



## 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:** Check it Out!  
**Format of Textbook:** PDF

<b>Assistive Technology (AT) Evaluation Score: Overall</b>	<b>5.6 (Maximum score = 10)</b>
<p><b>Assistive Technologies (AT) Evaluations</b> 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"> <li>• Accessibility features of desktop operating systems (e.g. high-contrast display themes, settings from the Keyboard and Mouse control panels)</li> <li>• Accessibility-related software included with desktop operating systems (e.g. VoiceOver, Microsoft Narrator)</li> <li>• Third-party accessibility software and hardware:</li> <li>• Screen readers (e.g. JAWS, Window Eyes)</li> <li>• Magnification software (e.g. ZoomText Magnifier/Reader, MAGIC Pro with Speech)</li> <li>• Reading software for users with learning disabilities (e.g. Read and Write Gold, Kurzweil 3000)</li> <li>• Refreshable Braille displays</li> </ul>	
<b>Non- Assistive Technology (NAT) Evaluation Score: Overall</b>	<b>7.2 (Maximum score =10)</b>
<p><b>Non-Assistive Technologies (NAT) Evaluations</b> 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.

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## **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.	<b>Fail</b>
Additional Information:	<b>URL not found.</b>
B. The organization providing the online materials has an accessibility statement.	<b>Fail</b>
Additional Information:	<b>URL not found.</b>
C. An Accessibility Evaluation Report is available from an external organization.	<b>Fail</b>
Additional Information:	<b>URL not found.</b>

### 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.	<b>Pass</b>
Additional Information:	<b>4/5 pages passed. Pages 1-5 checked.</b>

### 3. Text Adjustment

A. Text is compatible with assistive technology.	<b>Pass</b>
Additional Information:	<b>5/5 pages passed. Pages 18-22 checked.</b>
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).	<b>Pass</b>
Additional Information:	<b>5/5 pages passed. Pages 18-22 checked.</b>



#### 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><b>Pass</b></p>
<p>Additional Information:</p>	<p><b>5/5 pages passed. Pages 18-22 checked.</b></p>
<p>B. If the digital resource is an electronic alternative to printed materials, the page numbers correspond to the printed material.</p>	<p><b>N/A</b></p>
<p>Additional Information:</p>	<p><b>Did not have access to printed materials.</b></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><b>Fail</b></p>
<p>Additional Information:</p>	<p><b>5/5 pages passed. Pages 14-18 checked.</b></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><b>Fail</b></p>
<p>Additional Information:</p>	<p><b>0/15 pages passed. Pages 139-153 checked.</b></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,</p>	<p><b>Fail</b></p>



media player, or reader that offers this functionality).	
Additional Information:	<b>0/3 lists passed. Pages 1-219 checked.</b>
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.	<b>N/A</b>
Additional Information:	<b>Did not use eReader application for PDF document.</b>

## 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).	<b>N/A</b>
Additional Information:	<b>No tables found. Pages 1-219 checked.</b>

## 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.	<b>N/A</b>
Additional Information:	<b>No within-book links found. Pages 1-219 checked.</b>
B. Live hyperlinks take you to any website or webpages external to the book.	<b>N/A</b>
Additional Information:	
C. Live links take you to the correct webpage that is functioning properly.	<b>N/A</b>
Additional Information:	<b>No live on internet links found. Pages 1-219 checked.</b>



D. Live links are descriptive enough for the users to know where it should take them.	<b>N/A</b>
Additional Information:	<b>No live on internet links found. Pages 1-219 checked.</b>

### 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.	<b>N/A</b>
Additional Information:	<b>No instances of color redundancy were found, nor were they needed. Pages 1-219 checked.</b>
B. Information is conveyed from the sub-categories for contrast.	<b>Pass</b>
Additional Information:	<b>Averaged score.</b>
C. Contrast for headers passed WCAG AA standards for large texts (contrast ratio 3:1).	<b>Pass</b>
Additional Information:	<b>15/15 pages passed. Pages 139-153 checked.</b>
D. Contrast for text passed WCAG AA standards for normal texts (contrast ratio of 4.5:1).	<b>Pass</b>
Additional Information:	<b>15/15 pages passed. Pages 139-153 checked.</b>
E. Contrast for simple images (for example, images of atoms) passed WCAG AA standards (contrast ratio of 4.5:1).	<b>N/A</b>
Additional Information:	<b>1/1 images passed. Pages 1-219 checked.</b>

### 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.	<b>Fail</b>
Additional Information:	<b>Fails Adobe Acrobat XI Pro Accessibility Checker "Primary language" checkpoint.</b>



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:	<b>No foreign language passages found. Chapters 1, 7, and 16 checked.</b>

### 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:	<b>0/1 images passed.</b>
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:	<b>No decorative images found. Pages 1-219 checked.</b>
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).	N/A
Additional Information:	<b>No complex images found. Pages 1-219 checked.</b>

### 12.Multimedia

A. A synchronized text track (e.g. open or closed captions) is provided with all video content.	N/A
Additional Information:	<b>No multimedia found. Pages 1-219 checked.</b>
B. A transcript is provided with all audio content.	N/A
Additional Information:	<b>No multimedia found. Pages 1-219 checked.</b>



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. Pages 1-219 checked.

