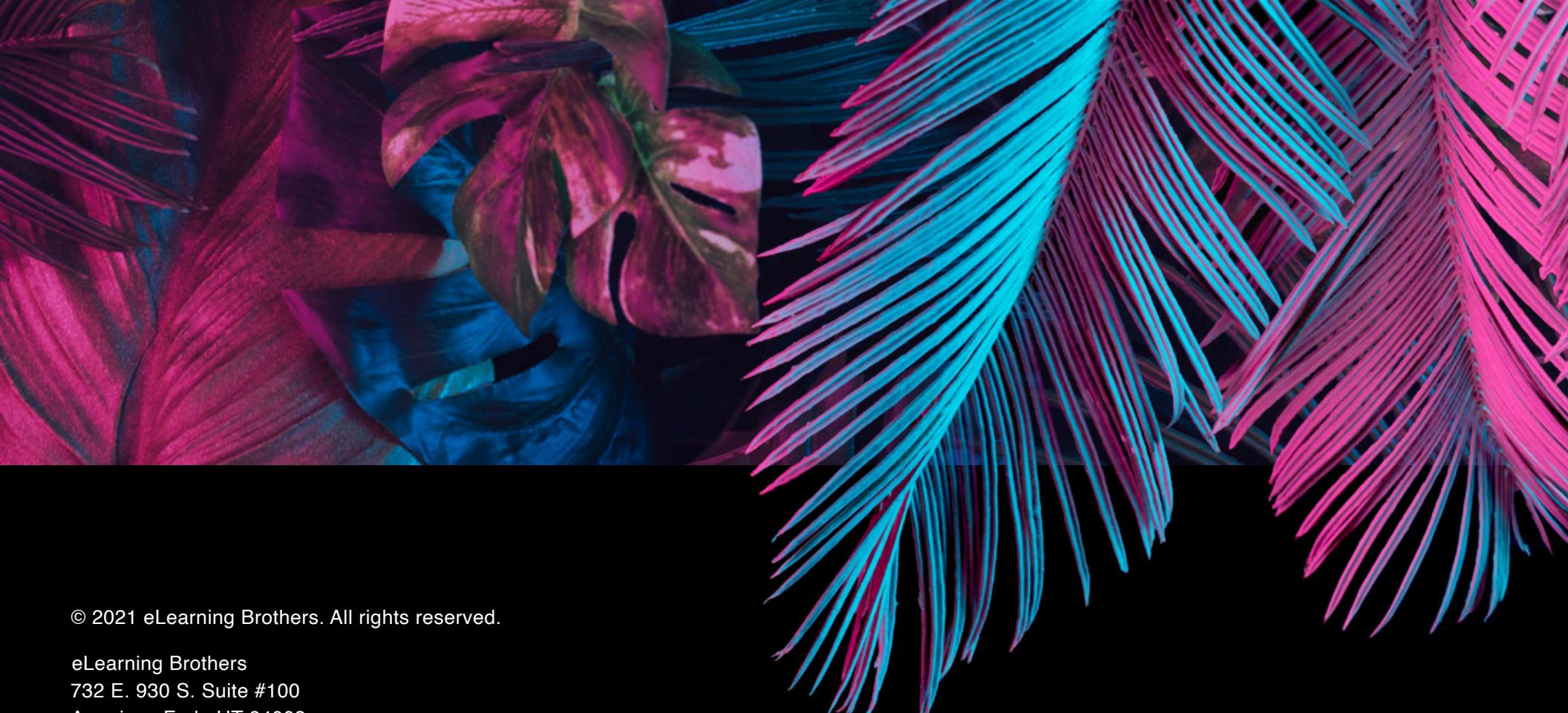


# Making eLearning Accessible





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# Acknowledgements

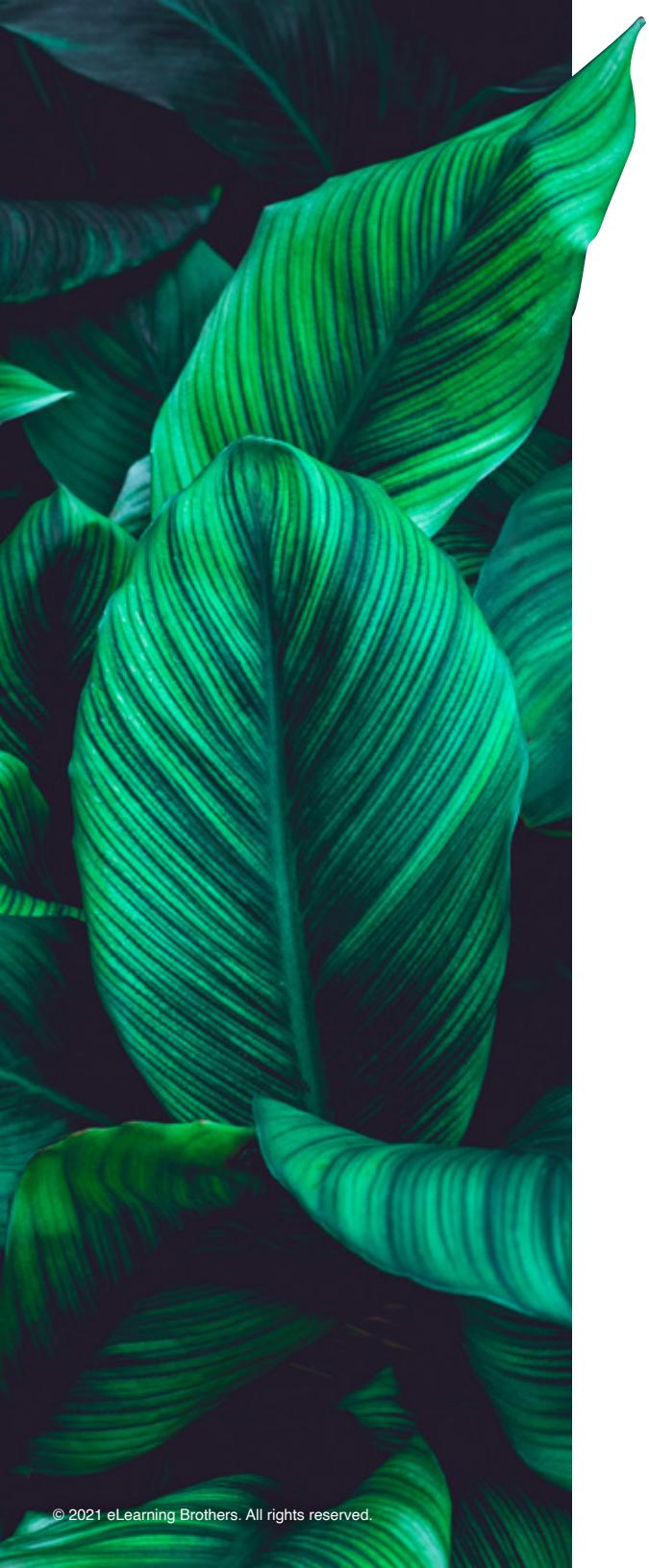


While following accessibility guidelines and requirements may have you focusing on features and functionality that you need; there's no reason that an accessible course can't also be engaging and interactive. We know that it is our duty to ensure knowledge is delivered clearly, concisely to, and for everyone.

The challenge for some developers is that they want Web Content Accessibility Guidelines (WCAG) to be more than a guideline, wanting something to spell out specifically what must be done. Rather we (as developers) should appreciate the WCAG guidelines as they enable us to be creative and find the most appropriate solution for our individual situation, without being lost. With this in mind, this book will focus on preparing your content for accessibility testing.

I would like to thank the following for contributing quotes to this book (in alphabetical order): Kim Gosnell, Dr. William J. "Bill" Griffiths, Steve Krug, Susi Miller, Christine O'Malley, Dan Richards, and Christopher "Kit" Wessendorf. I especially want to thank Christine O'Malley from e-Learning Designs and founder of the Lectora® Accessibility User Group (LAUG) for being a key contributor and assisting with revisions and edits.

A big thanks also goes to the folks at the eLearning Brothers. All of you have been a work family to me for so many years and I appreciate each of you! Special thanks to Christie Calahan, Chris Willis, Sheryl Coggins, and John Blackman. You have always been great at answering question, after question, after question and putting me in touch with people who could answer questions.



## About the Author & Key Contributor:

### **Chrisanna (Chris) Paxton McMillin, ISD & eLearning Developer**

Chris has more than 30 years of experience in classroom facilitation and more than 21 years' experience in distance learning. She started in the training world in 1991 teaching journalism and design and began working in distance learning in 2000 while working for WorldCom/MCI. Since then, she has worked in the areas of transportation, hospitality, health care, and oil and gas. Chris earned her MS in Adult Education focusing on technology and distance learning in 2004 and spent the next 11 years working as a trainer, instructional designer/developer, and LMS Administrator eventually managing a department of eLearning developers and LMS Administrators.

In 2004, Chris started developing with Lectora® and began teaching Lectora in 2007; later joining the training team of Interactive Advantage (the official training provider of the eLearning Brothers Lectora and CourseMill® courses). Currently, Chris is an independent consultant and an adjunct professor at Tulsa Community College teaching computer & business courses. She currently lives in Oklahoma with her husband and dogs, whom she fondly refers to as her "IT Support Team."





## Christine O'Malley, ISD & eLearning Developer

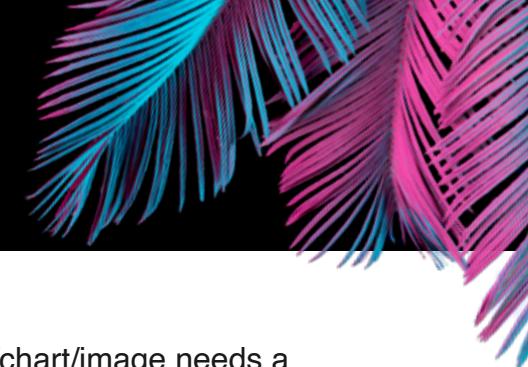
Christine's Training & Development 'roots' were formed in 1989 when she provided training support for the Quality Division of Unocal Chemicals Corporation. She also worked in Training organizations for two Fortune 500 healthcare companies: Baxter Healthcare and Hospira.

Since 2007, Christine has served as an independent consultant, delivering eLearning solutions for adult learners. As a student of Ruth Clark, she follows best practices for creating practical, evidence-based solutions for adult learners. Her expertise is in designing and developing eLearning solutions in Lectora, her tool of choice, and a popular and robust authoring tool that supports 508 and the Web Content Accessibility Guidelines (WCAG 2.0).

Creating accessible content is an important element of her business. There are many dynamics that come into play to 'get it right'. This is the reason Christine founded the Lectora Accessibility User Group. Since 2017, this platform has provided valuable knowledge for those who seeks to better understand and implement the WCAG 2.0 guidelines while developing eLearning in Lectora.



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# Preface



A well-known saying proclaims, “Knowledge is power.” An eLearning professional’s job is all about delivering that knowledge. While technology brings the world together in many ways and enables content delivery on a much broader scale than ever before, challenges to content accessibility can still arise. It’s up to you to ensure that you’re designing your content for as many people as possible, including those with physical, sensory, or cognitive limitations or disabilities. We call this concept “accessibility” or “accessible eLearning.”

## In this eBook, we’ll ask:

- » What Is Accessibility and why is it important?
- » What is WCAG and why is it important?
- » What Best Practices should be followed for Creating Accessible Content?

This is a guide on accessibility, for the specific standards and guidelines, see the World Wide Web Consortium (W3C) at [w3.org](https://www.w3.org).

**“** *The most important thing a Lectora developer can do is **design with accessibility in mind**. Knowing how to use the tools in your toolbox will be essential to your success. Lectora is a very powerful authoring tool. With that power comes the ability of more than one way to do something. Not every approach will be accessible and as the designer/developer it is up to you to know the outcome of your actions for your specific project. Remember—just because you can, doesn’t mean you should!* **”**

– **Christine O’Malley**, President of e-Learning Designs, Inc., & Founder of the Lectora Accessibility User Group

# What is Accessibility & Why is it Important?



Accessibility in eLearning involves the creation of an online learning experience within which as many people as possible can participate. In the United States, government agencies and those with government contracts, along with educational institutions are the ones who focus the most intently on accessibility because they are required by law to follow Section 508, an amendment to the Rehabilitation Act of 1973.

**“** *Accessibility is the right thing to do. And not just the right thing; it's profoundly the right thing to do, because the one argument for accessibility that doesn't get made nearly often enough is how extraordinarily better it makes some people's lives. How many opportunities do we have to dramatically improve people's lives just by doing our job a little better?* **”**

– Steve Krug, author “Don't make me think: 20 Thoughts on Usability”

Section 508 is a set of 50 guidelines for making electronic resources and information technology accessible to people with disabilities. These standards are based on guidelines originally developed by the Web Accessibility Initiative (WAI), known as the Web Content Accessibility Guidelines (WCAG). WCAG is a global set of guidelines followed around the world.

