



DOI UNIVERSITY

US DEPARTMENT OF THE INTERIOR

DOIU Accessibility and Usability Checker

Project Developer: Christina Moore

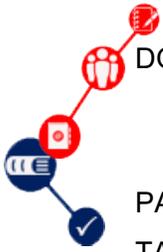


TABLE OF CONTENTS

PAGE	
	TABLE OF CONTENTS2
	OVERVIEW3
	LECTORA JOB AID.....4
	Topic: Title Options.....4
	Topic: Keyboard Shortcuts6
	Topic: Skip Navigation8
	Topic: Font treatments.....12
	Topic: Color and Contrast.....14
	Topic: Visual Elements15
	Topic: Reading Order23
	Topic: Audio and Video24
	Topic: Games25
	Topic: Tests25
	Topic: Tables26
	Topic: Checking for 508 Compliance.....27
	Topic: Table of Contents (TOC)28
	Topic: 28



Overview

This document is meant to be used as an “as needed” job aid, for online course development. It can either be used to build a new course from scratch, or as a troubleshooting guide for how to fix issues once you have identified them.

This job aid should be reviewed by instructional designers for DOIU annually, as part of their personal edification. The document itself should be reviewed for accuracy, and updated as 508 rules are updated, and as the Lectora software is updated (at a minimum annually).

Section 508 of the Rehabilitation Act of 1973 was refreshed January 2017, with total federal compliance due date of January 18, 2018. This was the first update in several years, and aligns to current technology, and WCAG 2.0 standards. Here is a quick reference document on the refresh: <https://section508.gov/refresh-toolkit/revised-508-standards-quick-reference-guide>

Supporting Word documents: (Path: P:\Libraries\DOI University\508 Compliance Materials)

- 508Proposal
- Needs Assessment 2018
- FinalInternshipPaperCMoore
- DOIU Accessibility Test Plan



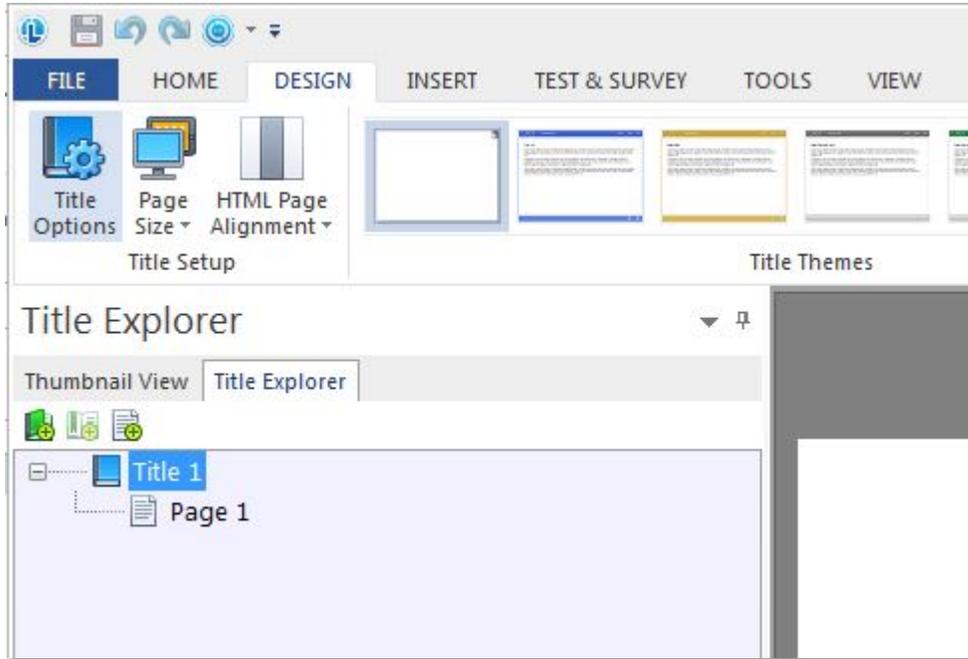
Lectora Job Aid

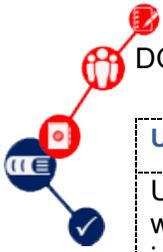
Use the following tables to assist in developing accessible and usable Lectora online courses.

Topic: Title Options

Selecting Title Options

In order to edit or review your title, select the course title, and then in the “Design” tab, click the “Title Options” icon.





Use Web Accessibility Settings

Under Title Options, be sure that the “Use Web Accessibility Settings” option is checked. This will disable certain features that are inaccessible. Lectora® will publish ALT tags based on the image name, disable skins, disable rollover video controllers, set the reading order to be correct, and specify the language property for text blocks.

Title Options

Name:

Title Type:

Standard

AICC and SCORM for LMS

Language:

Enable Dynamic Text Option
This setting will enable the Dynamic Text option on text blocks. The content in a dynamic text block can be updated once published to HTML.

Use Web Accessibility Settings
Selecting this option will disable certain features in Lectora that should not be used when developing content that is Section 508 compliant or follows the Web Content Accessibility Guidelines 2.0.