### 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:	219/219 pages passed. No flickering detected. Pages 1-219 checked.

### 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. Pages 1-219 checked.
B. STEM graphs have appropriate markup that indicates that the image is a graph.	N/A
Additional Information:	No STEM content found. Pages 1-219 checked.
C. STEM equations have appropriate markup that indicates that the image is an equation.	N/A
Additional Information:	No STEM content found. Pages 1-219 checked.
D. STEM tables have appropriate markup that indicates the image is a table.	N/A
Additional Information:	No STEM content found. Pages 1-219 checked.
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. Pages 1-219 checked.
F. STEM graphs have appropriate notation markup that conveys both the notation	N/A



(presentation) and meaning (semantics) of the STEM content.	
Additional Information:	<b>No STEM content found. Pages 1-219 checked.</b>
G. STEM equations have appropriate notation markup that conveys both the notation (presentation) and meaning (semantics) of the STEM content.	<b>N/A</b>
Additional Information:	<b>No STEM content found. Pages 1-219 checked.</b>
H. Assistive technology used can access the content from the STEM tables.	<b>N/A</b>
Additional Information:	<b>No STEM content found. Pages 1-219 checked.</b>

### *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.	<b>N/A</b>
Additional Information:	<b>No interactive elements found. Pages 1-219 checked.</b>
B. Each interactive element conveys information to assistive technology regarding the element's name, type, and status (e.g. "Play, button, selected").	<b>N/A</b>
Additional Information:	<b>No interactive elements found. Pages 1-219 checked.</b>
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).	<b>N/A</b>
Additional Information:	<b>No interactive elements found. Pages 1-219 checked.</b>



## 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.	<b>Fail</b>
Additional Information:	<b>No Content Found.</b>
B. The organization providing the online materials has an accessibility statement.	<b>Fail</b>
Additional Information:	<b>No Content Found.</b>
C. An Accessibility Evaluation Report is available from an external organization.	<b>Fail</b>
Additional Information:	<b>No Content Found.</b>

### 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.	<b>Pass</b>
Additional Information:	<b>Pgs 18-22 were checked. The text is available to assistive technology that allows user to enable text-to-speech functionality.</b>

### 3. Text Adjustment

A. Text is compatible with assistive technology.	<b>Fail</b>
Additional Information:	<b>Pgs 18-22 were checked. When the window page chaged in size, a horizontal bar appeared. The font size of all pages checked could be adjusted however a horizontal scrolling bar appeared.</b>
B. The resource allows the user to adjust the font size and font/background color (or is	<b>Fail</b>



<p>rendered by an application such as a browser, media player, or reader) that offers this functionality).</p>	
<p>Additional Information:</p>	<p><b>Pgs 18-22 were checked. When changing the font/background color to green text on black, the background color changed to black, and the font color did change to green. However, chapter numbers which were in black with gray background, did not change. The font color did change from black to green but the background did not change to black like the rest of the document.</b></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><b>Fail</b></p>
<p>Additional Information:</p>	<p><b>Pgs 18-22 were checked. When reflowing the text, the text to speech function did work. The text was available for assistive technology. This was consistent on all pages checked. Also the text did not reflow.</b></p>
<p>B. If the digital resource is an electronic alternative to printed materials, the page numbers correspond to the printed material.</p>	<p><b>N/A</b></p>
<p>Additional Information:</p>	<p><b>Need additional information. We do not have printed material to compare it too.</b></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><b>Pass</b></p>
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Additional Information:	<b>Pgs 18-22 were checked. The reading order was logical on all five pages.</b>
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## 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>	<b>Fail</b>
Additional Information:	<b>The tagged PDF, Title, bookmarks all failed using the accessibility checker. Heading passed.</b>
<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>	<b>Fail</b>
Additional Information:	<b>There were no list structural markups. The tagged PDF, Title and Bookmarks all failed using the accessibility checker. Headings passed.</b>
<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>	<b>N/A</b>
Additional Information:	<b>No additional eReader used.</b>

## 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</p>	<b>N/A</b>
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such as a browser, media player, or reader that offers this functionality).	
Additional Information:	<b>There were no tables found throughout the book. However, using the accessibility checker, the rows TH and TD, headers and regularity all passed.</b>

