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: **Biology Hub (Boundless)**
Format of Textbook: **HTML**

Assistive Technology (AT) Evaluation Score: Overall	**5.0 (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:	**There were no links provided for aditional information regarding the formal accessibility policy. The program used to analyze text content was NVDA which is an open source screen reader for Windows. Google chrome was used to access the book online.**
B. The organization providing the online materials has an accessibility statement.	**Fail**
Additional Information:	**There were no links provided for aditional information regarding the formal accessibility policy. The program used to analyze text content was NVDA which is an open source screen reader for Windows. Google chrome was used to access the book online.**
C. An Accessibility Evaluation Report is available from an external organization.	**Fail**
Additional Information:	**There were no links provided for aditional information regarding the formal accessibility policy. The program used to analyze text content was NVDA which is an open source screen reader for Windows. Google chrome was used to access the book online.**

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.	**Fail**
Additional Information:	**0/7 chapters analyzed passed. Chapters 1 through 7 were used for this analysis. The NVDA program**

	would read the text headings and content, however, whenever the program would come to a link in the text it would stop. This happened every time a link was encountered. The program used to analyze text content was NVDA which is an open source screen reader for Windows. Google chrome was used to access the book online.

3. Text Adjustment

A. Text is compatible with assistive technology.	**Pass**
Additional Information:	**7/7 chapters passed. Chapters 1 through 7 were analyzed and allow for adequate font size adjustment. The text was adjusted in size using a standard Toshiba laptop with a 16 inch screen size. Google chrome was used to access the book online.**
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:	**7/7 chapters passed. Chapters 1 through 7 were analyzed and allow for adequate adjustment of the font/background color. The tool used to analyze this component was the Google extension "Care your Eyes". Google chrome was used to access the book online.**

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:	**30/30 web pages passed. All content from chapters one and two allow for adequate text reflow**

	between 30% and 300% zoom levels. Results may vary depending on screen size. Text reflow was analyzed using a standard Toshiba laptop with a 16 inch screen size. Google chrome was used to access the book online.
B. If the digital resource is an electronic alternative to printed materials, the page numbers correspond to the printed material.	**N/A**
Additional Information:	**There is no printed material available to compare and the HTML text has no numbered pages. The program used to analyze text content was NVDA which is an open source screen reader for Windows. Google chrome was used to access the book online.**

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.	**Fail**
Additional Information:	**0/5 pages were analyzed and passed. The first five pages taken from chapter 20 were used in this analysis. The reading order for digital resource content did not logically corresponded to the visual layout of the page when rendered by assistive technology. Althought the text content was read correctly and in the proper order, every page starts with a learning objectives, key points and terms section which the NVDA program could not read in an understandable way. The reader would skip certain words or would start in the middle of a sentence. The program used to analyze text content was NVDA which is an open source screen reader for Windows. Google chrome was used to access the book online.**

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:	**0/7 chapters were analyzed and passed. Chapters 1 through 7 were used to analyze navigational text. The text of the digital resource included limited markup that allowed for navigation by heading levels using assistive technology but only for the main chapter page which listed sections and section titles. Once the content of each section was open the NVDA reader could not recognize any headings. All level 1 headings were in blue text on a white background and all level 2 headings were black text on a white background. The program used to analyze navigational text was NVDA which is an open source screen reader for Windows. Google chrome was used to access the book online.**
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 analyzed and passed. Ten lists from chapter 1 were used to analyze lists. The text of the digital resource did not include markup for bullets and numbered lists that was compatible with assistive technology. On the chapter table of contents page, the NVDA reader would identify lists representing the previous and the next chapter, however, once the chapter content was opened the NVDA program could not identify or navigate lists. The program used to analyze text content was NVDA**

	which is an open source screen reader for Windows. Google chrome was used to access the book online.
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:	**No additional eReader application being used in this evaluation. The program used to analyze text content was NVDA which is an open source screen reader for Windows. Google chrome was used to access the book online.**

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:	**0/5 tables passed analysis. Data tables did not include markup that would identify row and/or column headers in a manner that was compatible with assistive technology. The program used to analyze the tables was NVDA which is an open source screen reader for Windows. Google chrome was used to access the book online. Only five tables could be located in this text and were taken from chapters 2, 12, 14 and 47.**

