



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: Writing for Success
Format of Textbook: PDF

Assistive Technology (AT) Evaluation Score: Overall	7.3 (Maximum score = 10)
<p>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.</p> <ul style="list-style-type: none"> • 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	6.4 (Maximum score =10)
<p>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.</p>	



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 the formal accessibility policy specifically for the textbook, but did find accessibility information about the textbook's provider at http://www.calstate.edu/accessibility/resources/.
B. The organization providing the online materials has an accessibility statement.	Fail
Additional Information:	Did not find any information about the textbook's accessibility statement but found information about Merlot's accessibility statement at http://info.merlot.org/merlohelp/index.htm#merlot_technologies.htm.
C. An Accessibility Evaluation Report is available from an external organization.	Fail
Additional Information:	Did not find the textbook's accessibility evaluation report but did find information about Merlot's accessibility evaluation report at http://info.merlot.org/merlohelp/index.htm#merlot_technologies.htm.

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:	Pg. 21, 39, 132, 135, 139. All of the regular text was read properly with no words or sections skipped. Tables with lists were read in logical order without



	<p>skipping any information. However, while reading some headings such as "KEY TAKEAWAYS" on page 39, the NVDA assistive reader would read it as "K-E-Y" rather than reading "key." It was also difficult to understand when there were blanks in exercises (ex: pg. 135, blanks for answers). A person may not understand that the choices are actually choices rather than the program just reading it.</p>
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3. Text Adjustment

<p>A. Text is compatible with assistive technology.</p>	<p>Fail</p>
<p>Additional Information:</p>	<p>Pg. 21, 39, 132, 135, 139. The pages in the textbook zoom in and out. However, when you go past 100% while zooming, you have to horizontally zoom in order to read the whole content of the textbook.</p>
<p>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).</p>	<p>Fail</p>
<p>Additional Information:</p>	<p>Pg. 21, 39, 132, 135, 139. The pages that I checked to adjust font and colors did not pass the text adjustment evaluation because the background was able to change color to black, but the text remained black. Therefore, you were not able to read the entire textbook.</p>

4. Reading Layout

<p>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).</p>	<p>Pass</p>
<p>Additional Information:</p>	<p>Pg. 21, 39, 132, 135, 139. The text reflowed properly when zoomed in and out since the whole textbook</p>



	<p>page would zoom in and out rather than the font size just getting bigger or smaller and the text having to readjust the amount of words per line. There was no problem with the way the text reflowed in each line.</p>
<p>B. If the digital resource is an electronic alternative to printed materials, the page numbers correspond to the printed material.</p>	<p>N/A</p>
<p>Additional Information:</p>	

5. Reading Order

<p>A. The reading order for digital resource content logically corresponds to the visual layout of the page when rendered by assistive technology.</p>	<p>Pass</p>
<p>Additional Information:</p>	<p>Pg. 21, 39, 132, 135, 139. The regular text and tables with lists were all read in a logical order with no information skipped or read in a way that the reader would not be able to understand. There were headings such as the "KEY TAKEAWAY" heading that could be fixed so that the word "key" is read as a word rather than the individual letters, but the heading was a very small section of these pages that were checked (pg. 39).</p>

6. Structural Markup/Navigation

<p>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).</p>	<p>Pass</p>
<p>Additional Information:</p>	<p>I was able to navigate through the headings, lists, tables, and images of the textbook by using the NVDA hotkeys with no problem. However, there</p>



	<p>were images that were not labeled and did not have any description. I was not able to navigate to these as easily, and a person with visual impairment might not be able to understand what is going on in the images since the NVDA reader reads it as "blank." (ex: pg. 169, 170, 171. 251, 252, 253, 255, 257, 258, 260, 480-488-- blank images)</p>
<p>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).</p>	<p>Pass</p>
<p>Additional Information:</p>	<p>10/10 lists were navigable using the NVDA hotkeys (pg. 2-3, 4, 7-8, 9, 12, 13-14, 19 20, 21, 24). The only problem that I found while navigating through the lists was that the nVDA assistive program was not able to continue to second parts of the list if the first part of the list was on one page and the second part was on the next page. The NVDA reader would just state "No next list" even though it continues on the next page.</p>
<p>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.</p>	<p>N/A</p>
<p>Additional Information:</p>	