## 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.	<b>N/A</b>
Additional Information:	<b>No within book hyperlinks found.</b>
B. Live hyperlinks take you to any website or webpages external to the book.	<b>Fail</b>
Additional Information:	<b>1/1 live links worked. The link was found on page 114. Only one live link was found throughout the book. The links was in URL form.</b>
C. Live links take you to the correct webpage that is functioning properly.	<b>Pass</b>
Additional Information:	<b>1/1 live links worked. The link was found on page 114.</b>
D. Live links are descriptive enough for the users to know where it should take them.	<b>Fail</b>
Additional Information:	<b>0/1 live links were descriptive enough. The link was in URL (www.) form</b>

## 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.	<b>Pass</b>
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Additional Information:	<b>Pgs 18-29 were checked. Information not conveyed by color alone. Size of font, style of font (italics vs. print), and type of font (Bold versus Non-Bold font) were used. The chapter titles larger is size compared to the rest of the text. The chapter numbers were in black with gray background.</b>
B. Information is conveyed from the sub-categories for contrast.	<b>Pass</b>
Additional Information:	<b>Pgs 18-29 were checked. Most pages had the contrast ratio of 4.51:1 and above (16.3:1). The chapter titles larger in size and were bold compared to the rest of the text. The chapter titles passed with 14.11:1. There was italics text throughout the pages checked. The italics type of font passed for small text with a ratio of 15.76:1. The chapter numbers passed with a ratio of 10.7:1.</b>
C. Contrast for headers passed WCAG AA standards for large texts (contrast ratio 3:1).	<b>Pass</b>
Additional Information:	<b>Pgs 18-29 were checked. Large chapter headings passed with a ratio of 14.11:1. Small headers towards the top of the page passed with a ratio of 16.01:1.</b>
D. Contrast for text passed WCAG AA standards for normal texts (contrast ratio of 4.5:1).	<b>Pass</b>
Additional Information:	<b>Pgs 18-29 were checked. Most of the text was above the ratio 4.51:1 (16.3:1). Large text, which in this case were chapter titles, passed with a 14.11:1. Italics small text passed with a ratio of 15.76:1.</b>
E. Contrast for simple images (for example, images of atoms) passed WCAG AA standards (contrast ratio of 4.5:1).	<b>N/A</b>
Additional Information:	<b>No images found throughout the book.</b>

## 10.Language

A. The text of the digital resource includes markup that declares the language of the	<b>Fail</b>
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content in a manner that is compatible with assistive technology.	
Additional Information:	<b>Using the accessibility checker the primary language failed.</b>
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.	<b>Fail</b>
Additional Information:	<b>Using the accessibility checker the primary language failed.</b>

### *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).	<b>N/A</b>
Additional Information:	<b>No Non Decorative images were found. However, figures alternate text passed.</b>
B. Decorative images are marked with null alternate text or contain markup that allows them to be ignored by assistive technology.	<b>N/A</b>
Additional Information:	<b>No decorative images were found. However, figures alternate text passed.</b>
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).	<b>N/A</b>
Additional Information:	<b>No complex images were found. However, figure alternate text passed.</b>



### 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 1-10 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 figures were found throughout the book.
B. STEM graphs have appropriate markup that indicates that the image is a graph.	N/A
Additional Information:	No graphs were found throughout the book.
C. STEM equations have appropriate markup that indicates that the image is an equation.	N/A
Additional Information:	No equations were found throughout the book.
D. STEM tables have appropriate markup that indicates the image is a table.	N/A



Additional Information:	<b>No tables were found throughout the book.</b>
E. STEM figures have appropriate notation markup that conveys both the notation (presentation) and meaning (semantics) of the STEM content.	<b>N/A</b>
Additional Information:	<b>No figures were found throughout the book.</b>
F. STEM graphs have appropriate notation markup that conveys both the notation (presentation) and meaning (semantics) of the STEM content.	<b>N/A</b>
Additional Information:	<b>No graphs were found throughout the book.</b>
G. STEM equations have appropriate notation markup that conveys both the notation (presentation) and meaning (semantics) of the STEM content.	<b>N/A</b>
Additional Information:	<b>No equations were found throughout the book.</b>
H. Assistive technology used can access the content from the STEM tables.	<b>N/A</b>
Additional Information:	<b>No tables were found throughout the book.</b>

### ***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.	<b>N/A</b>
Additional Information:	<b>No Interactive Element Present.</b>
B. Each interactive element conveys information to assistive technology regarding the element's name, type, and status (e.g. "Play, button, selected").	<b>N/A</b>
Additional Information:	<b>No Interactive Element Present.</b>
C. All instructions, prompts, and error messages necessary to complete forms are conveyed as text to assistive technology (or are rendered	<b>N/A</b>



by an application such as a browser, media player, or reader that offers this functionality).	
Additional Information:	<b>No Interactive Element Present.</b>

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