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	**N/A**

embedded links take you to the correct location in the book.	
Additional Information:	**The within book links are included in the live links analysis for HTML formats. The program used to analyze text content was NVDA which is an open source screen reader for Windows. Google chrome was used to access the book online.**
B. Live hyperlinks take you to any website or webpages external to the book.	**Fail**
Additional Information:	**This is a combined average of the following two subsections of the links description and functionality. The program used to analyze text content was NVDA which is an open source screen reader for Windows. Google chrome was used to access the book online.**
C. Live links take you to the correct webpage that is functioning properly.	**Pass**
Additional Information:	**50/50 Links were analyzed for functionality and passed. Chapters 40 through 43 were used to determine link functionality. All links analyzed functioned properly. The program used to analyze text content was NVDA which is an open source screen reader for Windows. Google chrome was used to access the book online.**
D. Live links are descriptive enough for the users to know where it should take them.	**Fail**
Additional Information:	**0/50 Links were analyzed for their description and passed. Chapters 40 through 43 were used to determine link description. The links did not provide adequate information in describing their purpose and the NVDA program was unable to identify them as links. The program used to analyze text content was NVDA which is an open source screen reader for Windows. Google chrome was used to access the book online.**

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:	**7/7 chapters were analyzed and passed. Chapters 1 through 7 were all checked for color redundancy. The program used to analyze text content was NVDA which is an open source screen reader for Windows. Google chrome was used to access the book online.**
B. Information is conveyed from the sub-categories for contrast.	**Pass**
Additional Information:	**This is an average score taken from the combined sub sections of the color and contrast field. The content was analyzed using the color contrast analyzer tool. Google chrome was used to access the book online.**
C. Contrast for headers passed WCAG AA standards for large texts (contrast ratio 3:1).	**Pass**
Additional Information:	**49/49 headers were checked and passed. All level 1 headers are blue on white background, and all level 2 headers are black on white background. There were no other header levels. The content was taken from chapters 1 through 7. The content was analyzed using the color contrast analyzer tool. Google chrome was used to access the book online.**
D. Contrast for text passed WCAG AA standards for normal texts (contrast ratio of 4.5:1).	**Pass**
Additional Information:	**35/35 text samplings passed. Text sampling was taken from chapters 1 through 7. The color was black text on a white background. The content was analyzed using the color contrast analyzer tool. Google chrome was used to access the book online.**
E. Contrast for simple images (for example, images of atoms) passed WCAG AA standards (contrast ratio of 4.5:1).	**Pass**

Additional Information:	**15/15 total simple images passed for color contrast. The simple images analyzed were taken from chapters 1 through 7. The content was analyzed using the color contrast analyzer tool. Google chrome was used to access the book online.**

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:	**The text of the digital resource did not include markup that declared the language of the content in a manner compatible with assistive technology. The program used to analyze text content was NVDA which is an open source screen reader for Windows. Google chrome was used to access the book online.**
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:	**The digital resource did not include passages in a foreign language. The program used to analyze text content was NVDA which is an open source screen reader for Windows. Google chrome was used to access the book online.**

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:	**8/8 non-decorative images were analyzed and passed. Chapter 40 through 47 were analyzed. Text**

	descriptions were provided that were compatible with assistive technology. The program used to analyze text content was NVDA which is an open source screen reader for Windows. Google chrome was used to access the book online.
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:	**0/0 decorative images analyzed. Chapters 40 through 47 were analyzed. There were no decorative images contained in the chapters analyzed. The program used to analyze text content was NVDA which is an open source screen reader for Windows. Google chrome was used to access the book online.**
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).	**Pass**
Additional Information:	**4/5 complex images passed. Chapter 40 through 47 were analyzed. In chapter 44 section 1, the image of the different levels of ecological study had no text descriptions provided that were compatible with assistive technology and therefore failed. The program used to analyze text content was NVDA which is an open source screen reader for Windows. Google chrome was used to access the book online.**

12.Multimedia

A. A synchronized text track (e.g. open or closed captions) is provided with all video content.	**Pass**
Additional Information:	**3/4 multimedia components were analyzed and passed. The multimedia was found in chapter 14 under the section "DNA Replication in Eukaryotes", in chapter 16 under the section "Regulating gene expression"and chapter 41 under the section**