While many countries have laws protecting the rights of people with disabilities, they vary on if the law applies to public sectors, private sectors, and the government. No matter what it is called around the world, e.g., in Canada it's known as Accessibility for Ontarians with Disabilities Act (AODA) or Canadian Human Rights Act, in Europe, the European Accessibility Act (EAA), In Ireland, the Discrimination Disability Act (DDA), in



England, Scotland and Wales, the Equality Act of 2010, or in the United States, Section 508; groups around the world are working diligently to make sure that accessibility standards are harmonized and don't contradict each other.

**“** *Empowering people to learn and achieve their full potential is at the heart of what we do as eLearning professionals. That's why we're so focused on making our learning experiences engaging and effective. It's also why accessibility is crucial to the success of our content. Why would we design and develop inaccessible content which creates barriers for a potential 12% to 26% of our learners and prevents them from achieving their potential?* **”**

– **Susi Miller**, eLearning Accessibility Trainer & Consultant,  
author “Designing Accessible Learning Content”

Accessibility is based on a set of guidelines, and each organization must determine to which level they will comply and then tailor their content to meet that level. It is a good idea for everyone to follow best practices for creating accessible content, and that is what this book is about. When you follow the guidelines correctly, you create...you guessed it—accessible eLearning. We'll explain more about the Levels in a few pages.



**“** Accessibility is so important when creating our courses. We work with diverse populations who have various needs; disabilities, school districts with different security restrictions, technology limitations, and so on—not to mention the majority of our projects are actually required to follow 508 compliance guidelines. I think my favorite Lectora accessibility feature is the “Use Web Accessibility Settings” in the Project Options. This feature includes things like how the project handles focus, Alt Tags, and Video/Audio players. It disables certain features which means there will be less for us to change or miss later, and sometimes forces us to rethink the way we may go about creating an activity or a page that will accommodate all audiences. While we continue to learn more about building 508 compliant lessons every day, it’s nice to know Lectora is looking out for us.

**”**

— Kim Gosnell, Art Director, Innovation Research & Training

As eLearning developers, our goal should be to enhance the quality of learning and meet the learning style or needs of as many people as possible. While we often read about learning styles, we most often think in terms of visual, auditory, and kinesthetic/physical; but there is so much more we are missing.

Courses should be developed to meet the needs of all learners. To do this it must be accessible by people with limitations or disabilities, just as well as those without limitations or disabilities. You work hard on your eLearning content—don’t you want as many people as possible to see and learn from it?

## Join the Lectora Accessibility User Group

[JOIN NOW](#)



# What is WCAG & Why is it Important?

When building accessible eLearning, you want to create an online learning experience that includes as many people as possible regardless of their limitations—whether physical, sensory, or cognitive.

According to the United Nations [\*\*Aging and Disability\*\*](#) report, there are “higher disability rates among older persons, as a result of an accumulation of health risks across a lifespan of disease, injury, and chronic illness.”

What type of disabilities are we talking about? Here are a few examples:

## Visual

- » Blindness
- » Low vision
- » Color blindness
- » Glaucoma
- » Farsightedness, Nearsightedness, Astigmatism

*Everyone sees color a little differently—even people who aren't color blind. One in 12 men are color blind.*

— National Eye Institute

## Hearing

- » Deafness
- » Hard of hearing
- » Hearing loss

*In the United States, approximately 20% of Americans have at least one disability.*

— Centers for Disease Control

## Motor\*

- » Loss or damage of limbs
- » Arthritis

\*While this references physical impairments, as eLearning developers, we are concerned with dexterity issues affecting the learners' ability to interact with technology. These issues include a mouse, keyboard, touchpad, or computer screen.

- 
- » Paralysis
  - » Multiple Sclerosis
  - » Parkinson's
  - » Cerebral Palsy

### Cognitive

- » Learning difficulties such as Down's syndrome
- » Neurodiverse conditions such as Dyslexia and ADHD
- » Mental health problems like Anxiety

Additionally, learners may use assistive technology, such as a screen reader, to interpret content on the screen.

**“** *People with disabilities are the largest minority in the world, and it's the only minority we can join at any time.* **”**

– Christopher “Kit” Wessendorf, Accessibility Engineer

WCAG guidelines are evolving; in earlier versions, the 50 WCAG guidelines were written in a dense, complex, regulatory-type language, with several ways each of the guidelines could be satisfied. In 2008, the guidelines were upgraded to v2.1, which grouped the initial 14 guidelines into four principles, often referred to as POUR: Perceivable, Operable, Understandable, and Robust.

Some of the accessibility requirements are:

### Perceivable

- » Information must be presented to users in ways they can perceive such as text alternatives for non-text content using items such as large print or symbols.



## Operable

- » Interface components and navigation must be operable such as available functionality from a keyboard, and users are given sufficient time to read and use the content.

## Understandable

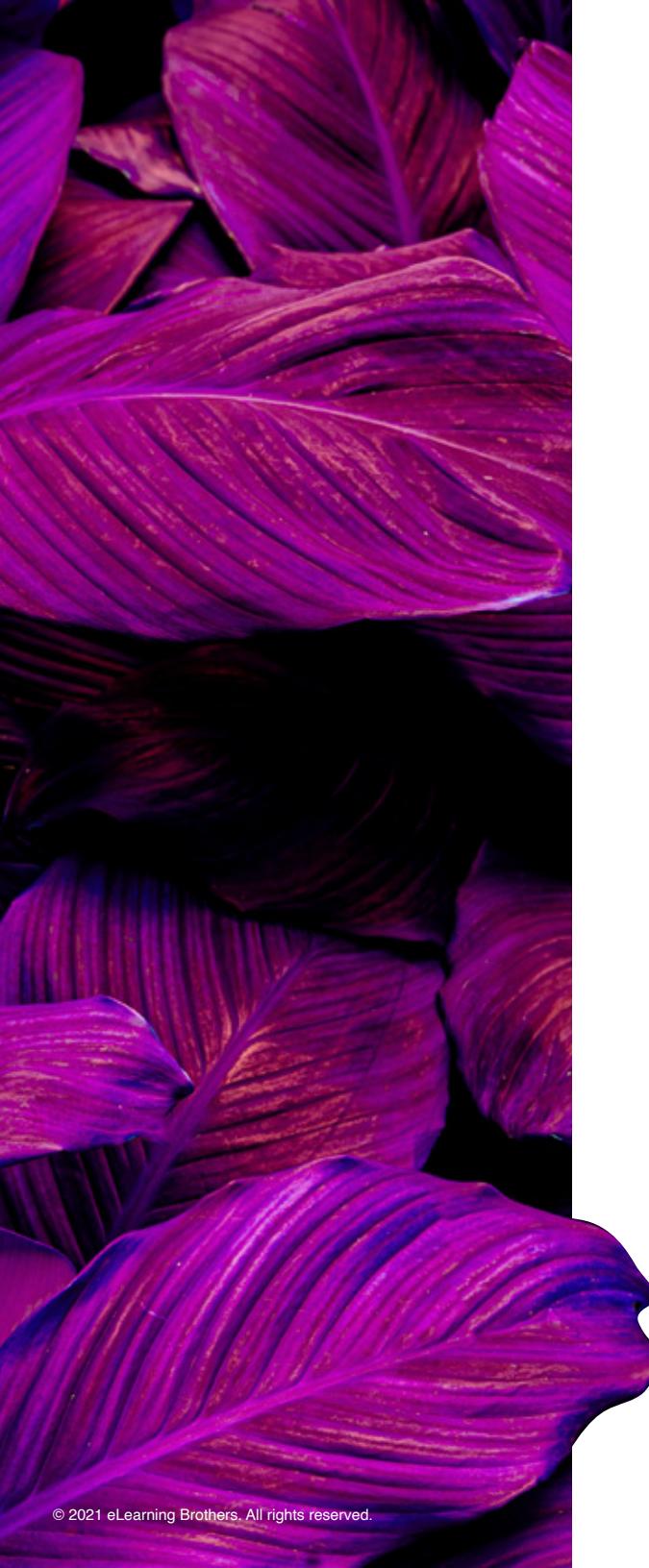
- » Information and the operation of the user interface must be understandable. Including making sure the text is readable and understandable, and the learning content appears and operates in a predictable way.

## Robust

- » Content must be robust enough to be interpreted by a wide variety of user agents, including assistive technologies. This includes current and future tools.

**“***No tool is perfect in terms of accessibility because the technology landscape and web practices and standards are continually changing. Lectora provides the awesome capability to plug in custom HTML, CSS, and JavaScript components to take accessibility to the next level. When such homemade solutions are concocted, they can easily be shared by creating library objects. Not being able to do this would make me feel ‘disabled’ in terms of providing accessible online learning experiences to all users.***”**

– **Dr. William J. Griffiths**, LMS Manager, eLearning Specialist, & Information Accessibility Specialist  
Kansas Department for Children & Families



More about the Levels: You may have heard of the WCAG guidelines referred to as A, AA, or AAA. WCAG 2.0 further categorized the guidelines into three levels of conformance in order to meet the needs of different groups and different situations:

- » A (lowest)
- » AA (mid-range)
- » AAA (highest)

Level A sets a minimum level of accessibility (primarily for visual and hearing limitations) and does not achieve broad accessibility for many situations. Conformance at higher levels indicates conformance at the lower levels. For example, by conforming to AA, a course meets both the A and AA conformance levels. Level AAA requires more criteria to be satisfied.

If your course meets Level A, the majority of users will be able to use the course. While each additional level makes your course more accessible, it is important to know who your audience is and what their needs are.

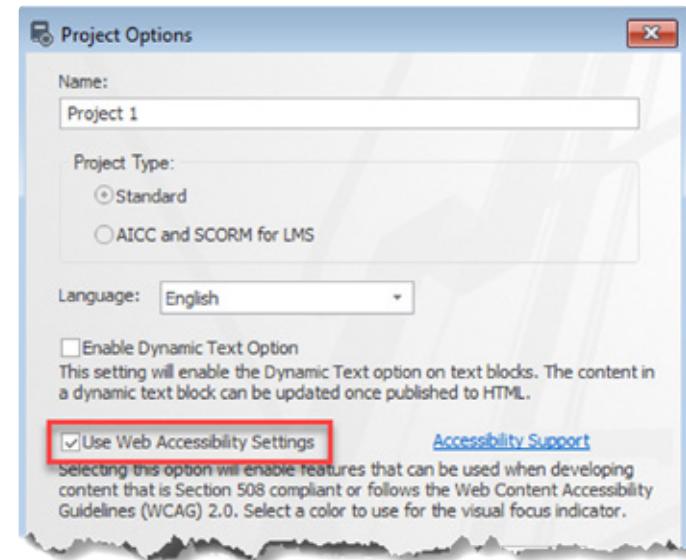
According to the W3.org [\*\*Understanding WCAG20\*\*](#) website, “It is not recommended that Level AAA conformance be required as a general policy for entire sites because it is not possible to satisfy all Level AAA Success Criteria for some content.”

# Best Practices for Creating Accessible Content

Authoring tools simplify the process of creating eLearning. Instead of coding directly in HTML and scripting languages, the tool does some of the coding for you. With some authoring tools, developers can often use different methods to achieve the same result. However, when it comes to WCAG compliance and accessibility, certain factors must still be met.

## Web Accessibility Settings

As you begin to design your content, be sure to turn on the **Use Web Accessibility Settings** option within your **Project Options** on the **Design Ribbon**. When you select this option, Lectora will automatically enable certain features in the application that will assist you with meeting Section 508 standards and the Web Content Accessibility Guidelines 2.0 Level AA. As stated throughout this eBook, you will still need to check your title for accessibility both manually (try unplugging your mouse and using just your keyboard), using automated tools (like a screen reader or accessibility evaluation tool), and in the field with students. However, this should give you a head start down the path toward more usable, accessible content.





