is available to assisstive technology that allows user to enable text-to-speech functionality.**

3. Text Adjustment

A. Text is compatible with assistive technology.	**Pass**
Additional Information:	**Pgs 5-10 were checked. When the window page chaged in size, no horizontal bar appeared. The font size of all pages checked could be adjusted.**
B. The resource allows the user to adjust the font size and font/background color (or is rendered by an application such as a browser, media player, or reader) that offers this functionality).	**Pass**
Additional Information:	**Pgs 5-10 were checked. When changing the font/background color to green text on black, the background color changed to black, and the font color changed to green.**

4. Reading Layout

A. Text of the digital resource is compatible with assistive technology that allows the user to reflow the text by specifying the margins and line spacing (or is rendered by an application such as a browser, media player, or reader that offers this functionality).	**Fail**
Additional Information:	**Pgs 5-10 were checked. I was able to reflow the text, however, when relfowing the text, the text to speech function said "warning empty page." This was consistent on all pages checked. In addition the text seem to lose structure. Meaning, there were no spaces between words in a page when the page size decreased.**
B. If the digital resource is an electronic alternative to printed materials, the page numbers correspond to the printed material.	**N/A**

Additional Information:	**Need additional information. We do not have printed material to compare it too.**

5. Reading Order

A. The reading order for digital resource content logically corresponds to the visual layout of the page when rendered by assistive technology.	**Pass**
Additional Information:	**Pgs 20-25 were checked. The reading order was logical on all five pages.**

6. Structural Markup/Navigation

A. The text of the digital resource includes markup (e.g. tags or styles) that allows for navigation by key structural elements (chapters, headings, pages) using assistive technology (or is rendered by an application such as a browser, media player, or reader that offers this functionality).	**Fail**
Additional Information:	**No method provided that allows user to bypass sections of text. The Title and Bookmarks passed when using the accessibility checker. The tagged PDF and Headings failed using the accessibility checker.**
B. The text of the digital resource includes markup for bullets and numbered lists that is compatible with assistive technology (or is rendered by an application such as a browser, media player, or reader that offers this functionality).	**Fail**
Additional Information:	**No markups found. The Title and Bookmarks passed when using the accessibility checker. The tagged PDF and Headings failed using the accessibility checker.**
C. If the text of the digital resource is delivered within an ebook reader application, a method is provided that allows users to bypass the reader interface and move directly to the text	**N/A**

content that is compatible with assistive technology.	
Additional Information:	**No additional eReader used.**

7. Tables

A. Data tables include markup (e.g. tags or styles) that identifies row and column headers in a manner that is compatible with assistive technology (or are rendered by an application such as a browser, media player, or reader that offers this functionality).	**Fail**
Additional Information:	**Tables on pages 19, 23, 24, 26, and 28 were checked manually. The text to speech function seperated and read the tables by row. Using the accessibility checker, the rows, TH and TD, headers and regularity all failed.**

8. Hyperlinks

A. In-book links take you to a location within the textbook. For example, the table of contents would be considered in-book links and embedded links take you to the correct location in the book.	**Pass**
Additional Information:	**30/30 total in-book links worked. All links appeared to be links and functioned as links. All links checked came from the beginning of the book since no within book links were found in the middle or the end of the book. ---> (Beginning) Pg 3 was checked=(30/30) hyperlinks worked. ---> Using the accessibility checker, navigations links passed.**
B. Live hyperlinks take you to any website or webpages external to the book.	**Fail**
Additional Information:	**3/3 links functioned. There were only 3 live links found in the entire book. Pgs 2 (2 links), 76 had live links and were checked. There were no description of the links.**

C. Live links take you to the correct webpage that is functioning properly.	**Pass**
Additional Information:	**3/3 links worked. Pages 2 (2 links), and 76 had links and were checked. All three links functioned.**
D. Live links are descriptive enough for the users to know where it should take them.	**Fail**
Additional Information:	**0/3 links had descritptions. Pages 2 (2 links), and 76 had links and were checked. All links were in html (URL) form and were not descriptive enough.**

9. Color and Contrast

A. All information within the material that is conveyed using color is also available in a manner that is compatible with those that do not perceive color, and information conveyed by color is also conveyed in other ways.	**Pass**
Additional Information:	**Pgs 5-13 were checked. Information not conveyed by color alone. Size of font, and type of font (Bold versus Non-Bold font) were used. The chapter headings were in black font, bold font, and the size was larger than the rest of the text.**
B. Information is conveyed from the sub-categories for contrast.	**Pass**
Additional Information:	**Pgs 5-13 were checked. Most pages had the contrast ratio of 4.51:1 and above (21.0:1). Chapter headings passed with a ratio of 20.5:1.**
C. Contrast for headers passed WCAG AA standards for large texts (contrast ratio 3:1).	**Pass**
Additional Information:	**Pgs 5-13 were checked. Chapter headings passed with a ratio of 20.5:1.**
D. Contrast for text passed WCAG AA standards for normal texts (contrast ratio of 4.5:1).	**Pass**
Additional Information:	**Pgs 5-13 were checked. Most of the text was avove the ratio 4.51:1 (21.0:1).**