	"Concept of Osmolality and Milliequivalent", no other multimedia components were located. The multimedia components provided a closed captioned text track. Although the multimedia in chapter 16 had no text track there was no audio content and the second multimedia video indicated that the video did not exist and failed. Google chrome was used to access the book online.
B. A transcript is provided with all audio content.	**Fail**
Additional Information:	**0/4 multimedia components were analyzed and passed. The multimedia was found in chapter 14 under the section "DNA Replication in Eukaryotes", in chapter 16 under the section "Regulating gene expression" and chapter 41 under the section "Concept of Osmolality and Milliequivalent", no other multimedia components were located. The multimedia components did not provide a transcript for any of the audio content. Google chrome was used to access the book online.**
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:	**We are not using additional assistive technology to open audio/video content. Google chrome was used to access the book online.**

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:	**While analyzing book material there was no flickering on any of the pages. The program used to analyze text content was NVDA which is an open source screen reader for Windows. Google chrome was used to access the book online.**

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

A. STEM figures have appropriate markup that indicates that the image is a figure.	**Fail**
Additional Information:	**0/10 figures were analyzed and passed markup. Figures were found in chapters 44 and 46. Content is not marked up in a manner that is compatible with assistive technology. Although there were alternate text descriptions, they were not adequate in describing the information portrayed by the figures. The program used to analyze text content was NVDA which is an open source screen reader for Windows. Google chrome was used to access the book online.**
B. STEM graphs have appropriate markup that indicates that the image is a graph.	**Fail**
Additional Information:	**0/10 graphs were analyzed and passed markup. Graphs were found in chapters 14, and 44 through 47. Content is not marked up in a manner that is compatible with assistive technology. Although there were alternate text descriptions, they were not adequate in describing the information portrayed by the graphs. The program used to analyze text content was NVDA which is an open source screen reader for Windows. Google chrome was used to access the book online.**
C. STEM equations have appropriate markup that indicates that the image is an equation.	**N/A**
Additional Information:	**No STEM equations found. The program used to analyze text content was NVDA which is an open source screen reader for Windows. Google chrome was used to access the book online.**
D. STEM tables have appropriate markup that indicates the image is a table.	**Fail**
Additional Information:	**2/10 tables were analyzed and passed markup. Tables were found in chapters 2, 5 through 10 and 47. Content is not marked up in a manner that is compatible with assistive technology. Although there were alternate text descriptions, they were not adequate in describing the information portrayed by**

	the tables. The program used to analyze text content was NVDA which is an open source screen reader for Windows. Google chrome was used to access the book online.
E. STEM figures have appropriate notation markup that conveys both the notation (presentation) and meaning (semantics) of the STEM content.	**Fail**
Additional Information:	**0/10 figures were analyzed and passed notation markup. Figures were found in chapters 44 and 46. Content is not marked up in a manner that is compatible with assistive technology. The resource does not convey both the notation (presentation) and meaning (semantics) of the STEM content. Although there were alternate text descriptions, they were not adequate in describing the information portrayed by the figures. The program used to analyze text content was NVDA which is an open source screen reader for Windows. Google chrome was used to access the book online.**
F. STEM graphs have appropriate notation markup that conveys both the notation (presentation) and meaning (semantics) of the STEM content.	**Fail**
Additional Information:	**0/10 graphs were analyzed and passed notation markup. Graphs were found in chapters 14, and 44 through 47. Content is not marked up in a manner that is compatible with assistive technology. The resource does not convey both the notation (presentation) and meaning (semantics) of the STEM content. Although there were alternate text descriptions, they were not adequate in describing the information portrayed by the graphs. The program used to analyze text content was NVDA which is an open source screen reader for Windows. Google chrome was used to access the book online.**
G. STEM equations have appropriate notation markup that conveys both the notation	**N/A**