7. Tables

<p>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).</p>	<p>Fail</p>
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Additional Information:	6/10 tables were navigable using the NVDA hotkeys (pg. 5, 15-17, 20, 35, 145, 154). The 4 tables left over were not navigable because these tables were not labeled as tables. Instead, they were labeled as blank graphics or just not labeled at all (pg. 29, 170, 174-175, 254).
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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.	Fail
Additional Information:	0/30 links within book hyperlinks worked (pg. 6, 17, 18, 22, 35, 38 (4), 39(15), 131, 542, 543, 552, 553) All of these links looked like links however none of them were clickable.
B. Live hyperlinks take you to any website or webpages external to the book.	Fail
Additional Information:	When averaging out the 2 scores of the hyperlinks of the functionality and the description of the links, the evaluation came out to a 6.
C. Live links take you to the correct webpage that is functioning properly.	Pass
Additional Information:	15/20 hyperlinks were correctly functioning and connected the reader to the correct website on the internet (pg. 5, 544(2), 546(4), 568(5), 569, 570, 596). However, there were 5 links of the 20 that I evaluated that led to pages that were not found on the internet (pg. 546(2), 560, 568, 570).
D. Live links are descriptive enough for the users to know where it should take them.	Fail
Additional Information:	7/20 hyperlinks had good description of where the links would lead the user to on the internet (pg. 5, 546(6)). However, the remaining 13 did not have good descriptions because the links listed were just URLs that did not inform the reader of where the



	links would go (pg. 544(2), 560, 568(6), 569, 570(2), 596)).
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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:	Headings were easily distinguishable in black/dark blue and in bold. Links were consistently in blue even though many within-book links were links that were not working.
B. Information is conveyed from the sub-categories for contrast.	Pass
Additional Information:	Headings, simple images, and text all passed the color contrast analysis because a majority of it was in black with a white background.
C. Contrast for headers passed WCAG AA standards for large texts (contrast ratio 3:1).	Pass
Additional Information:	Headings were consistently in black, dark blue and in bold and passed the color contrast analysis.
D. Contrast for text passed WCAG AA standards for normal texts (contrast ratio of 4.5:1).	Pass
Additional Information:	Text was consistently in black with the background in white, therefore it passed the color contrast analysis.
E. Contrast for simple images (for example, images of atoms) passed WCAG AA standards (contrast ratio of 4.5:1).	Pass
Additional Information:	Simple images were just of black text on a white background, therefore it passed the color contrast analysis.



10. Language

<p>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.</p>	<p>N/A</p>
<p>Additional Information:</p>	
<p>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.</p>	<p>N/A</p>
<p>Additional Information:</p>	

11. Images

<p>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).</p>	<p>Fail</p>
<p>Additional Information:</p>	<p>0/20 nondecorative images had good description and were read properly by the NVDA program (pg. 27 29, 30, 137, 169, 170, 171, 251, 252, 253, 255, 257, 258, 260, 480-488). The images on these pages were not labeled and had no description or captions to help readers with visual impairments understand what was in the images. The images would be read as "blank" images and there were a few tables that were also labeled as graphics but were read as "blank" images as well.</p>
<p>B. Decorative images are marked with null alternate text or contain markup that allows them to be ignored by assistive technology.</p>	<p>N/A</p>
<p>Additional Information:</p>	
<p>C. Complex images, charts, and graphs have longer text descriptions that are compatible with assistive technology (or are rendered by</p>	<p>Fail</p>



<p>an application such as a browser, media player, or reader) that offers this functionality).</p>	
<p>Additional Information:</p>	<p>0/9 complex images that were found in the textbook had good description and were read properly by the NVDA program (pg. 28, 386-387, 558-559, 560, 569, 569-570, 570, 572-573, 573). 7 of the 9 images found were read by the NVDA program as "blank" images and 2 of he 9 were not labeled and had no descriptions or captions for the images. A person with visual impairment would not be able to understand what was in the images.</p>

12.Multimedia

<p>A. A synchronized text track (e.g. open or closed captions) is provided with all video content.</p>	<p>N/A</p>
<p>Additional Information:</p>	
<p>B. A transcript is provided with all audio content.</p>	<p>N/A</p>
<p>Additional Information:</p>	
<p>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.</p>	<p>N/A</p>
<p>Additional Information:</p>	

