

UDL Principles of Representation Analysis

Richard B. Goldsmith

University College, University of Denver

IDT 4140: Universal Design for Learning

Professor Amanda Hardman

October 22, 2022

UDL Principles of Representation Analysis

For the analysis phase of the Accessibility Course for Education (ACE) course, Modules 1 and 2 were examined. Since the Accessibility Course for Education OER is Open Source, the author imported the course into the Canvas sandbox course. Next, the author performed accessibility checks on each website page for modules one and two using the CAST guide on creating accessible documents (CAST 2018). This CAST guide focuses on "five practices that can have a significant impact on the learner experience for all students, especially those who rely on assistive technology for their access to the curriculum" (CAST 2018). These five practices go by the mnemonic **SLIDE**, which stands for **Styles, Links, Images, Design,** and **Evaluation** (CAST 2018).

Numerous representation principles and checkpoints correlate with the **SLIDE** CAST guide. First, **Styles** are used for section headings and incorporate Checkpoint 1.1 (Offer ways of customizing the display of information); Checkpoint 3.2 (Highlight patterns, critical features, big ideas, and relationships); and Checkpoint 3.3 (Guide information processing and visualization). Next, **Links** are descriptive and meaningful and include Checkpoint 2.2 (Clarify syntax and structure) and Checkpoint 2.3 (Support decoding of text, mathematical notation, and symbols). Furthermore, **Images** have text descriptions and comprise Checkpoint 1.3 (Offer alternative for visual information); Checkpoint 2.1 (Clarify vocabulary and symbols); and Checkpoint 2.5 (Illustrate through multiple media). Additionally, the **Design** is perceivable, with high contrast, and consists of Checkpoint 1.1 (Offer ways of customizing the display of information). Lastly, **Evaluation** is holistic and authentic, which encompasses Checkpoint 1.3 (Offer alternative for visual information); Checkpoint 2.1 (Clarify vocabulary and symbols); and Checkpoint 2.5 (Illustrate through multiple media) (CAST 2018).

The **ACE Course** appeared to follow the best webpage design practices regarding color selection. As a result, reader viewability is high because there is enough contrast between the text and background (Checkpoint 1.1). In addition, good color contrast on webpages can help "learners focus more of their energies on gaining an understanding of the information, rather than on overcoming barriers caused by poor design" (CAST 2018).

Text formatting in the **ACE Course** includes titles, headings, and other styles to enhance readability and improve the structure of a document (Checkpoints 1.1, 3.2, and 3.3).

Additionally, headings break a long document into sections, prompting readers when a critical idea appears within a document (CAST 2018). Finally, headings must follow a few best practices for a person using a screen reader.

Hyperlinks on web pages must be descriptive and meaningful (Checkpoints 2.2 and 2.3). Hyperlinks that lack meaning can confuse users, "Make sure your links are meaningful on their own, without the surrounding text to provide additional context" (CAST n.d.). The **ACE Course** correctly created hyperlinks with descriptive titles and avoided complete URLs that can negatively affect a person using a screen reader. Lastly, based on my investigation, videos contained closed captions (Checkpoint 1.3).

The ACE course would benefit from applying CSS style for headers on all its web pages in modules one and two. For example, level 1 headings should display each page's title, topic, or purpose (University of Minnesota n.d.). Level 2 headings should display each main section of the document (Checkpoints 1.1, 3.2, and 3.3). Additionally, applying CSS style for all headers will create a consistent layout throughout all web pages, facilitating the perceptual features of text, color, and contrast (Checkpoint 1.1). Different header sizes use different font sizes, color depth, and contrast, making reading easier for learners.

Furthermore, the header CSS style will "highlight or emphasize key elements in the text," which helps learners focus on critical features (Checkpoint 3.2). Next, CSS headers provide an organizational method for reading a web page, which serves as a scaffold to support information processing during the reading process (Checkpoint 3.3). Lastly, providing accurate text descriptions using CSS style for headers provides accurate access for learners using text-to-speech software (Checkpoint 1.3).

The ACE course would facilitate learner usability from specific text within table headers and captions on web pages. Each web page in modules one and two of the ACE course was evaluated for accessibility using the Canvas Accessibility Checker tool. The Canvas Accessibility Checker discovered several issues on Module page 1.5, with a few missing headers and missing captions for the table. Tables should include a caption or alt text describing the table's contents (Checkpoints 1.3, 2.1). These techniques help users with screen readers better understand the information contained in the table (University of Minnesota n.d.). Additionally, a learner using a screen reader could fail to properly understand a table with missing alt text

because tables serve as concept organizers, cueing and prompting learners by drawing their attention to critical features (Checkpoint 3.2).

The last recommendation for the ACE course would be implementing Web Content Accessibility Guidelines (WCAG) 2.0 alt text guidelines for all images. Screen readers can only describe images to learners if they contain alt text (Checkpoint 1.3). Alternative text can also help digital learners who face issues with poor internet connections or limited data plans by turning-off image downloads while viewing webpages. (CAST n.d.). A few images in modules one and two contained the file name or "simply described the surface features of the image" (Checkpoint 1.3) (University of Minnesota n.d.). An image file name is helpful during web page development. However, "image filenames should not be used as the alt attribute describing the image content" (Canvas Accessibility Checker, 2022) since filenames do not accurately describe an image or multiple media with sufficient detail and accuracy (Checkpoints 1.3 and 2.5).

Applying the UDL principle of representation is a necessary but detailed process that requires thoroughness and a great deal of time. First, examining each asset on a web page for accessibility requires closely examining all web page content at several levels of investigation. Furthermore, some web page content may appear accessibility compliant; however, a more detailed analysis may discover errors. Next, the Canvas Accessibility Checker allowed me to perceive alt text and CSS styles accurately, but the accessibility checker missed some errors. Additionally, consulting UDL implementation guidelines and checkpoints elaborated on specific issues regarding accessibility. For instance, alt text may include a file name only, but how this affects a screen reader or web page readability is discovered within UDL checkpoints. Lastly, several accessibility checkers would be ideal when analyzing a web page, but this process still requires detailed examination and human intervention.

Bibliography

- CAST. 2018a. "AEM Center: Creating Accessible Documents." Aem.cast.org. 2018.
<https://aem.cast.org/create/creating-accessible-documents>.
- . 2018b. "UDL: Optimize Relevance, Value, and Authenticity." Udlguidelines.cast.org.
2018. <https://udlguidelines.cast.org/engagement/recruiting-interest/relevance-value-authenticity>.
- University of Minnesota. n.d. "Headings | Accessible U." Accessibility.umn.edu. Accessed October 6, 2022. <https://accessibility.umn.edu/what-you-can-do/start-7-core-skills/headings>.