(presentation) and meaning (semantics) of the STEM content.	
Additional Information:	**No STEM equations found. The program used to analyze text content was NVDA which is an open source screen reader for Windows. Google chrome was used to access the book online.**
H. Assistive technology used can access the content from the STEM tables.	**Fail**
Additional Information:	**2/10 tables were analyzed and passed notation markup. Tables were found in chapters 2, 5 through 10 and 47. Content is not marked up in a manner that is compatible with assistive technology. The resource does not convey both the notation (presentation) and meaning (semantics) of the STEM content. Although there were alternate text descriptions, they were not adequate in describing the information portrayed by the tables. The program used to analyze text content was NVDA which is an open source screen reader for Windows. Google chrome was used to access the book online.**

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.	**Fail**
Additional Information:	**0/2 interactive elements were analyzed and passed. The interactive element in chapter 1 and in chapter 3 do not allow for keyboard use only; you must interact using the mouse. The program used to analyze text content was NVDA which is an open source screen reader for Windows. Google chrome was used to access the book online.**
B. Each interactive element conveys information to assistive technology regarding the element's name, type, and status (e.g. "Play, button, selected").	**Fail**

Additional Information:	**0/2 interactive elements were analyzed and passed. The interactive element in chapter 1 and in chapter 3 do not convey information to assistive technology regarding the element's name, type, and status. The program used to analyze text content was NVDA which is an open source screen reader for Windows. Google chrome was used to access the book online.**
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).	**Fail**
Additional Information:	**0/2 interactive elements were analyzed and passed. The interactive element in chapter 1 and in chapter 3 do not convey instructions, prompts, and error messages with assistive technology. The program used to analyze text content was NVDA which is an open source screen reader for Windows. Google chrome was used to access the book online.**

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:	**Google Select and Speak Free Version. Chapters 1 through 7 checked. Equation on Chapter 2 Section 2 Water's High Heat Capacity not read correctly. Keypoints, Terms, Examples (all on top of page) as well as Headers and figure descriptions are not read unless specifically highlighted. "NaCl" is read as "nackle". Ions and equations not necessarily read correctly. "-" read as "hyphen" and ignored when used as an exponent. " ' " is meant to read as "prime" but actually read as "single quote."**

3. Text Adjustment

A. Text is compatible with assistive technology.	**Pass**
Additional Information:	**Chapters 1 through 7 checked and passed. Horizontal scroll bar is an option but not needed for even 200+%.**
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:	**Chapters 1 through 7 checked and passed. Images are not inverted.Google "care your eyes" used. Ch2Section3 Organic Isomers: first figure not fully shown. Ch3.1 Second figure of Dehydration Synthesis section looks odd. Ch3.5 Second figure of DNA Double Helix Section not fully shown. Chapter 4**

	section Characteristics of Eukaryotic Cells: last two figures not fully shown. Ch5 Tonicity section figure not very readable. CH5. Metabolism of Carbohydrates second figure does not load. Ch6. First Law of Thermodynamics second figure not fully shown as well as Ch6 ATP section figure two. Ch7 Chemiomosis and Oxidative Phosphorylation section has two incomplete images. Ch 7 Control of Catabolic Pathways Section second figure not readable.

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).	**N/A**
Additional Information:	**No printed material or PDF available to compare.**
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 or PDF available to compare.**

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.	**N/A**
Additional Information:	**Needs assistive technologies.**

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	**N/A**

technology (or is rendered by an application such as a browser, media player, or reader that offers this functionality).	
Additional Information:	**Needs assistive technologies.**
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).	**N/A**
Additional Information:	**Needs assistive technologies.**
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:	**Needs assistive technologies.**

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).	**N/A**
Additional Information:	**Needs assistive technologies.**

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.	
Additional Information:	**Table of contents links work well.**

B. Live hyperlinks take you to any website or webpages external to the book.	**Pass**
Additional Information:	**20/20. Chapter 4 Cell Structure Section1 checked. Terms and "edit" hyperlinks in the text are linked to the same website but a different page. These hyperlinks were tested, did not find other ones in the text.**
C. Live links take you to the correct webpage that is functioning properly.	**Pass**
Additional Information:	**20/20. Chapter 4 Cell Structure Section 1 checked.**
A. Live links are descriptive enough for the users to know where it should take them.	**Pass**
Additional Information:	**20/20. Chapter 4 Cell Structure Section 1 checked.**