## What does “Use Web Accessibility Settings” do?

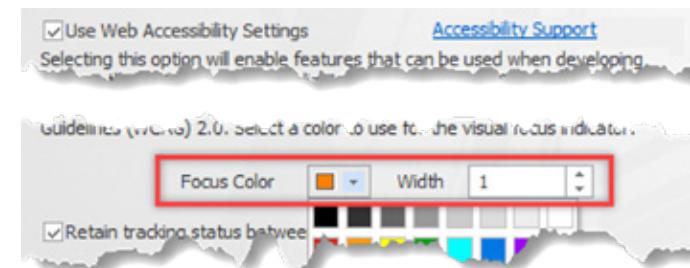
- » Language property setting for text fields is enabled. This lets the screen reader know that a specific text block is different than the default language
- » Custom button states are announced by the screen reader
- » ALT tags are initially set to Empty when adding images and shapes
- » Video and audio skins are disabled
- » Rollover video controllers are disabled
- » “Always on Top” property for objects is not selected by default\*
- » Visual indicators are enabled to be displayed when an object receives focus
- » “Set Reading Order to Last” feature is enabled for groups
- » Enable/disable audio Closed Caption background and change the background color
- » You can choose to use lightbox per page

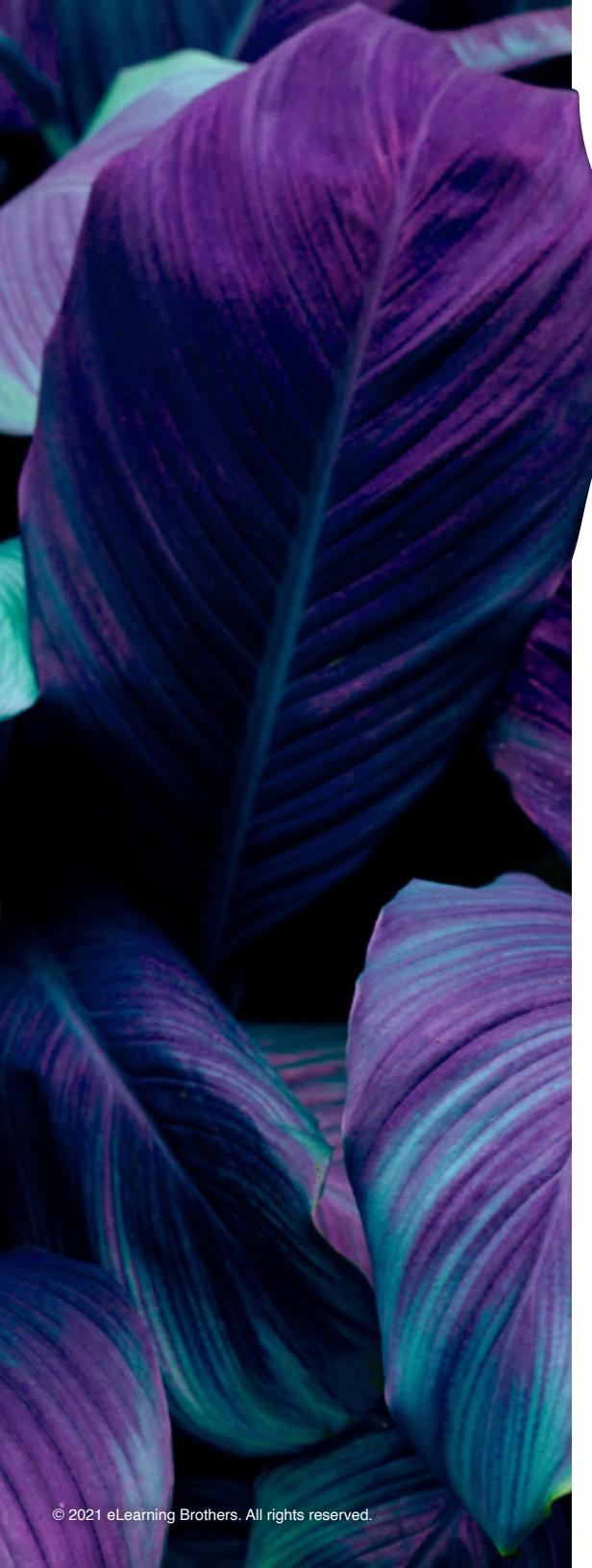
**\*Please Note:** If the **Use Web Accessibility Settings** is checked BEFORE content is added, then it will not select by default. If that setting is applied after content is added, it will have added Always on Top to a button. Those previous settings will need to be changed individually.

## Focus Color

When an object receives focus through tabbing, a visual indicator is displayed. The indicator highlights the object that is in focus. Pressing the **Enter** key will execute the action associated with the object just as clicking the object using the mouse. This color highlights the object that is in focus and can be defined by color and width in the **Project Options** dialog box.

Visual indicators are only supported by all modern internet browsers with accessibility settings turned on.





## Tab Order

Tab order refers to the sequence of detectable objects within a page. The **Project Explorer** (found in the left navigation pane) controls the layering of objects on a page, and therefore the reading order that screen readers use to identify objects. An object at the top of the list in the **Project Explorer** is actually on the bottom-most layer of the page. A screen reader would identify this object first. Alternatively, an object at the bottom of the list of objects in the Project Explorer would be identified last.



**“** With Lectora, we can push the boundaries of what is possible with Section 508 compliant courses that resonate with all users. **”**

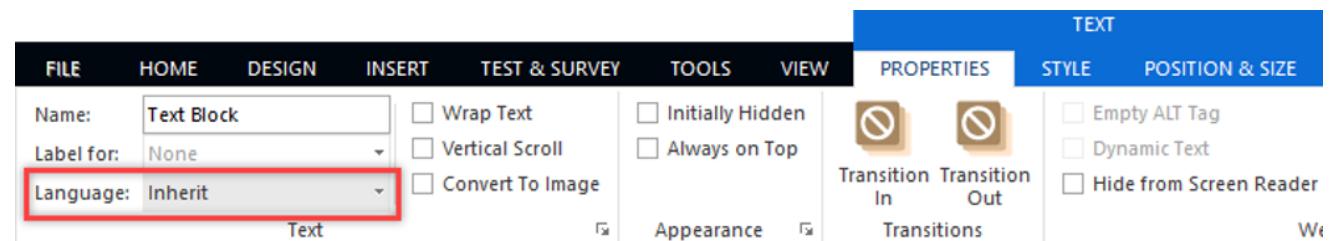
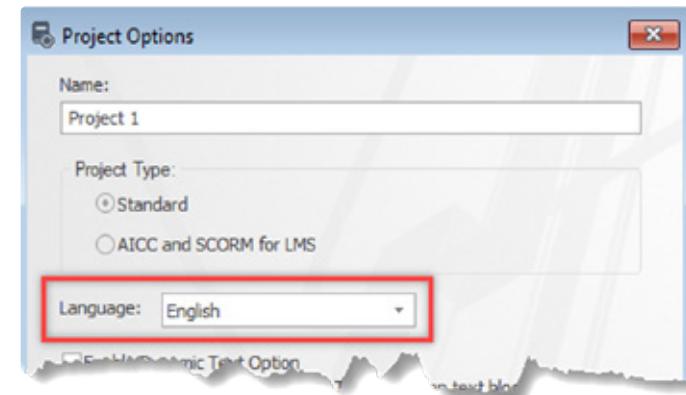
— Dan Richards, Learning Solutions Architect  
Interactive Advantage Corporation

## Setting Up: The Basics

### Language

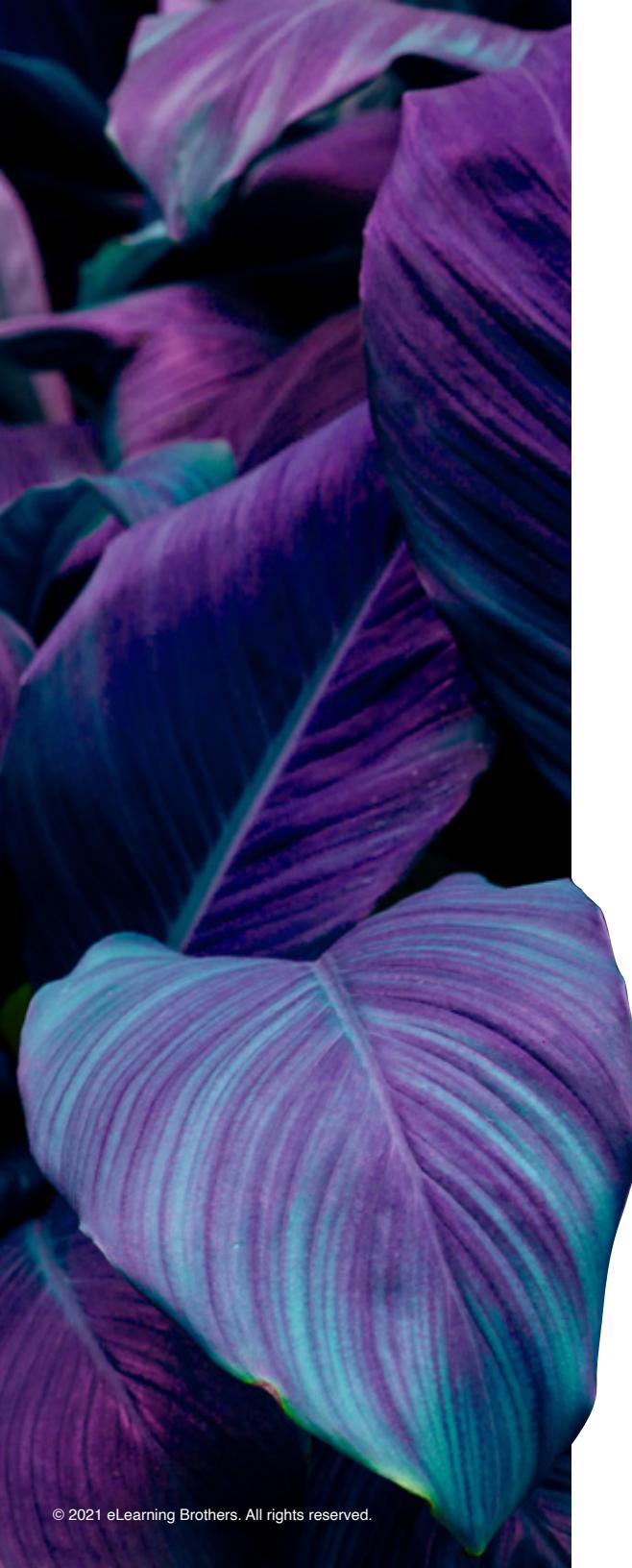
Use the **Language** drop-down in the **Project Options** dialog to specify the default language for your project. This will default to the language you chose when you installed Lectora desktop and to the local preference for each individual user in Lectora Online.

Language is enabled for text blocks when **Web Accessibility Settings** are enabled. Using the **Language** property, you can let a screen reader know that a specific text block is different from the default language of the page. This is useful if you are using multiple languages in the same course.



Follow these 2 steps to change the Language:

1. Select the **Text Properties** to view the **Properties** ribbon.
2. Use the **Language** pull-down list in the **Text** group to select the language for the text block.



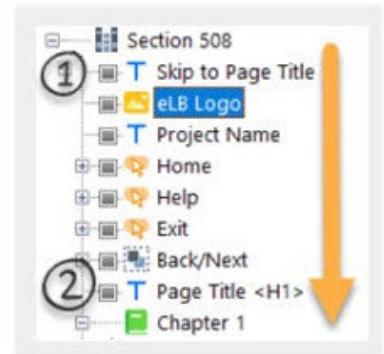
## Skip Navigation Links

Accessible content means your learners can skip repetitive navigation menu items; course title, logo, buttons, and links. Those using a screen reader or the keyboard exclusively can skip over listening to a screen reader announce each navigation element on the page or tabbing through each navigation element on the page before arriving at the main content. This shortcut link is often referred to as “Skip to Content,” “Skip Navigation” or “Skip Nav.”

Lectora enables you to provide a “Skip Navigation.” When executed, it automatically brings users to the main content on the page and enables the screen reader to begin announcing that content. There are two ways to accomplish this in Lectora:

1. Use HTML Text Types <H1>
2. Use a hyperlink.

» Please note: You may experience inconsistent results using the hyperlink due to the published HMTL page refresh

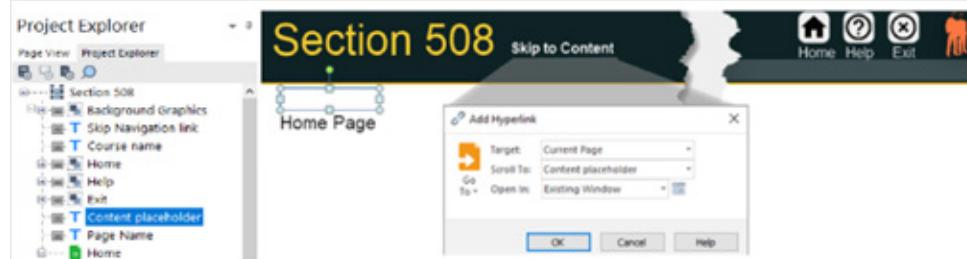


### Use HTML Text Types

HTML defines six levels of headings <H1> to <H6>. These headings communicate the organization of the content on the page. Web browsers, plug-ins, and assistive technologies can use them to provide in-page navigation. The most important heading has the rank <H1>.

The screenshot illustrates the configuration of an HTML Text Type in Lectora. The 'Properties' panel shows 'HTML Text Type: Heading 1 <H1>'. The preview window displays a dark-themed header with the text 'Section 508 Skip to Content' in yellow, indicating the skip navigation link. The Lectora Project Explorer on the left lists various navigation items, including 'Skip to Content', 'eLB Logo', 'Project Name', 'Home', 'Help', 'Exit', 'Back/Next', 'Page Title <H1>', and 'Chapter 1'.

## Use Hyperlink



Follow these steps to create a “**Skip Navigation**” link:

### Use HTML Text Types

- » In the Project Explorer, add a text block at the Project or AU/AOO1 level before the main content.
- » Add the text “Skip to Content” or “Skip Navigation.” \*
- » Place the **Page Title** at the beginning of the new page and in the **Properties** tab, select the **HTML Text Type** and change from Normal to the appropriate type (in the above example, we used `<H1>`).