Retain tracking status between sessions

Enable Responsive Title



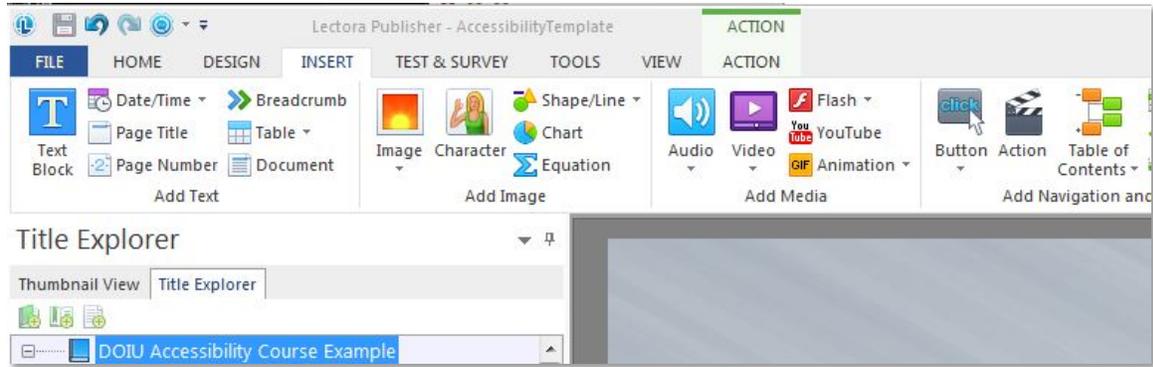
Topic: Keyboard Shortcuts

How to assign keyboard shortcuts for learners to navigate your course

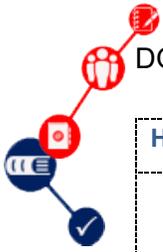
It's important to consider learners with physical limitations, when designing the navigation in your course. Rather than forcing your learners to click next or back, allow them to use the keyboard arrows to navigate your course.

Here's how to assign an "OnLeftArrowGoToNextPage" action:

- Highlight your course name (the blue book icon)
- In the "Insert" tab, click the "Action" icon (it looks like a movie action marker)

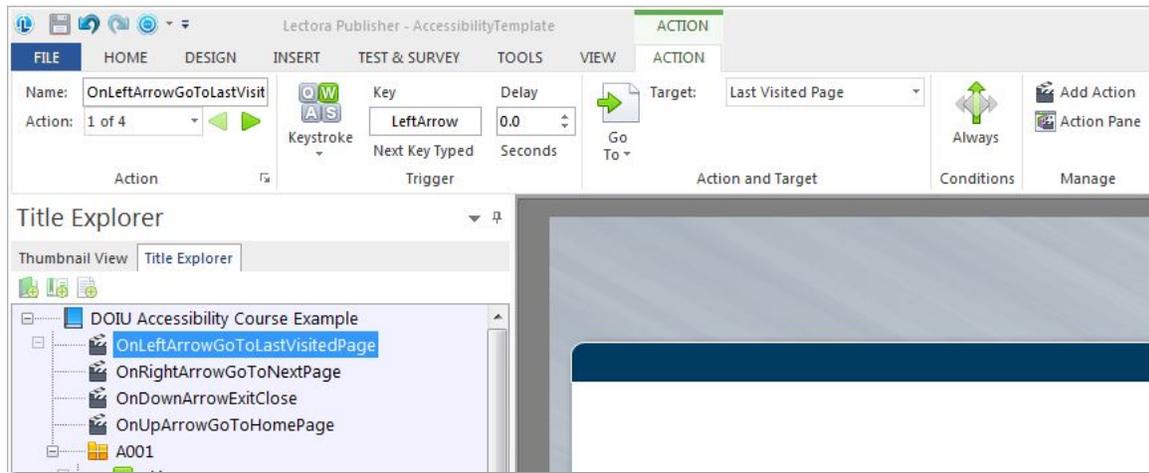


WCAG: 2.1.3 Keyboard (No Exception): All functionality of the content is operable through a keyboard interface without requiring specific timings for individual keystrokes. (Level AAA)



How to assign keyboard shortcuts for learners to navigate your course (Continued)

- Select the Keystroke icon.
- Place your cursor in the “Key” field and press the key you want to assign to the action. The example highlighted below is the left arrow.
- Select “Go To”
- Under the “Target” field, choose “Last Visited Page”
- In the “Name” field, rename the action. The default name will be generic and confusing. Label this specific action “OnLeftArrowGoToLastVisitedPage”
- Note: Many developers will also include a page that lists out each keyboard shortcut for disabled learners.