E. Contrast for simple images (for example, images of atoms) passed WCAG AA standards (contrast ratio of 4.5:1).	**Pass**
Additional Information:	**Pgs 21-29 were checked. Simple images (in this case a simple table-there were no images other than tables found throughout the book so I used a table that had little information and was simplistic) passed with a ratio of 4.51:1 and above.**

10. Language

A. The text of the digital resource includes markup that declares the language of the content in a manner that is compatible with assistive technology.	**Fail**
Additional Information:	**Using the accessiblity checker the primary language failed.**
B. If the digital resource includes passages in a foreign language, these passages include markup that declares the language in a manner that is compatible with assistive technology.	**Fail**
Additional Information:	**Using the accessiblity checker the primary language failed.**

11. Images

A. Non-decorative images have alternative text that is compatible with assistive technology (or is rendered by an application such as a browser, media player, or reader that offers this functionality).	**N/A**
Additional Information:	**No Non-Decorative images present.**
B. Decorative images are marked with null alternate text or contain markup that allows them to be ignored by assistive technology.	**N/A**
Additional Information:	**No Decorative images present.**

C. Complex images, charts, and graphs have longer text descriptions that are compatible with assistive technology (or are rendered by an application such as a browser, media player, or reader) that offers this functionality).	**Fail**
Additional Information:	**0/10 image descriptions did not convey meaning (descriptions were not present on most of the images). 19, 23, 24, 26, and 28, 38, 39 (3 images), and 40 had images and were checked. Most images did not contain descriptions except for 1 on page 38. This table on page 38 did not include a longer text description however it was compatible with assisstive technology. Using the accessibility checker, figures alternate text failed.**

12.Multimedia

A. A synchronized text track (e.g. open or closed captions) is provided with all video content.	**N/A**
Additional Information:	**No content found.**
B. A transcript is provided with all audio content.	**N/A**
Additional Information:	**No content found.**
C. Audio/video content is delivered via a media player that is compatible with assistive technology. This includes support for all criteria listed in Section 15 below.	**N/A**
Additional Information:	**No content found.**

13.Flickering

A. The digital resource content does not contain anything that flashes more than three times in any one-second period.	**Pass**
Additional Information:	**Pgs 5-10 were checked. No flickering content was observed. Using the accessibility checker, screen flicker passed.**

14. Science, Technology, Engineering, and Math (STEM)

A. STEM figures have appropriate markup that indicates that the image is a figure.	**N/A**
Additional Information:	**No Stem content found.**
B. STEM graphs have appropriate markup that indicates that the image is a graph.	**N/A**
Additional Information:	**No Stem content found.**
C. STEM equations have appropriate markup that indicates that the image is an equation.	**N/A**
Additional Information:	**No Stem content found.**
D. STEM tables have appropriate markup that indicates the image is a table.	**N/A**
Additional Information:	**No Stem content found.**
E. STEM figures have appropriate notation markup that conveys both the notation (presentation) and meaning (semantics) of the STEM content.	**N/A**
Additional Information:	**No Stem content found.**
F. STEM graphs have appropriate notation markup that conveys both the notation (presentation) and meaning (semantics) of the STEM content.	**N/A**
Additional Information:	**No Stem content found.**
G. STEM equations have appropriate notation markup that conveys both the notation (presentation) and meaning (semantics) of the STEM content.	**N/A**
Additional Information:	**No Stem content found.**
H. Assistive technology used can access the content from the STEM tables.	**N/A**
Additional Information:	**No Stem content found.**

15. Interactive Elements

A. Each interactive element (e.g. menu, hyperlink, button) and function (e.g. annotations) allows keyboard-only operation both with and without assistive technology.	**Pass**
Additional Information:	**On page 3, there are within-book links and I am able to use my tab key and enter key to navigate the book.**
B. Each interactive element conveys information to assistive technology regarding the element's name, type, and status (e.g. "Play, button, selected").	**Pass**
Additional Information:	**On page 3, there are within-book links and I am able to use my tab key and enter key to navigate the book. The markups were sufficient enough to convey meaning.**
C. All instructions, prompts, and error messages necessary to complete forms are conveyed as text to assistive technology (or are rendered by an application such as a browser, media player, or reader that offers this functionality).	**N/A**
Additional Information:	**No Interactive Elements Present.**