### Use Hyperlink

- » In the Project Explorer, add a text block at the Project or AU/AOO1 level before the main content.
- » Add the text “Skip to Content” or “Skip Navigation.” \*
- » Add a button or hyperlink that is set to **Go To > Current Page**, and **Scroll To** the placeholder.
- » Layer the “Skip Navigation” link in the Project Explorer by placing it before any navigation.
- » Use an appropriate ALT tag for the button or text for the link, such as “Skip to Content.”

\*Most developers will set the color of the link to blend with the background color or set the opacity to 0 to avoid confusion for sighted users. It is set to white for this example only.

## Course Navigation:

### Tabbing Order and Reading Order

Users must be able to interact with a course using only their keyboard (referred to here as “keyboard navigation”). The Tab key functions the same as the Windows tabbing functionality; it enables a user to cycle forward through the course while using Shift+Tab to cycle back to previous items. The **Project Explorer** provides a means to control the tabbing order of clickable objects for users relying on a keyboard.

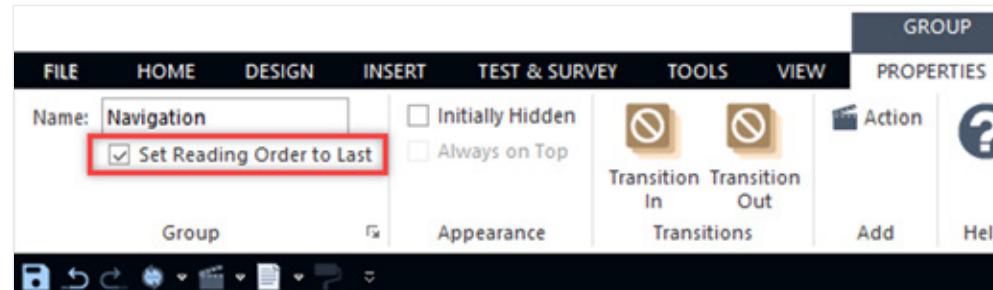
The Tab order is based on the object’s listed position in the Project Explorer.

A clickable object that appears in the top-most position of the list in the Project Explorer will receive focus first when using a keyboard to navigate the page.

Having consistent navigation in your course (and throughout all your courses) is important, especially for those using screen readers. Most will include navigation (Back and Next) at Project Level and inherit throughout the course.

We will discuss this more in the Layout and Design section.

To ensure it is read after all the content on the page, navigate to properties for the group and check the box for **“Set Reading Order to Last.”**





## Table of Contents

A table of contents (TOC) provides links to sections and subsections of the same project. The information in the TOC is usually organized hierarchically and is intended to be read sequentially.

The table of contents serves two purposes:

- » It gives users an overview of the project's contents and organization.
- » It allows readers to go directly to a specific section of a project.

## Drop Down Menus or Fly-Out Menus

Ensure that Drop Down Menus or Fly-Out Menus can be used by a mouse and a keyboard. Users with fine motor difficulties and touch screen users require larger targets to click or tap on, so the menu should not disappear immediately after the mouse has left the clickable area.

## Color and Contrast

Images, audio, video, and color are equally important parts of creating an attractive and visually engaging course. For students with visual disabilities, however, color can create confusion and barriers to accessibility.

WCAG 2.0 level AA requires a contrast ratio of at least 4.5:1 for normal text and 3:1 for large text.

WCAG 2.1 requires a contrast ratio of at least 3:1 for graphics and user interface components (such as form input borders).

WCAG Level AAA requires a contrast ratio of at least 7:1 for normal text and 4.5:1 for large text.



When color is used to express meaning or identify an object, always ensure there is a secondary indicator of meaning.

For example, when adding textual or verbal guidance for learners, instead of saying ‘select the orange button to continue,’ say, ‘select the orange Next button to continue.’ Including both features of the button enables both visual and screen reader users to follow the instructions.

Please note: with the exception of logos, all text must have sufficient color contrast so it is easily visible to all users.

Select the [WAI: Colors with Good Contrast](#) video to learn more.

The preferred color contrast checker may vary by client/agency. If you need a contrast checking tool, try:

[Colour Contrast Analyser from the Paciello Group](#)

[WebAIM Contrast Checker](#)

## Typography and Text

In traditional printed training materials, serif fonts (Times New Roman and Garamond) have been used due to the details and the long-held belief that serif fonts were easier to read, while sans-serif fonts (Arial and Calibri) are easier for viewing on a screen. These ideas are outdated due to the prevalence of high-resolution displays. There is not a “best” typeface or font; but simplicity is critical. The typeface should be chosen to align with the tone, messaging, and brand of the content. Most developers use a sans-serif for body text and serif for headlines or titles. No matter what you choose to use, use a limited number of typefaces, fonts, and font variations and if possible, use true type text as it can be adapted to different screen sizes and orientations.



WCAG 2.0 Level AA does not set any rules about typeface or type size. It does not specify which typefaces are better than others.

Large text is defined as 14 point (typically 18.66 px) and bold or larger, or 18 point (typically 24 px) or larger.

WCAG 2.1 Level AA is aimed at low vision and includes specifics regarding line and character spacing.

Use text within a text box rather than converting a text block into an image, as a screen reader will automatically read the content within a text block.

Ensure the contrast is sufficient. Black text on a white background is the default for web content, but this combination can feel stark and fatiguing, especially for long sections of text. Too much contrast may introduce halos or echos of text characters which can impact readability, especially for some with dyslexia. While WCAG does not have a maximum contrast threshold, you may want to style text with slightly lower contrast. This page, for example, uses a very dark grey body text color on white for slightly reduced contrast.

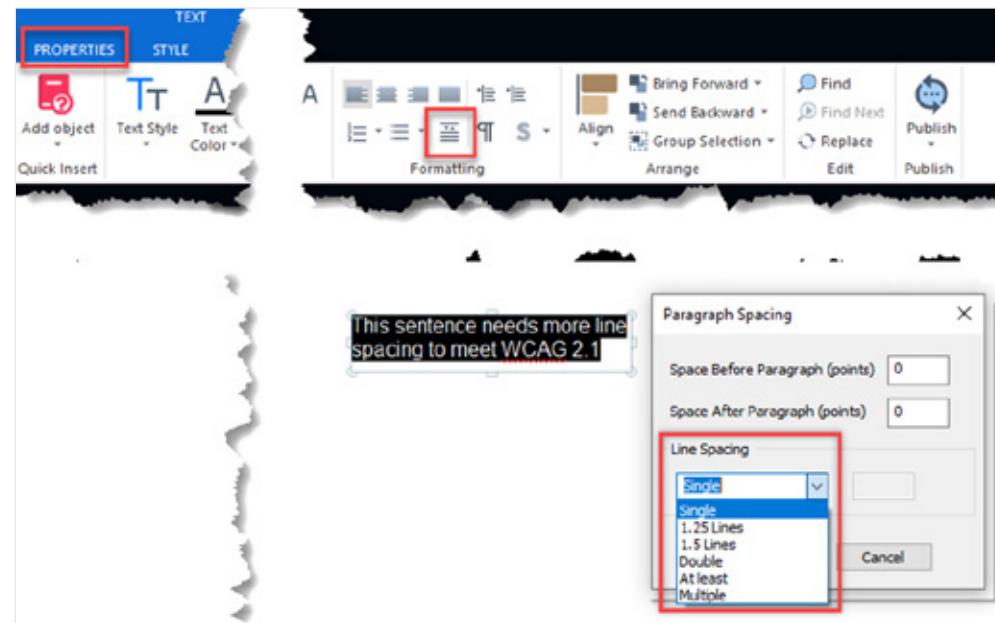
## Type Size

As for size, when it comes to fonts, bigger is better. A minimum size would be 14 pt. to 16 pt. Avoid using text smaller than 12 pt.



## Kerning and Letter Spacing

In typography, kerning (sometimes referred to as letter spacing) is the space between letters and forms. Letter-spacing is the overall spacing between letters. When letters are squished too close together, it is more difficult to distinguish between the letters. If you have issues with specific letter pairs, adjust the kerning to improve consistency and legibility.



## Leading

Leading is also referred to as Line Height and Line Spacing. Line spacing should be at least 1.5 times the font size.

## Lists

For lists, use native bullets or numbered options rather than hyphens or other characters.



## Text Friendly Links

It's important for link text to make sense without the surrounding sentences or content. The link text alone should convey the function and purpose of the link. Link text should also be unique and easy to speak out loud.

Consider these guidelines when writing link text:

- » Avoid link text like “Click Here,” “More,” and “Read More.” These kinds of links can be confusing when a screen reader reads them out of context. Instruct the user on what they actually need to do such as, “Select the next button to continue.”
- » Use unique link text where possible. Speech recognition software users may have a bad experience with duplicated link text.
- » It is OK to link a full sentence, but avoid anything longer.
- » Use judgment when linking full URLs. When linking a URL, consider users who must speak it out loud and who must listen to a screen reader announce it.

## Layout & Design Q&A

### QUESTION:

#### How do I make a course keyboard accessible?

For sighted learners in the US, content is typically consumed from top-to-bottom and left-to-right. Learners with visual disabilities consume content differently; rather than using a mouse, some learners may depend on a keyboard to navigate through a course and the content on a page, and other learners may use a screen reader.

When a screen reader encounters this True radio button, the text and the ALT text will be read, the object type will be identified, and if required, the status will be identified. The screen reader would announce this as “True, Radio Button. Unchecked.” The user could then press Space or Enter on the keyboard to change its status or activate its trigger.





Think about how a screen reader user would experience many typical interactions or how someone only using a keyboard would experience the course. Without the use of a mouse, some interactions are not accessible. Course designers should plan for this, and one of the best ways to test a course for accessibility is to unplug your mouse and confirm you can access all of the content and complete the course using only a keyboard.

Check to see if you can:

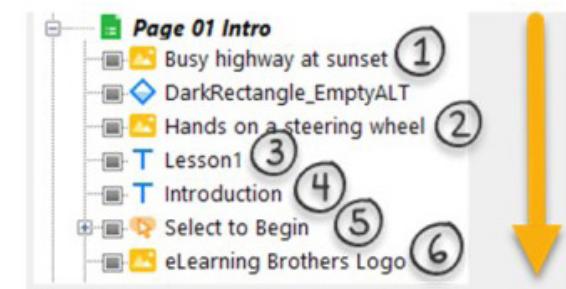
- » Navigate through the course with your keyboard
- » Access keyboard shortcuts when necessary
- » Tab between fields like buttons, entry fields, and question controls
- » Stop, pause, and play audio and video using the keyboard

## ANSWER:

### Reading Order, Tab Order, and Layering

Well-designed courses include a consistent layout with routine navigation placed in a standard location. Ensuring consistency in how navigation and content are organized and displayed helps decrease the potential learning curves, and improve accessibility—for everyone. Learners can easily glance at a page, find the navigation links, and quickly focus on the main content. Students who use screen readers rely on the software to gather this type of information. A screen reader will interpret the HTML markup used to generate the page, rather than the page itself. Creation of a first-visit tour, a “welcome course,” or a tutorial that orients new users to the primary navigation and tools used in your LMS will help all users start on the right path.

For this reason, it’s important to pay careful attention to the reading order of the elements used on a page. For example, paragraphs should be announced in logical order, and page titles should be read first, rather than last. Consider reading order as you develop and design your course, rather than after you have



A close-up photograph of tropical leaves, featuring vibrant purple and teal colors against a dark background.

already added all of the content. This will save you time and rework down the road.

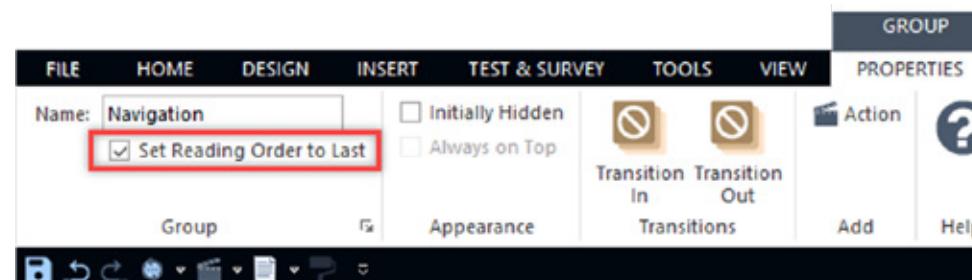
The **Project Explorer** (found in the left-navigation pane) controls the layering of objects on a page, and therefore the reading order that screen readers use to identify objects. An object at the top of the list in the **Project Explorer** is actually on the bottom-most layer of the page. A screen reader would identify this object first. Alternatively, an object at the bottom of the list of objects in the Project Explorer would be identified last.

Use caution when setting the **Always On Top** property for an object. This option places the object on the top-most layer of the page and at the same time, makes it the first object identified by a screen reader.