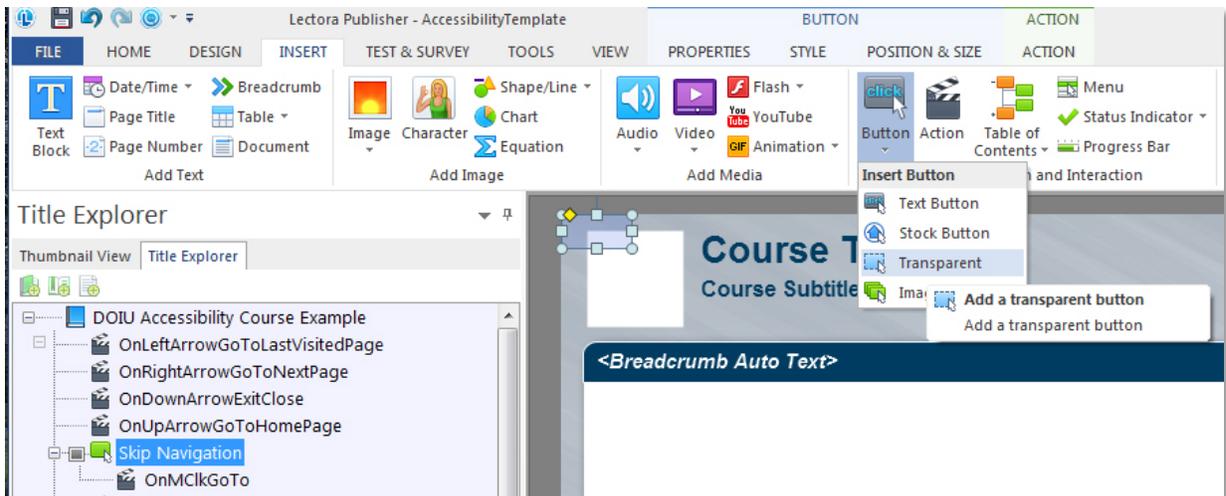
Topic: Skip Navigation

Creating a Skip Navigation button

All courses need to be set up so that learners that use screen reading devices (such as Jaws) can skip the repetitive elements on each page. By making a transparent button that skips to a hidden element on each page, assistive devices will be able to get straight to the content, rather than listening to each element on the page repeated to them.

Here's how to set up a "Skip Navigation" button:

- Select your last keyboard action
- On the "Insert" tab, click the "Button" icon, and choose "Transparent"
- Place the button in the upper left corner of the page
- In the "Title Explorer" name the button "Skip Navigation"
- You will update the action in a moment, after you set up the hidden target (next table).



508: (o) A method shall be provided that permits users to skip repetitive navigation links.

WCAG: 2.4 Provide ways to help users navigate, find content, and determine where they are.

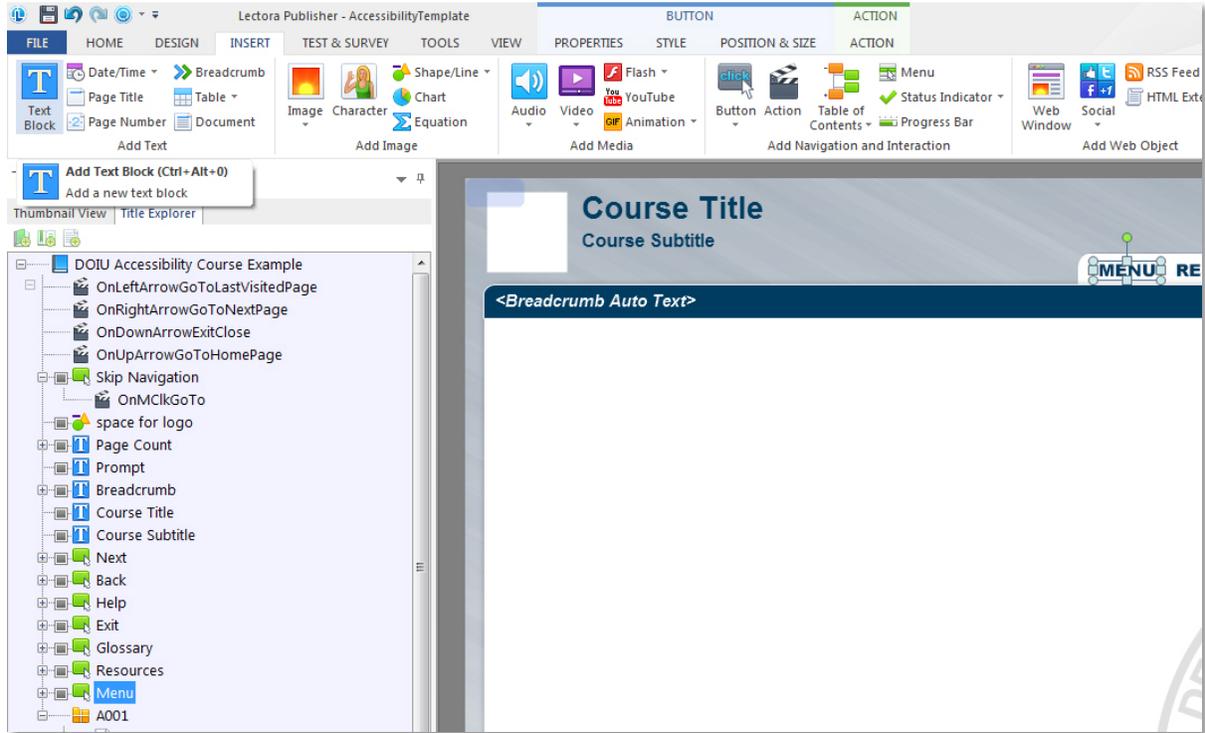


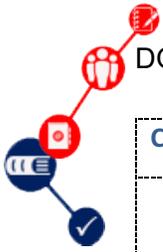
Creating the Hidden Target

Now you'll create an invisible target for the "Skip Navigation" button you just made. (This assumes you've built your navigation buttons and GUI for the course already, as this checker document only describes the process of providing guidance on accessibility.)