13.Flickering

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



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:	
B. STEM graphs have appropriate markup that indicates that the image is a graph.	N/A
Additional Information:	
C. STEM equations have appropriate markup that indicates that the image is an equation.	N/A
Additional Information:	
D. STEM tables have appropriate markup that indicates the image is a table.	N/A
Additional Information:	
E. STEM figures have appropriate notation markup that conveys both the notation (presentation) and meaning (semantics) of the STEM content.	N/A
Additional Information:	
F. STEM graphs have appropriate notation markup that conveys both the notation (presentation) and meaning (semantics) of the STEM content.	N/A
Additional Information:	
G. STEM equations have appropriate notation markup that conveys both the notation (presentation) and meaning (semantics) of the STEM content.	N/A
Additional Information:	
H. Assistive technology used can access the content from the STEM tables.	N/A
Additional Information:	



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:	
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:	
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:	

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:	Pg. 1-5, Adobe Acrobat XI Pro v 11.0.12.

3. Text Adjustment

A. Text is compatible with assistive technology.	Pass
Additional Information:	Pg. 1-5, all text is adjustable.
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).	Fail
Additional Information:	Pg. 1-5, pages become all black.

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:	Pg. 1-5, no pages reflow.
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



5. Reading Order

<p>A. The reading order for digital resource content logically corresponds to the visual layout of the page when rendered by assistive technology.</p>	<p>Pass</p>
<p>Additional Information:</p>	<p>Pg. 19-23</p>

6. Structural Markup/Navigation

<p>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).</p>	<p>Fail</p>
<p>Additional Information:</p>	<p>No structural markup</p>
<p>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).</p>	<p>Fail</p>
<p>Additional Information:</p>	<p>No structural markup</p>
<p>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.</p>	<p>Fail</p>
<p>Additional Information:</p>	<p>No structural markup</p>

7. Tables

<p>A. Data tables include markup (e.g. tags or styles) that identifies row and column headers in a manner that is compatible with assistive</p>	<p>Pass</p>
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technology (or are rendered by an application such as a browser, media player, or reader that offers this functionality).	
Additional Information:	Accessibility Checker: only Regularity section fails, Manual Check: Read Out Loud will read the text in the table from left to right, but it is not sensible.

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.	N/A
Additional Information:	No within book links found, but passes in accessibility report.
B. Live hyperlinks take you to any website or webpages external to the book.	Fail
Additional Information:	Not all of the links work and none of them have descriptive text.
C. Live links take you to the correct webpage that is functioning properly.	Pass
Additional Information:	15/20 links work pg. 277, 426 (2), 492 (2), 537 (2 - same as pg 492), 544 (2), 546 (6 : 2 = don't work), 560 (1 = doesn't work), 568 (4 : 2 = don't work).
D. Live links are descriptive enough for the users to know where it should take them.	Fail
Additional Information:	None of the tested links have accurate descriptive text, only show URL.

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	Pass
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not perceive color, and information conveyed by color is also conveyed in other ways.	
Additional Information:	Pg. 315-346, has redundancy.
B. Information is conveyed from the sub-categories for contrast.	Pass
Additional Information:	Pg. 315-346
C. Contrast for headers passed WCAG AA standards for large texts (contrast ratio 3:1).	Pass
Additional Information:	All headers pass
D. Contrast for text passed WCAG AA standards for normal texts (contrast ratio of 4.5:1).	Pass
Additional Information:	Some light blue text fails: pg. 318, 322, 326, 327, 332, 337, 342, 343, 344.
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 simple images

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.	Pass
Additional Information:	Language markup found
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:	No foreign languages



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).	Pass
Additional Information:	No errors in accessibility report
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
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:	Image tags read as the file location, not a description of the image: pg. 313, 314, 315, 316 (2), 317, 318, 321, 325, 329.

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 found
B. A transcript is provided with all audio content.	N/A
Additional Information:	No multimedia 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 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
B. STEM graphs have appropriate markup that indicates that the image is a graph.	N/A
Additional Information:	No STEM content
C. STEM equations have appropriate markup that indicates that the image is an equation.	N/A
Additional Information:	No STEM content
D. STEM tables have appropriate markup that indicates the image is a table.	N/A
Additional Information:	
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
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
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
H. Assistive technology used can access the content from the STEM tables.	N/A
Additional Information:	

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
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
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

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