Note that objects that are inherited on a page are always identified first and layered at the very bottom of that page. A screen reader will first identify inherited project level objects, then identify inherited chapter level objects second, and identify page level objects last. You can check the reading order simply by reviewing the **Project Explorer** from top to bottom.

With Lectora v.21 you may place inherited items in a group at the Project or Chapter level and to ensure it is read after all the content on the page, navigate to properties for the group and check the box for “**Set Reading Order to Last**.”

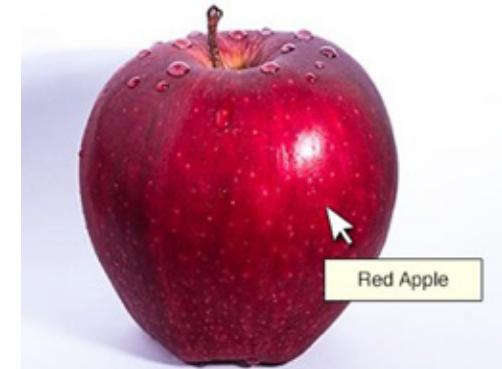




## QUESTION:

How do users with visual impairments view visual elements within a course?

A learner with a visual impairment may not be able to distinguish or identify images, graphics, charts, graphs, audio, and video if they are not configured properly in your course. If any of the images in your project are of no informational value or are used merely for decoration, the image description doesn't need to be sent to a screen reader.



## ANSWER #1:

### ALT Tags for decorative images turned off

Select Empty ALT Tags for decorative images; those images that do not add information to the content of a page. For example, the information provided by the image might already be present on screen in text, the image might be included to make the website more visually attractive, or it might be background images, shapes, and borders.

Screen readers and assistive technology will skip over objects with empty ALT Tags. You can set this in Lectora by selecting the **Empty ALT Tag** option in the object's properties to properly turn off ALT tags for an image. Don't leave the object name blank, or a screen reader will end up reading the image's filename instead.

Don't leave the object name blank, or a screen reader will end up reading the image's filename instead.

The Properties panel shows the following settings for the image object:

- Name: Arrow
- Image: arrowCurved2.png
- Properties tab selected
- Empty ALT Tag checkbox is checked
- Style and Position & Size tabs are visible but not selected



## ANSWER #2:

### ALT Tags for images, media, buttons and hotspots

For images that are not simply decorative, alternative text (referred to as ALT Text) or text equivalents are the most essential and straightforward methods for creating accessible content. You can provide text equivalents in Lectora by using ALT tags for media, buttons, and hotspots.

ALT Tags in Lectora are created from the object's name as it is listed in the Project Explorer. The name used in the Project Explorer is the same name that appears in the Name field of the object's properties. Use short, descriptive object names to create ALT tags for images, media, buttons, and animations.

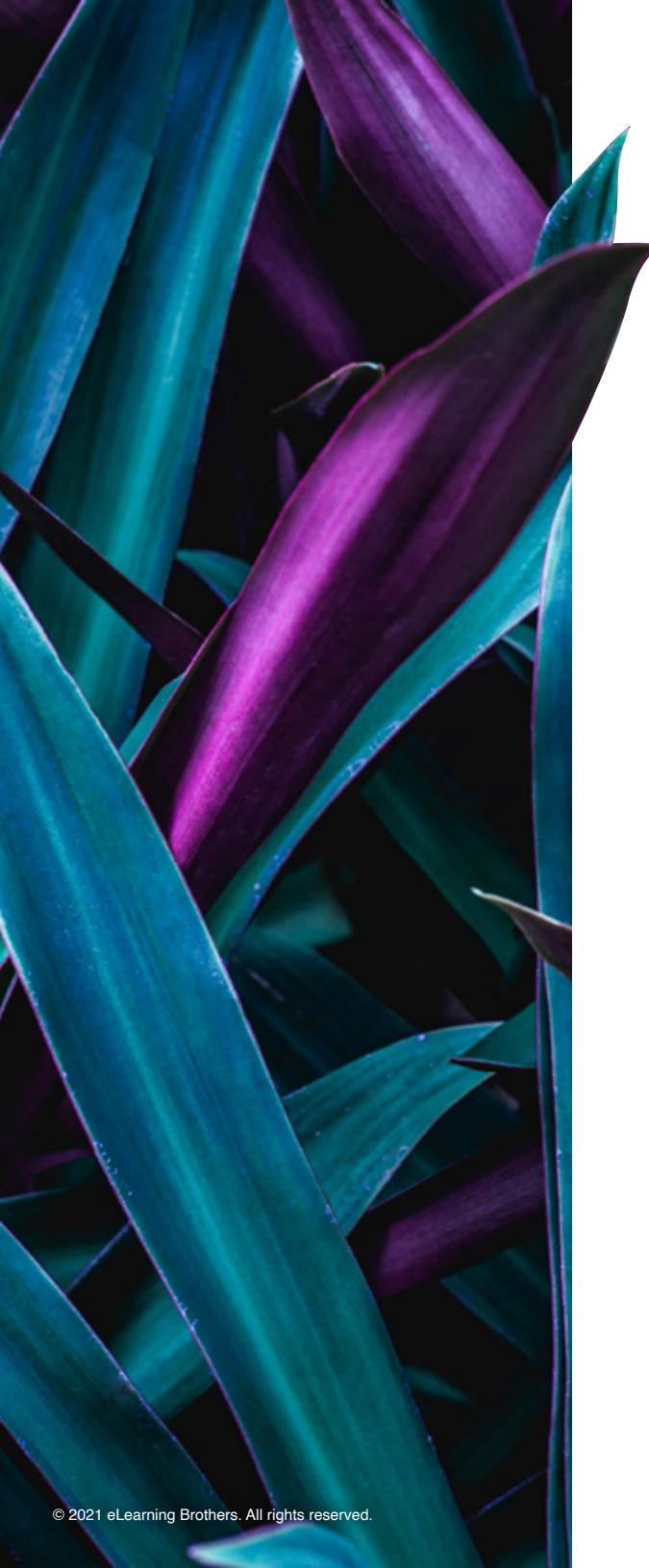


If you're layering transparent buttons on top of images to create hotspots or rollovers, ensure that the ALT tags for all of the transparent buttons (as well as the underlying image) have appropriate ALT tags as well.

ALT Text should be as brief as possible and has a maximum length of 156 characters.

When writing ALT Text, be sure to keep descriptions short and to-the-point. Avoid unnecessary information and qualifiers at the beginning or end of a description, such as "image of..." or "graphic of."

When a screen reader is running it will automatically declare an item when it has finished reading the ALT Text. In the case of an image, it will say "graphic."



## QUESTION:

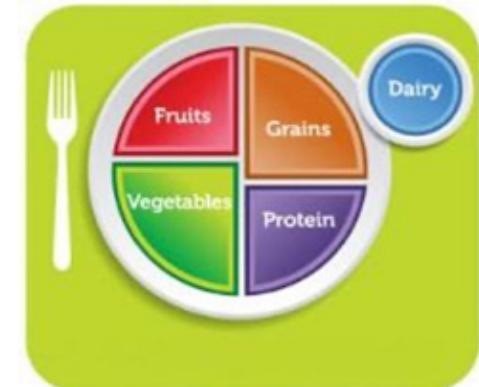
What do I do if my graphic/chart/image needs a longer description than 156-characters?

## ANSWER:

### Page text, Hidden Text, Display Message

Often complex graphics, charts, and some images will require a longer description than what you can provide with the 156-character ALT Tag limit, so a textual description is needed. There is more than one way:

- » Describe the image within your page's text. This benefits all learners by reinforcing the information presented in the graphic.
- » Place the description behind the graphic, so it is only recognized by a screen reader, but not displayed on the page. To do this, use a small font and a text color that matches the background color of the page; then layer it, hidden, behind the image. You can also change the opacity of the text block to 0 and place the text block near the image.
- » Add a hyperlink below the image to open a textual explanation in a new window. In earlier versions of Lectora, you would use a Display Message action and type the long description in the Message field. Since Lectora v.18, you could include an initially hidden text block that is revealed by the click of a button or synchronized to audio.



[image description](#)

## Additional Notes on Text

When using hyperlinks rather than listing the URL, use a descriptive title of the resource such as read [“The Making eLearning Accessible eBook.”](#)



## QUESTION:

**How and why do I need to structure headings and other text?**

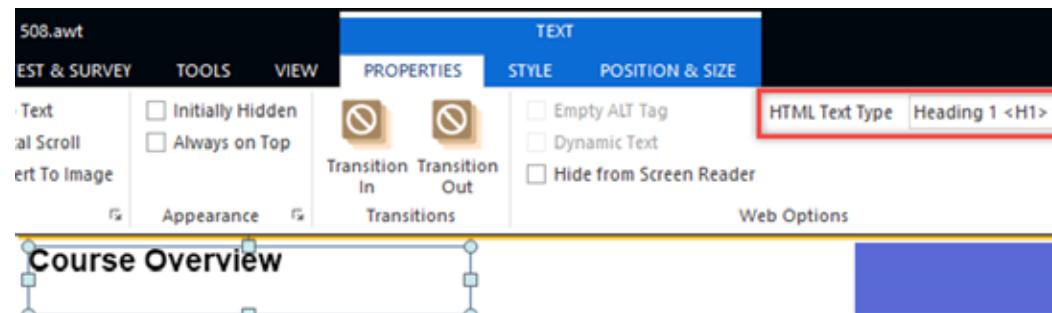
Visually, headings are presented as larger and more distinct than surrounding text. Making text larger helps guide the eye around the page. Using headings and making them visually apparent is especially helpful for users with cognitive disabilities. If the text is set up correctly, users of screen readers can search the page to find and identify important content.

## ANSWER:

### HTML Text Headers

When you label the text block as a heading, it is recognized by assistive technologies such as screen readers and search engines as containing important information. This selection will not affect the formatting of the text block, but will define the importance of the text relative to the content. HTML defines six levels of headings <H1> to <H6>. These headings communicate the organization of the content on the page. The most important heading has the rank <H1> with the least important heading having the rank of <H6>.

To enable this, select the **Text Properties**, the, **HTML Text Type** property. For each text block, you can set the HTML Text Type to Heading 1 through Heading 6.





## QUESTION:

How can a data table be accessible?

If you use tables within your project and that table contains data, accessibility guidelines require you to identify row and column headers so that a screen reader can properly identify the information within the table.

## ANSWER:

### Table Header Rows

In Lectora, select the Include Header option within the Table properties. Cells within the table are automatically referenced with the left-most column of the table, and the designated header row. The program can only natively support the simplest of tables that contain only a single header row.

Food Groups			
Fruits	Grains	Proteins	Oils
Apples	Brown Rice	Chicken	Olive Oil
Watermelon	Bulgur	Almonds	Avocado
Peaches	Oatmeal	Salmon	Soybean Oil

The **Include Header** option is on the **Table Properties** ribbon.

## QUESTION:

Is there anything I need to do to Lectora questions and form elements?

## ANSWER:

### Labels

Most questions and form elements are already accessible, but there are a few design considerations to keep in mind.

For example, all form controls like radio buttons and entry fields require a label so that learners can identify the name and function of the control. Radio buttons and check boxes automatically include a **Label** property you can use to enter a descriptive label.

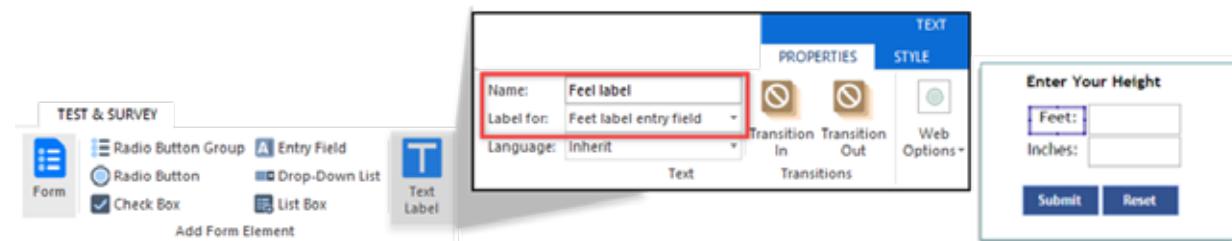


They are added directly to the page. However, drop-down lists, list boxes, and entry fields require a different method. You will need to add a **Text Label** from the **Test & Survey ribbon**. Then use the **Label for** option within the Text Properties to associate the label with the correct form element.