Here's how to set up a "HiddenTarget" text block:

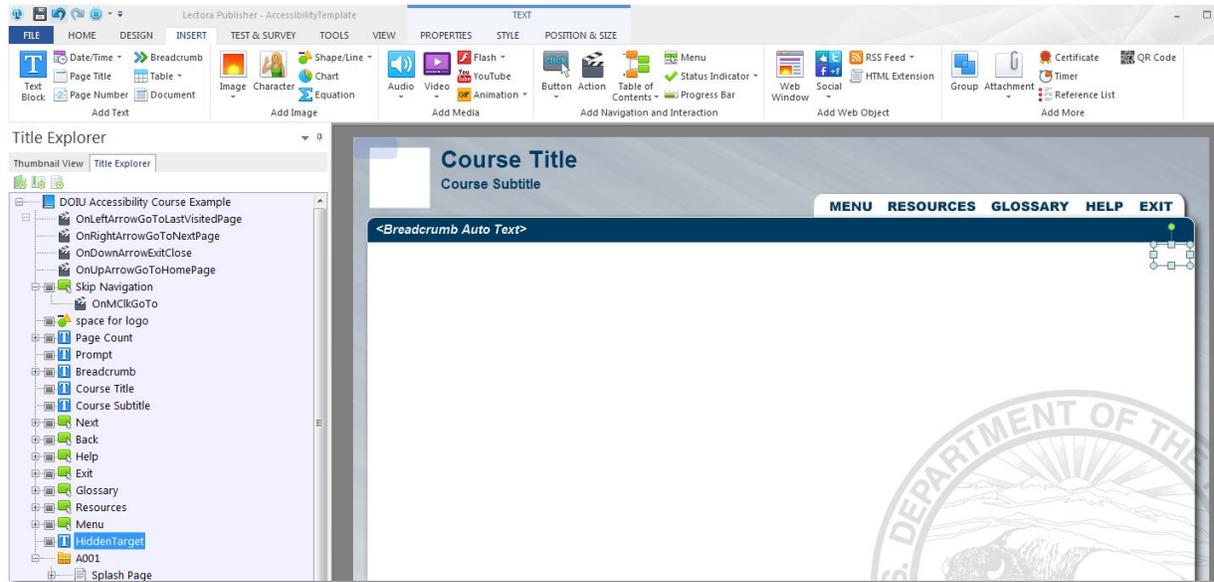
- Select you last button, in this case it's the "Menu" button
- On the "Insert" tab, click the "Text Block" icon

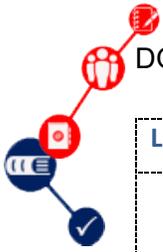




Creating the Hidden Target (Continued)

- Type a period "." in the box and make the color match your background. In this case I made it white to match this GUI.
- Resize the box and place it anywhere on the screen. In this case I put it in the upper right corner
- Name the text box "HiddenTarget"
- Double check that the "HiddenTarget" text box is in the last position before the Assignable Unit icon





Linking the Skip Navigation to the Hidden Target

- Double click the action icon under your Skip Navigation button in the title explorer
- Update your action to match the screen shot below: “Go To” “Current Page” “Scroll To: HiddenTarget”

The screenshot displays the Lectora Publisher interface. The top menu bar includes FILE, HOME, DESIGN, INSERT, TEST & SURVEY, TOOLS, VIEW, PROPERTIES, STYLE, POSITION & SIZE, and ACTION. The 'ACTION' tab is active, showing the following settings:

- Name: OnMClkGoTo
- Action: 1 of 1
- Trigger: Mouse Click
- Delay: 0.0 Seconds
- Go To: Go To
- Target: Current Page
- Scroll To: HiddenTarget
- Open In: Existing Window
- Conditions: Always
- Manage: Add Action, Action Pane
- Help: ?

The 'Title Explorer' on the left shows a tree view of the course content. The 'Skip Navigation' folder is expanded, and the 'OnMClkGoTo' action is selected. Other items in the tree include 'space for logo', 'Page Count', 'Prompt', 'Breadcrumb', 'Course Title', 'Course Subtitle', 'Next', 'Back', 'Help', 'Exit', 'Glossary', 'Resources', 'Menu', and 'HiddenTarget'.

The main preview area on the right shows a course page with the following elements:

- Course Title
- Course Subtitle
- <Breadcrumb Auto Text>



Topic: Font treatments

Font Size and Family

Serif fonts are best used as headlines for eLearning, or in use for printed material. Sans Serif fonts (Arial, Verdana, Helvetica) are the preferred fonts for eLearning in general, as they are easier to read on a backlit screen.

For regular body copy, do not go below 11pt for the font size.

All text needs to remain as such, and not be made into an image. When you allow the learner to change the font or increase the point size, it allows for people with low vision to access your materials.

WCAG: 1.4.4 Resize text: Except for captions and images of text, text can be resized without assistive technology up to 200 percent without loss of content or functionality. (Level AA)

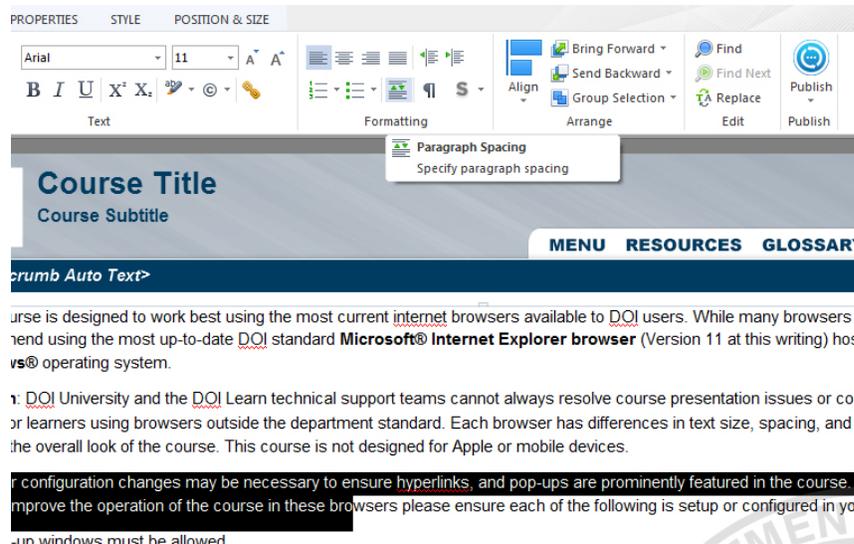
Special Effects Applied to Fonts

Do not apply effects to the text in your course. If you add an effect (such as a drop shadow) to your text, Lectora® will render it as an image, and it will become unreadable and unalterable by assistive technology.