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:	**Bold and bigger font size used for headers. Italicized font used for certain figure descriptions and words in the text. Links are underlined. Chapters 13-19 checked.**
B. Information is conveyed from the sub-categories for contrast.	**Fail**
Additional Information:	**Chapters 13-20 checked.**
C. Contrast for headers passed WCAG AA standards for large texts (contrast ratio 3:1).	**Fail**
Additional Information:	**Top blue headers fail. Smaller black headers pass. Chapters 13-14 checked.**
D. Contrast for text passed WCAG AA standards for normal texts (contrast ratio of 4.5:1).	**Fail**

Additional Information:	**All text passes except italiziced grey text used for figure descriptions. Chapters 15-16 checked.**
E. Contrast for simple images (for example, images of atoms) passed WCAG AA standards (contrast ratio of 4.5:1).	**Pass**
Additional Information:	**2/2 simple images passed. Chapters 17-18 checked.**

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:	**No lang="en" found in coding.**
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 passages found in a foreign languages but there are some words in Latin.**

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).	**Fail**
Additional Information:	**0/182 images had alt description. All had a description underneath. Chapters 23-29 checked. W3C validator website used. Img errors: no alt attribute for any of the images. Figure on Ch23 SEction1.3 contains small unreadable font within the image.**

B. Decorative images are marked with null alternate text or contain markup that allows them to be ignored by assistive technology.	**Pass**
Additional Information:	**3 consistent ads shown on each page. Null alt text in coding, thus ignored. Chapters 23-29 checked.**
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).	**Pass**
Additional Information:	**40/43 images. Chapters 23-29 checked. All images described with longer descriptions or in the text. Figures that could use more description: Ch24Section2.2 figure1; Ch25 Section 1.2 and Section 4.1.**

12.Multimedia

A. A synchronized text track (e.g. open or closed captions) is provided with all video content.	**Fail**
Additional Information:	**0/2 "Annotations" set to on but no words on the screen. Ch19 Section 3.4 YouTube video " BBC Planet Earth - Birds of Paradise mating dance" and Ch19 Section 3.1 YouTube video "Galápagos with David Attenborough."**
B. A transcript is provided with all audio content.	**Fail**
Additional Information:	**0/2 No transcript found. Ch19 Section 3.4 YouTube video " BBC Planet Earth - Birds of Paradise mating dance" and Ch19 Section 3.1 YouTube video "Galápagos with David Attenborough."**
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.	**Pass**
Additional Information:	**2/2 videos played with sound. Ch19 Section 3.4 YouTube video " BBC Planet Earth - Birds of Paradise**

	mating dance" and Ch19 Section 3.1 YouTube video "Galápagos with David Attenborough."

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:	**Chapters 13-19 pass.**

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

A. STEM figures have appropriate markup that indicates that the image is a figure.	**Fail**
Additional Information:	**0/10 Not marked as figures, just given a Title. Fungi Chapter checked.**
B. STEM graphs have appropriate markup that indicates that the image is a graph.	**Fail**
Additional Information:	**0/2 found Not marked as graphs. Ch27 Sections 4.2 and 4.3.**
C. STEM equations have appropriate markup that indicates that the image is an equation.	**Fail**
Additional Information:	**Equations in Chapter 2 and 8 not labeled as equations.**
D. STEM tables have appropriate markup that indicates the image is a table.	**Fail**
Additional Information:	**Chapter 2 Section 1.4 tables not marked as tables.**
E. STEM figures have appropriate notation markup that conveys both the notation (presentation) and meaning (semantics) of the STEM content.	**Pass**
Additional Information:	**Titled and described. Fungi Chapter checked.**
F. STEM graphs have appropriate notation markup that conveys both the notation	**Pass**

(presentation) and meaning (semantics) of the STEM content.	
Additional Information:	**Titled and described. Ch 27 Sections 4.2 and 4.3.**
G. STEM equations have appropriate notation markup that conveys both the notation (presentation) and meaning (semantics) of the STEM content.	**Pass**
Additional Information:	**Titled and described. Chapter 2 and 8 not labeled as equations.**
H. Assistive technology used can access the content from the STEM tables.	**Pass**
Additional Information:	**Titled and described. Chapter 2 Section 1.4 tables not marked as tables.**

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.	**Fail**
Additional Information:	**Chapter 8 checked. Stops at the "Subjects" tab in the navigation bar.**
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.**