The following questions are accessible and require no additional work:

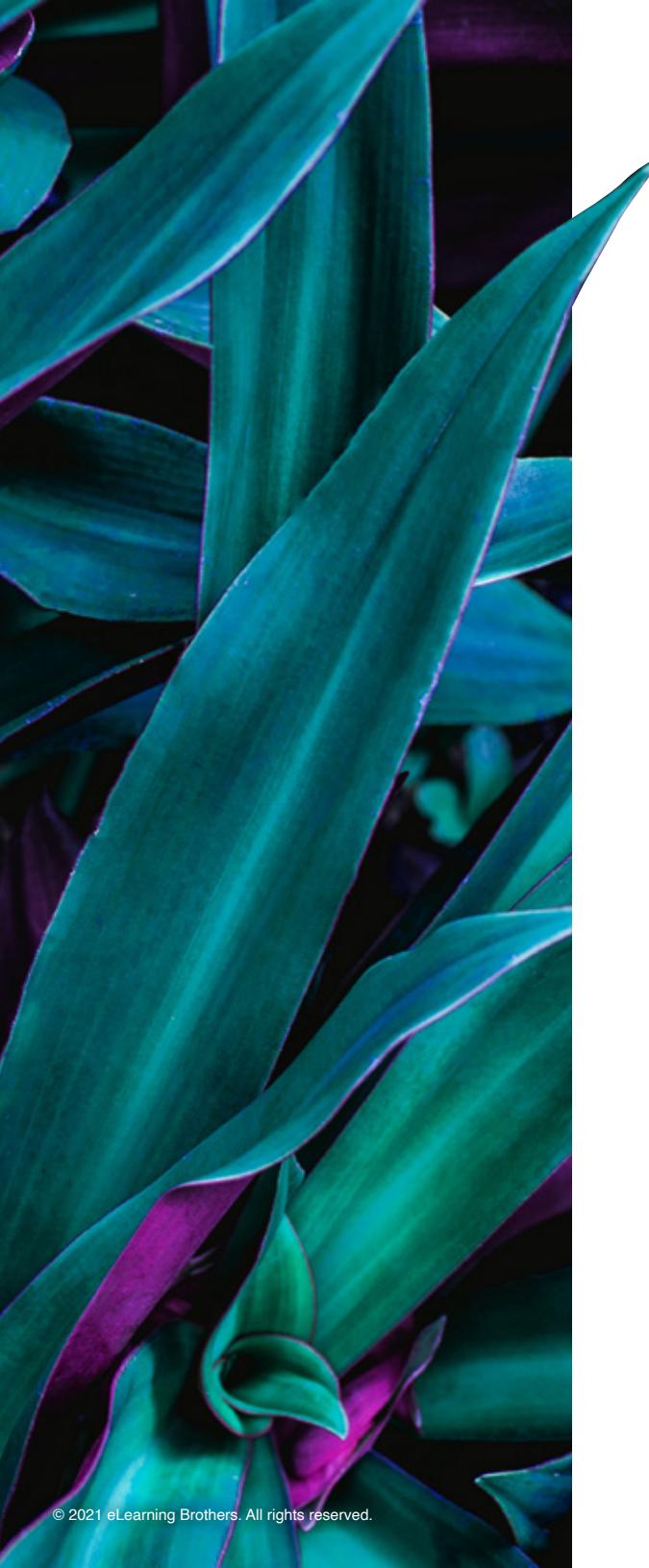
- » True/False
- » Multiple Choice
- » Multiple Response
- » Essay
- » Short Answer
- » Fill in the Blank
- » Number Entry
- » Rank/Sequence

\*Remember to place labels close to their corresponding form elements on the page. If a learner is using a screen magnifier, it should be easy to determine which label identifies which form control.



*In this example, the Feet Text Block is set to be a label for the Feet Entry Field.*

Since radio buttons, check boxes, entry fields, and other form elements are used to make up the parts of a question, it's helpful to know which questions can be used in accessible projects. Generally, the question text or question choice will serve as the label for the form control.



## QUESTION:

### What needs to be done to pre-recorded audio or video?

Accessible multimedia involves providing equivalent alternatives that are synchronized with the project. Developers must also remember that learners with auditory impairments cannot interpret the narration or sound effect that is part of the audio or video file.

## ANSWER #1:

### No Auto Start

Set audio and video to not automatically start when the user enters the screen. This is done to help prevent simultaneously playing the screen reader and the course audio or videos with audio. Accessible audio and video controls that allow play, pause, and stop media with only the keyboard should be used.

If a course has audio in every page, having to click a play button on each slide is likely not the ideal experience for many users. So, as part of the implementation of this requirement, consider also including an action that allows users to enable “play on” at the beginning of the course so that audio and/or video play automatically when the slide opens (“auto play”).

## ANSWER #2:

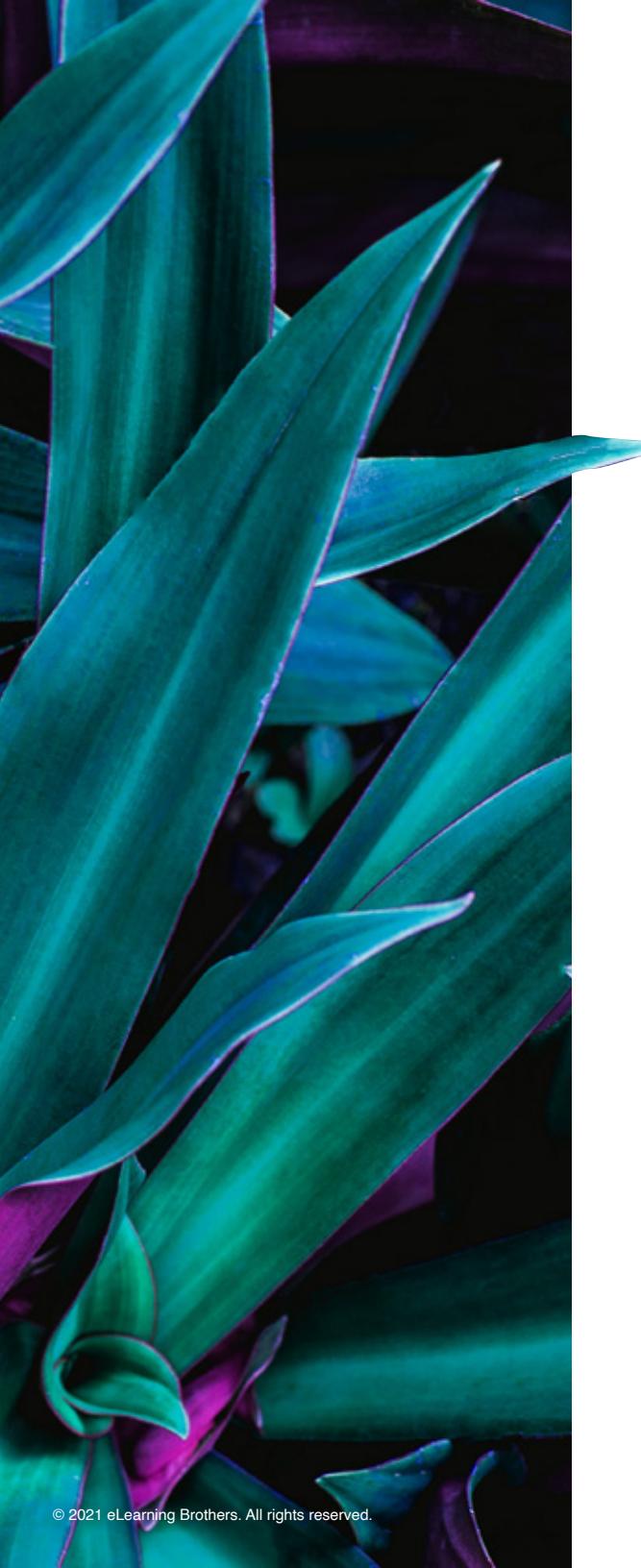
### Enable Pause, Stop, Resume, Scrubbing

Users should be able to easily pause/stop and resume complex media, such as slideshows, videos and audio narration, since such media can interfere with the use of some assistive technology devices.

## ANSWER #3:

### Closed Captions

To accomplish this, Lectora enables you to add closed captioning to video (MP4) and audio files (MP3 and M4A) within your project and you may select from three formats: Web Video Text Tracks (WebVTT—this is the recommended captioning format for HTML media players), SubRipSubtitle (SRT—this is a popular standard for YouTube

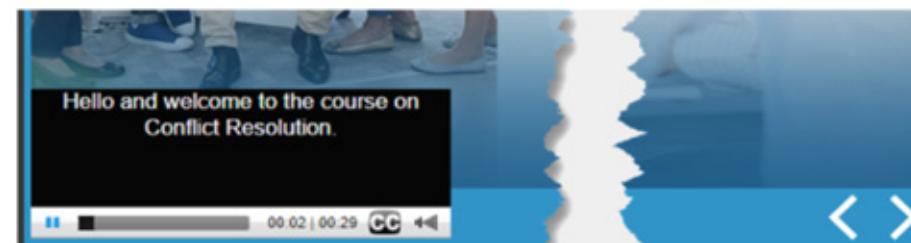
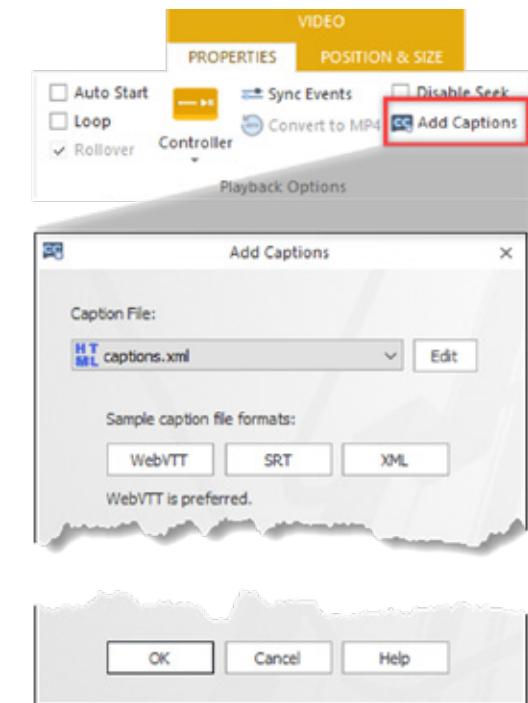


and Facebook captioning), and eXtensible Markup Language (XML—captioning format for Flash video).

When you preview and publish your project, the captioning text is displayed above the controller according to the details specified within the WebVTT, SRT, or XML file.

1. Select the **Add Captions** button on the **Video Properties** or **Audio Properties** ribbon.
2. You can import the Closed Captioning file or open a sample file to get started.
3. The sample XML file can then be modified with the correct details for your media.
4. Save and import the modified file to use with the video or audio.

While captioning is available for audio files, you may also choose to include a textual transcript of any audio narration added to your project. You can display the transcript on the page, or you may link to a separate text file that opens in a new window. Videos may also need to include an audio description as well.



*Sample of Closed Captioning and WebVTT file provided by Interactive Advantage Corporation's Advanced Lectora class.*

## QUESTION:

How can I give my audience the choice of a text version or an audio version?

## ANSWER:

You can always use Lectora's variables and conditional actions to provide alternate content when necessary:

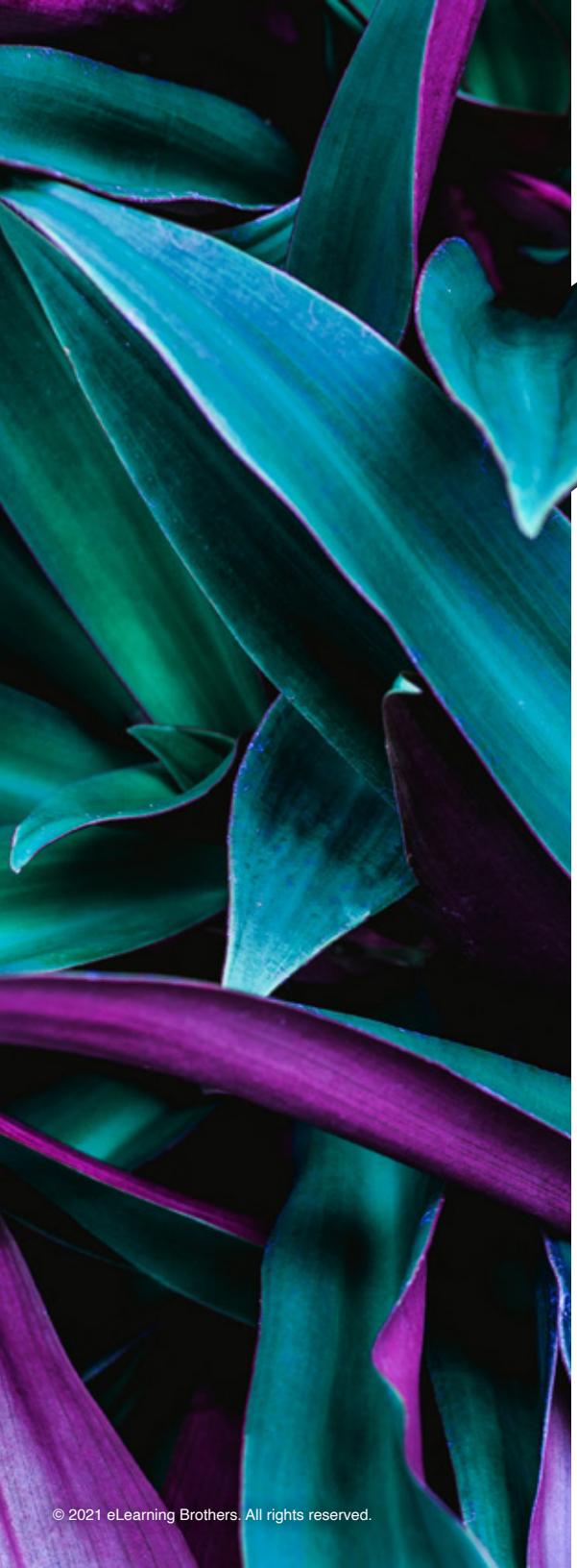
On the first or second page of your course, provide a way for your learner to indicate if they prefer (either with a button, hyperlink, or keyboard shortcut) taking the audio version or text version of the course.