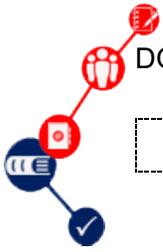
WCAG: 1.4.5 Images of Text: If the technologies being used can achieve the visual presentation, text is used to convey information rather than images of text except for the following: (Level AA)

Best Practices Font Formatting

- Use paragraph spacing to adjust the space between lines and between paragraphs (rather than extra paragraph returns). Screen readers will read aloud each extra paragraph return if present.



- Use the bullet format for lists (rather than manual formatting). Screen readers will indicate a list is about to be read when properly formatted.



DOIU Accessibility and Usability Checker

- Use a tab or manually position the text box (rather than extra spaces for alignment)



Topic: Color and Contrast

Indicators Need to be More Than Color Alone

The lesson should never be color dependent. Do not indicate an action to take by mention of color alone. For example: You should never say something like, “The red text above has been removed from the policy” or, “Click the green button when ready to proceed.” Rather, you would say, “The following text has been removed from the policy” or “Click the next button when ready to proceed.”

508: (c) Web pages shall be designed so that all information conveyed with color is also available without color, for example from context or markup.

WCAG: 1.4 Make it easier for users to see and hear content including separating foreground from background.

Good Contrast in Text Treatment for Readability

In order to make your course readable, you need to provide good contrast, especially in regards to your text treatment. Here you can see a good example of high contrast, and an example of very poor contrast. The very best contrast is black text on a white background. There are many contrast calculators online if you are in doubt (such as <https://contrastchecker.com/>). Please also see the contrast checking plan as outlined in the testing document.



WCAG: The visual presentation of *text* and *images of text* has a *contrast ratio* of at least 7:1, except for the following: (Level AAA)

- **Large Text:** *Large-scale* text and images of large-scale text have a contrast ratio of at least 4.5:1;
- **Incidental:** Text or images of text that are part of an inactive *user interface component*, that are *pure decoration*, that are not visible to anyone, or that are part of a picture that contains significant other visual content, have no contrast requirement.
- **Logotypes:** Text that is part of a logo or brand name has no minimum contrast requirement.



Topic: Visual Elements

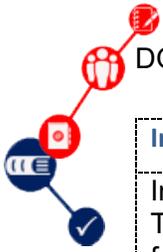
Use Empty Alt Tags for Decorative Elements

Images that are purely decorative in nature (such as backgrounds, or decorative images that do not assist in the learning) should be marked with the “empty alt” marker as seen here.



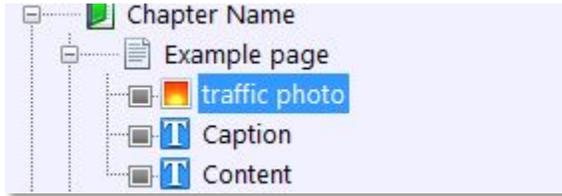
Checking the “Empty ALT Tag” box, will ensure that it is not read aloud to those with assistive devices.

WebAim: Decoration, Formatting, Invisible: If non-text content is pure decoration, is used only for visual formatting, or is not presented to users, then it is implemented in a way that it can be ignored by assistive technology.



Image, Video, and Audio Naming

Images, Video, and Audio all need to be named in a descriptive and meaningful manner in the Title Explorer. The name is read aloud by assistive technology. Naming an image “traffic photo,” for example, is much easier to understand than “img_4225” is. You can change the name in either the Title Explorer, or in the image properties field. The name should be short and descriptive.



508: (a) A text equivalent for every non-text element shall be provided (e.g., via “alt”, “longdesc”, or in element content).

WebAim: All images, form image buttons, and image map hot spots have appropriate, equivalent alternative text.

Flickering or Flashing Elements

Do not include any elements that flicker or flash. This can cause seizures in some people.

508: (j) Pages shall be designed to avoid causing the screen to flicker with a frequency greater than 2 Hz and lower than 55 Hz.

WCAG: 2.3 Do not design content in a way that is known to cause seizures.