Trigger an action to modify a user-defined variable (in this example it was `_PlayAudio`), and set it equal to “Yes” if they prefer the AudioVersion or “No” if they prefer the TextVersion.

On each page, add conditional action to show either the textversion or audioverson if the user-defined variable (in this example it was `_PlayAudio`) is equal to Yes.

The screenshot shows a Lectora course slide titled "Section 508". At the top right are "Home", "Help", and "Exit" buttons. Below the title is a section titled "Before you Begin". It contains instructions: "Please Indicate your preference by selecting one of the buttons below." It notes that the training is available in two formats: "The narrated format includes text and images synchronized to the audio narration, much like a presentation. This format includes either audio captions or on-screen text that supports the audio." and "The text format is for those who prefer to read through the material. The on-screen text matches the narration in the narrated format and may include scrolling." Below this, it states: "The information shared is the same in both formats. If you're not sure which one you prefer, you'll have the option to switch between them as you go through the training." At the bottom are two buttons: "I prefer the narrated format" with a speaker icon and "I prefer the text format" with a large 'T' icon. To the right of the slide, there are two small screenshots labeled 1 and 2. Screenshot 1 shows the narrated format with audio icons. Screenshot 2 shows the text format with a large 'T' icon.

*Sample of Audio Version or Text Version provided by D3 Training: Design, Develop, Deliver.*



## QUESTION:

Can I have time-based requirements?

## ANSWER:

Unless a time-limit is an essential feature of an exercise you're creating, avoid time-based requirements, such as requiring users to answer questions within a certain amount of time, since the length of time needed to complete a task can vary by learner. If a time-limit is an essential feature of an exercise you're creating, provide an alternative version that does not have a time limit.

### Other WCAG 2.0 guidelines suggest:

**Adjust:** Allowing the user to adjust the time limit before encountering it over a wide range that is at least ten times the length of the default setting.

**Extend:** User warned before time expires and is given an opportunity to extend their time by at least 20 seconds with a simple action such as press the spacebar. User must be allowed to extend time at least 10 times.

Additionally, do not show or hide elements too quickly. There are specific technical requirements for determining whether content flashes or flickers at an unsafe level. In general, if content flashes more than three times per second, it is unsafe, as this can trigger certain conditions (e.g., photosensitive epilepsy) or cause important content to be missed.

To review WCAG's more precise technical formula for calculating [general flash and red flash thresholds](#).



## QUESTION:

Can I use initially hidden objects?

## ANSWER:

Yes, since Lectora 18, initially hidden text blocks are read by the screen reader by default when they are shown. However, you can disable the reading of a text block in accessible titles by enabling the Hide from Screen Reader text block property.

Always ensure that the layering order is correct in the Project Explorer, which affects the tabbing order on the page and the reading order that assistive technology like screen readers use to announce the objects.

## QUESTION:

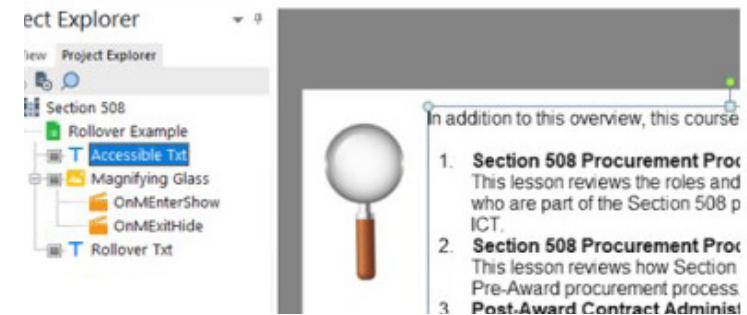
Can I use Roll-over Text or Hover States?

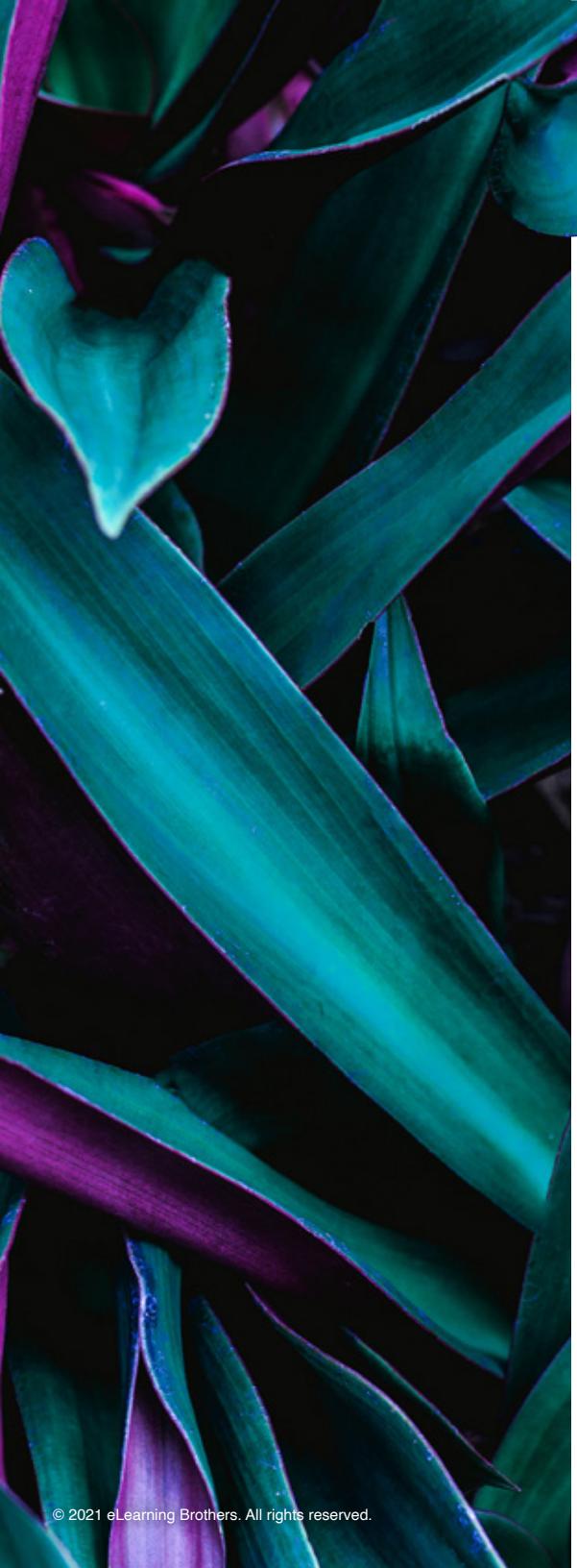
## ANSWER:

This ability is disabled when Web Accessibility is selected as this relied on a mouse and is not accessible. An easy way to create accessible tool tips and rollover text is to continue to use Mouse Enter/Exit actions to show initially hidden text, but ensure that a hidden copy of the text is also on the page as alternative content.

For example use: to add rollover text to a page, make a copy of the text block and set that to be initially visible (clear the Initially Hidden checkbox) and then consider reducing the font size, matching the font color to the background color of the page or changing opacity to 0, and layering it behind an image. This way, a learner who is sighted or not using assistive technology will interact with the rollover text use; and a learner using assistive technology will encounter the accessible version of the text.

*The accessible text is layered behind the rollover text and is initially visible on the page.*





## QUESTION:

Is there anything else I should be aware of?

## ANSWER:

When developing interactive scenarios in your course, ensure that the learner can initiate and control what happens on the page. Different disabilities can affect the time it takes or the means used to read a page, fill out a form, answer a test question, or complete an interaction.

As you develop interactive scenarios, remember these tips:



1. Avoid timed games and tests. If you must provide timed access to a page, be sure to provide a warning to the learner that time is about to run out, give them plenty of time to read the message, and provide the option to extend the time limit.



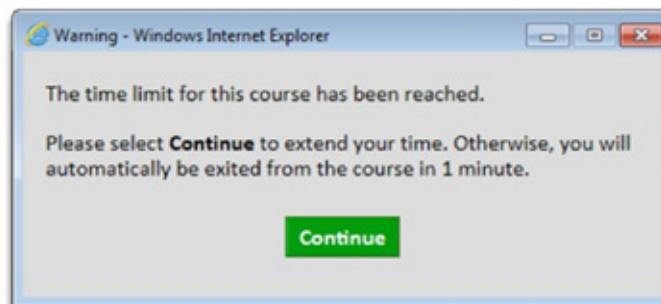
2. Avoid changing or updating content on the page automatically. Let the learner initiate this change.



3. Avoid flashing images and text. Not only can these be extremely dangerous to a learner with photosensitive epilepsy, flashing media can also be distracting and unnecessary.



4. Allow the learner to easily begin, complete, and exit a game, test, or interaction.



This dialog allows the learner to extend his or her time in the course.



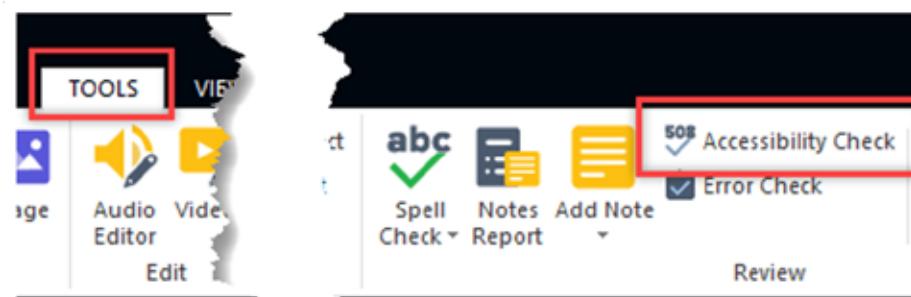
## QUESTION:

How should I use the Accessibility Checker?

## ANSWER:

As you go through the process of designing and developing your project, you can take advantage of Lectora's Accessibility Check tool. It can be run at any time during development and the feature is designed to catch any elements Lectora detects needs further attention. Keep in mind this tool should not be used as the final indicator in determining whether or not your project is Section 508 or WCAG compliant. No automated tool can fully accomplish what a person can do with a manual test.

Instead, the Accessibility Check tool can help identify objects within your project that may need special attention in order to comply with the Section 508 requirements or Web Content Accessibility Guidelines. For example, the Accessibility Check tool cannot determine if you have appropriately provided synchronized captions for animations that may exist within your title. However, it can detect those animations exist, and will supply a warning indicating that you may need to address the animation. The Accessibility Checker only applies to titles that will be published to a Web-based format (HTML, CourseMill®, AICC/Web-based, and SCORM/Web-based).



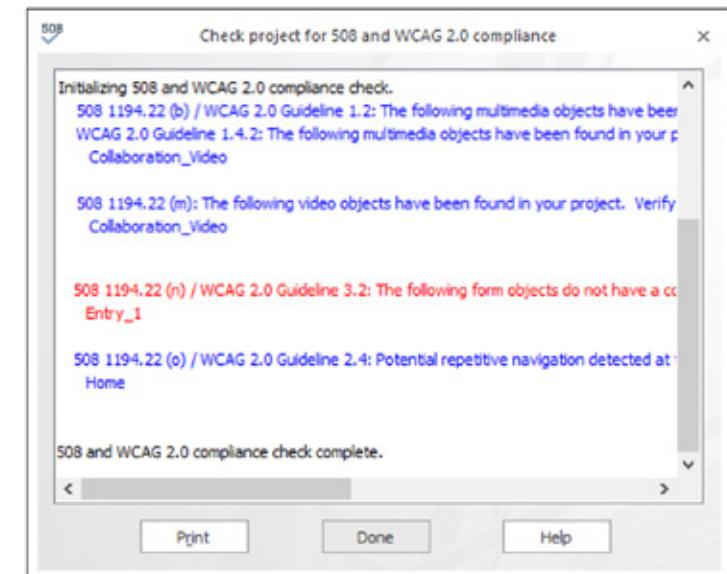


Follow these steps to run the Accessibility Check:

1. Save your project.
2. From the **Tools** ribbon, select **Accessibility Check** from the **Review** group. The program rapidly reviews your title for 508/WCAG 2.0 - Level A- Compliance errors and displays the results in the Check Title for Accessibility window.
3. For each item that is flagged by the tool, a reference to the corresponding 508/ WCAG 2.0 - Level A- rule is cited, along with additional information about how to resolve the issue.
  - » Double-click items that are warnings (displayed in **blue**) or errors (displayed in **red**) to jump to the page containing the object that is causing the problem.
4. Make the necessary changes to your title to resolve the errors and click Done.