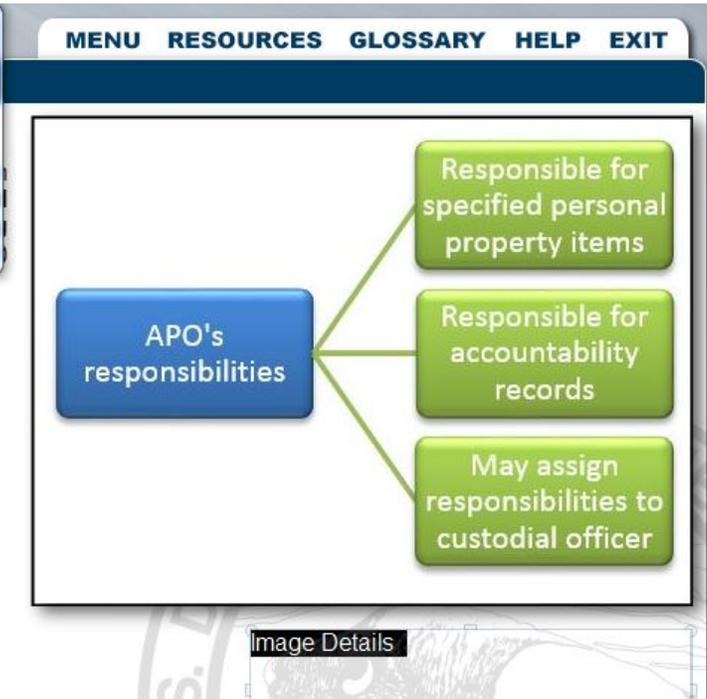
Long Descriptions

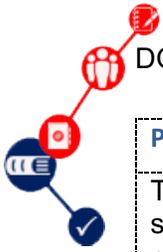
If there is no caption below an image, if the caption does not summarize the image successfully (such as a simple photo credit), or if a more robust explanation for the image is necessary for learning comprehension (as in the case of infographics or charts) provide a link to “Image Details” below the image.

- Insert a text box, and type: Image Details
- Select the text and right click it
- Select “Add Hyperlink” in the popup window
- Select “Display Message” on the left side
- Type in the description for the image in the “Message” field. If it hasn’t been given to you by the SME, then it’s up to you to properly convey the meaning of the image.



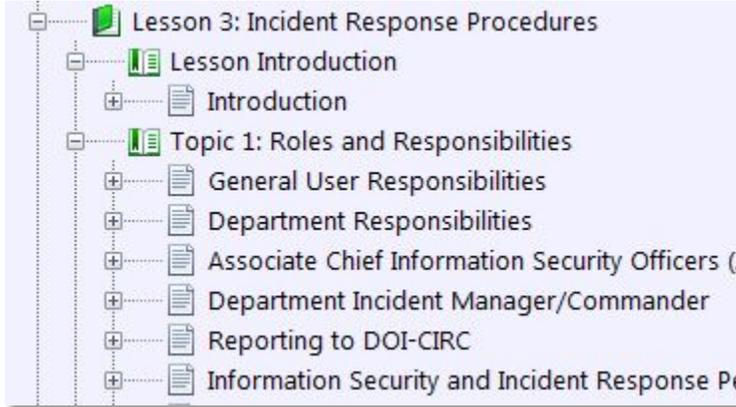
of a





Page, Chapter, and Section Naming

The default naming (Page 1, Chapter 1) is not descriptive enough. Rename the pages and sections of your course to reflect what is being taught on each page/section. This is also good practice for people without disability, as the naming will appear if you use a breadcrumb in your course.



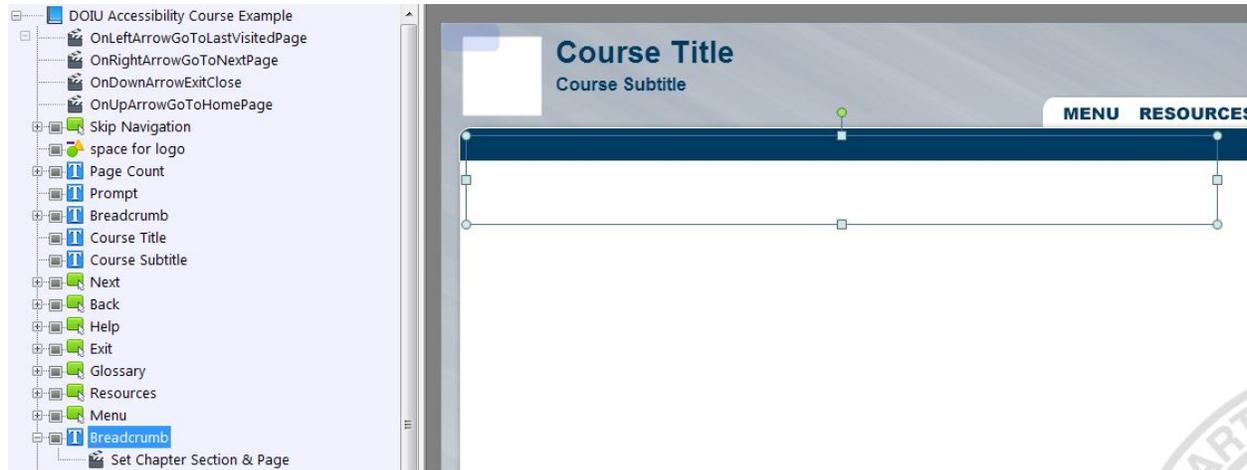
WCAG: 2.4.2 Page Titled: Web pages have titles that describe topic or purpose. (Level A)



Use Breadcrumbs

A breadcrumb is a way to display to the learner where they are in the course (Lesson, topic and page name). This is populated by referencing the descriptive page names you give your course. Here are the steps on how to make a breadcrumb (a functioning breadcrumb is made for you in the Lectora accessibility template that I created).

- At the top level of your document, insert a text box, choose the font, size and color you want for your breadcrumb
- In the Title Explorer, label the textbox “Breadcrumb”



- Add an action: Page Show, Change Contents, Target Breadcrumb, Value: Set Text, Text: VAR(CurrentChapterName) > VAR(CurrentSectionName) > VAR(CurrentPageName)

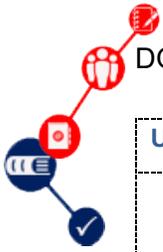


DOIU Accessibility and Usability Checker

The screenshot displays the Lectora Publisher interface for an AccessibilityTemplate. The top menu includes FILE, HOME, DESIGN, INSERT, TEST & SURVEY, TOOLS, VIEW, PROPERTIES, STYLE, and POSITION & SIZE. The main workspace is divided into several panels:

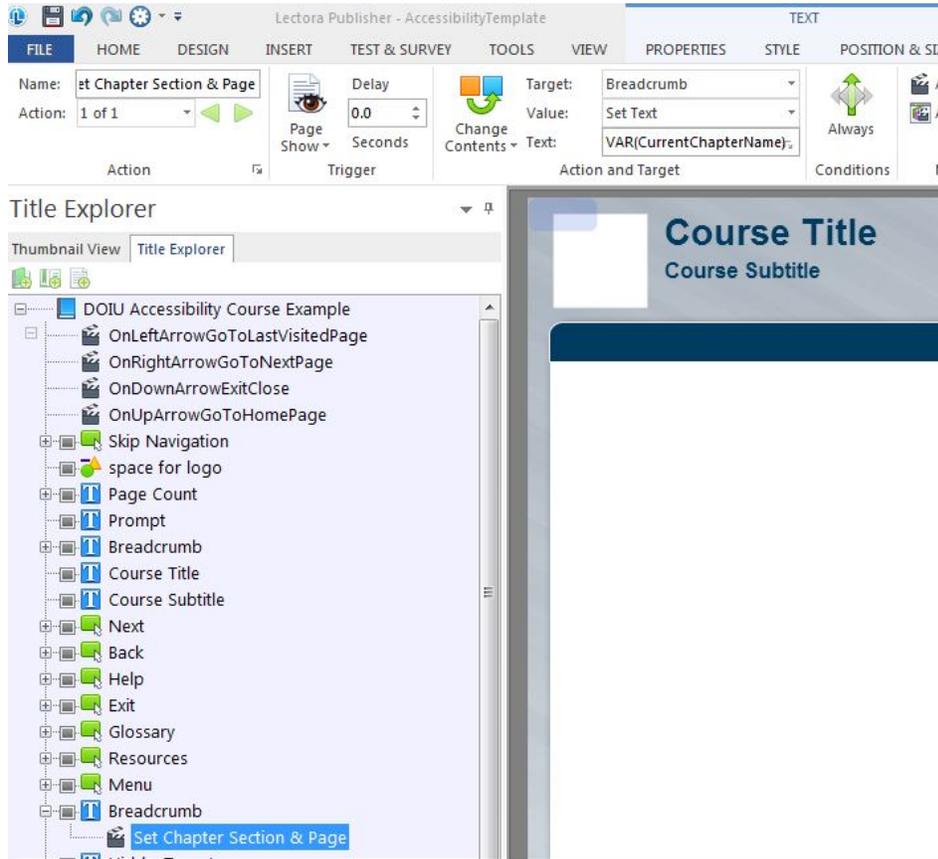
- Properties Panel:** Shows the Name as "et Chapter Section & Page" and Action as "1 of 1". It includes a "Page Show" trigger with a "Delay" of "0.0" seconds. The "Action and Target" section is set to "Breadcrumb" with the "Value" set to "Set Text" and the "Text" set to "VAR(CurrentChapterName);".
- Title Explorer:** A tree view on the left showing the document structure. The root is "DOIU Accessibility Course Example", which contains several navigation and content elements. The "Set Chapter Section & Page" element is currently selected and highlighted in blue.
- Preview Area:** On the right, a preview of the course header is shown. It features a dark blue background with the text "Course Title" in a large, bold, white font, and "Course Subtitle" in a smaller, white font below it.

WCAG: 2.4.8 Location: Information about the user's location within a set of Web pages is available. (Level AAA)



Use Breadcrumbs (continued)

- Add an action: Page Show, Change Contents, Target Breadcrumb, Value: Set Text, Text: VAR(CurrentChapterName) > VAR(CurrentSectionName) > VAR(CurrentPageName)
- *Please note, I have left the more complicated 4 step breadcrumb in the template document, as that was the previous method used for course development for DOIU. This tutorial is for a simpler method of creating a breadcrumb, with only one action.*





Hyperlink Naming

Be descriptive in your hyperlink naming. You should never use the exact web address, rather describe where you are sending the learner as it's important to let the learner know where the link is taking them. All links should open in a new window, so that the learner can navigate back to the course easily.