Re-run the Accessibility Check as necessary until you have eliminated all errors. Some warning messages (displayed in blue) may never be resolved.

Now you can create your own accessibility development checklist to keep on hand as you develop your next accessible project—or print the one at the end of this eBook.



# Accessibility Development Checklist



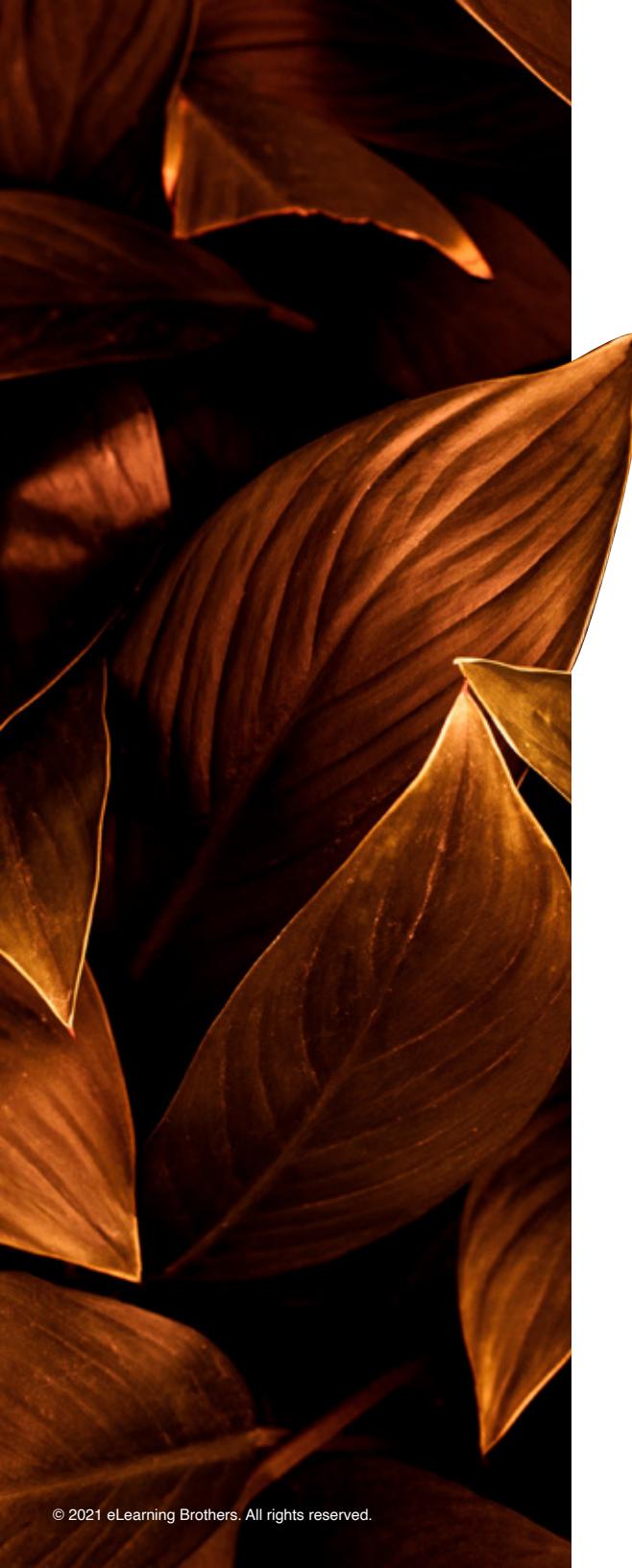
Print and keep this checklist handy to ensure you're not forgetting vital accessibility features. This checklist is abbreviated for a quick reference. It does not cover every detail fully and does not guarantee your course will successfully pass WCAG compliancy tests.

## » Global Settings

- Web Accessibility Settings are turned on
- Focus Color is set up
- Tab Order has been tested and reviewed on a keyboard
- Language is declared for the project
- Skip Navigation is set up and on each page (HTML tags or hyperlinks)
- Tabbing order is correct for each page
- Set Reading Order to Last is set for Next and Back
- Layering order is correct on each page
- If using a Table of Contents, set the type to Indented List and uncheck the Use Icons checkbox
- There are no items that blink, flash, or use sparkling animation

## » Color and Contrast

- Do not use color alone to convey information
- Text and background color have sufficient color contrast
- Colors should still work when switched to high-contrast mode in their browser



- » Typography, Text, and Tables
  - Text Size—at least 14 points
  - Lists—use bullets or numbers
  - Headings—all logical headings are identified <H1> through <H6>
  - Page titles, heading, text and links are descriptive
  - Form elements and questions use labels
  - Abbreviations have definitions
  - Tables—should be used for true tabular content only (not positioning/layout on the screen)
  - Table Header Rows—Identified correctly
- » Hyperlinks
  - Links use descriptive text and are uniquely named (actual URL is not used)
  - Websites I have linked to follow appropriate WCAG guidelines
- » Images and Graphics
  - Decorative images have ALT Tags are turned off
  - ALT Tags (object names) are used for images, media, buttons, and hot spots
  - Descriptions are available for complex graphics
- » Audio and Video
  - Audio and/or Video does not auto-start unless on “audio path”
  - Ensure controls (play, pause, stop) are visible and available
  - All audio or video content are captioned, have subtitles, a full transcript(s) or a synopsis.
  - Video-only content (with no audio track) has a text description of the important visual content from the video
  - There is no background noise in any audio files

» Attachments

- Items (Word, PowerPoint, Excel, etc.) are saved as an accessible format
- Scanned documents are not used
- PDFs have been through the Adobe Accessibility Report

» Checking Work

- The Accessibility Check tool does not return any unintended errors
- Test course with keyboard only
- Test course with a screen reader

Sign up for a Free Trial of

**Lectora®**

and start building accessible eLearning today!

**FREE TRIAL**

Or, visit [eLearningBrothers.com](https://eLearningBrothers.com) for custom accessible course development.



# Terms & References

## Terms

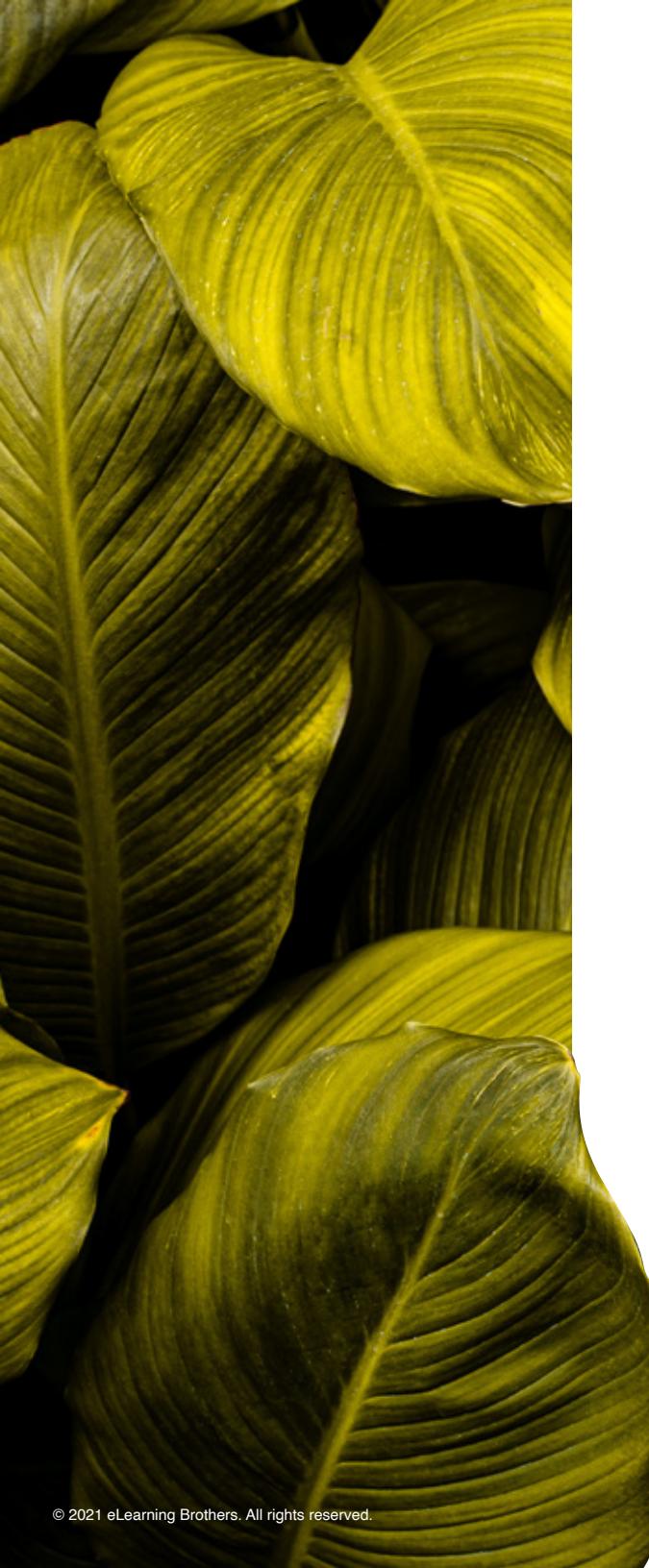
- » A11Y: The A11Y Project where “a11y” stands for accessibility. The A11Y Project strives to be a living example of how to create beautiful, accessible, and inclusive digital experiences.
- » ADA: The Americans with Disabilities Act of 1990 is a broader application of accessibility standards to influence commercial and social practices related to person with disabilities. Title III of the ADA requires that businesses, state and local governments and nonprofit services providers make accommodations for the disabled public to access the same services as patrons who are not disabled. Movie theaters, digital media, websites, and ICT are required to be accessible to people with disabilities.
- » ADA and Section 508: Section 508 is not part of the ADA. The ADA is a different law, but Section 504 of the original Rehabilitation Act laid some of the groundwork for the ADA in the areas of rehabilitation, training and employment of disabled people.
- » Screen Readers: A screen reader reads the text on the screen in a computerized voice. Learners can use their mouse, the Tab key, or the arrows on the keyboard to navigate the screen. Barriers are created when correct heading elements have not been used to structure content and when link text is not meaningful on its own (e.g., “click here” provides no useful information). Additionally, drop-down menus should be avoided, as screen readers will only interpret them as one object. JAWS (Job Access With Speech) and NVDA (NonVisual Desktop Access) work on personal computers and VoiceOver works on Macs and IOS devices.
- » W3C: World Wide Web Consortium is an international community that develops open standards to ensure the long-term growth of the Web.
- » WAI: Web Accessibility Initiative



- » WCAG: Web Content Accessibility Guidelines published by W3C is a set of global, worldwide guidelines to help standardize the development of accessible online content.
  - » WCAG 1.0: Published May 5, 1999, focuses on HTML (Hypertext Markup Link)
  - » WCAG 2.0: Published December 11, 2008 expanded the technical footprint to include more than HTML, such as text documents like Word, Google Docs, PDFs, spreadsheets, and presentations. It also includes eLearning, mobile apps, and eBooks. It focuses on four principles of perceivable, operable, understandable, and robust.
  - » WCAG 2.1: Currently being drafted and is available for public review. It will focus on filling known gaps to 2.0 such as low vision, mobile, and cognitive.
  - » SILVER AKA: Accessibility Guidelines 3.0
- » WebAIM: WebAIM (Web Accessibility In Mind) is a non-profit organization that has provided comprehensive web accessibility solutions since 1999. These years of experience have made WebAIM one of the leading providers of web accessibility expertise internationally.

## Resources

- » [Alex Chen's Access Guide](#)
- » [eLearning Brothers Rockstar Community](#)
- » [JAWS – Freedom Scientific JAWS Screen Reader Keystrokes](#)
- » [Lectora User Accessibility Group \(LAUG\)](#)
- » [NDVA](#)
- » [Section 508 and WCAG Compliance Training from Interactive Advantage](#)
- » [Section 508 Standards](#)
- » [Section 508 Tools & Resources](#)
- » [The A11Y Project](#)
- » [W3 Accessibility Principles](#)
- » [W3C – World Wide Web Consortium](#)

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- » [\*\*WAI – Web Accessibility Initiative\*\*](#)
  - » [\*\*Web Content Accessibility Guidelines\*\*](#)
  - » [\*\*WebAIM\*\*](#)
  - » [\*\*WebAIM Color Contrast Checker\*\*](#)

## **Books**

- » *A Guide for Preparing Lectora-developed Content for Functionality Testing with a Screen Reader* – Christine O’Malley
- » *Accessibility for Everyone* – Laura Kalbag
- » *Designing Accessible Learning Content* – Susi Miller
- » *Don’t make me think: 20 Thoughts on Usability* – Steve Krug
- » *Giving a Damn About Accessibility* – Sheri Byrne-Haber, CPACC