Carnegie Mellon

[CMU/SEI-2003-HB-002 Handbook for Computer Security Incident Response Teams](#)

[CMU/SEI-2004-TR-015 Defining Incident Management Processes for CSIRTs: A Work in Progress](#)

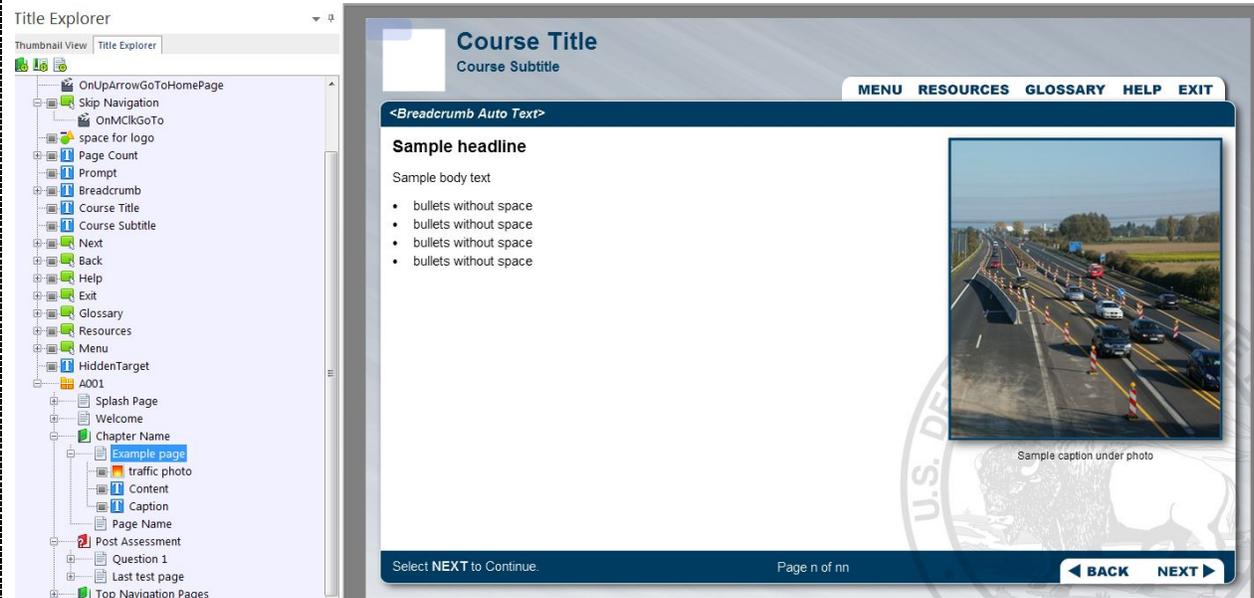
WCAG: 2.4.4 Link Purpose (In Context): The purpose of each link can be determined from the link text alone or from the link text together with its programmatically determined link context, except where the purpose of the link would be ambiguous to users in general. (Level A)



Topic: Reading Order

How to check your reading order

The best way to check your reading order, is to print your document in outline view. The first elements on a page will always be the inherited items, then the chapter, then section, then the page. The reading order is opposite of the stacking or layering order, in that the page is read top down, as you would read in a book. The example below shows the correct reading order for a simple page. After the prompts, course title, and subtitle are read, the next element is the main text frame, and finally the caption under the photo.



WCAG: 2.1.1 Keyboard: All functionality of the content is operable through a keyboard interface without requiring specific timings for individual keystrokes, except where the underlying function requires input that depends on the path of the user's movement and not just the endpoints. (Level A)



Topic: Audio and Video

Synched Closed Captions

All audio and videos need to have synchronized closed captions. To add closed captioning:

- Select the “Add Captions” button on the Video or Audio properties ribbon.
- You can import an existing Web VTT, SRT, or XML file, or open a sample of each file type to get started. The sample file can then be modified with the correct details for your media.
- Save and import the modified file to use with the video or audio.

If an outside vendor is supplying the video, they will need to have captions already added to it.

508: (b) Equivalent alternatives for any multimedia presentation shall be synchronized with the presentation.

WCAG: 1.2.2 Captions (Prerecorded): Captions are provided for all prerecorded audio content in synchronized media, except when the media is a media alternative for text and is clearly labeled as such. (Level A)

Adjusting Volume, Muting and Pausing

Adding audio to your Lectora file can be a simple process, but making auto play audio adjustable across your course is difficult, and requires advanced programming. Generally, we do not budget for narration, so this is not often an issue for us. As a rule, if you are going to provide audio (whether with video or not), the learner must be allowed to adjust the volume, to pause, and to mute it and still receive the same level of education from each page. Here is a link to a troubleshooting board on Trivantis which discusses how to program for the course to remember the user’s choice on each slide. <http://community.trivantis.com/forums/topic/skins-and-muteunmute-audio/>

WCAG: 1.4.2 Audio Control: If any audio on a Web page plays automatically for more than 3 seconds, either a mechanism is available to pause or stop the audio, or a mechanism is available to control audio volume independently from the overall system volume level. (Level A)

Text Equivalent

If you have a video, you need to have a text equivalent of what the video is demonstrating. For example: if you had a video of a person cleaning beakers in a laboratory, you would have a text box describing what the person is doing in a small font that matches the background that is hidden behind the video. That way a person with an assistive device, such as Jaws, would be able to “read” the video’s description, but it would not appear to a sighted user.

This is related to closed captions, but rather than just writing the spoken track, it’s important to provide context of what actions are taking place on screen. Here is a link demonstrating what it’s like to view The Lion King with descriptions for the non-sighted. <https://www.youtube.com/watch?v=jT5AsjzglC4>

WCAG: 1.2.3 Audio Description or Media Alternative (Prerecorded): An alternative for time-based media or audio description of the prerecorded video content is provided for synchronized media, except when the media is a media alternative for text and is clearly labeled as such. (Level A)



Topic: Games

Lectora's Flash Games are inaccessible

In general, do not use the games, as they are inaccessible.

Topic: Tests

Inaccessible tests

Drag and drop, matching, and hot spot questions are inaccessible to users with physical and sight disabilities. If you want to keep one of these question types, you must provide an alternate question for those with disabilities. This is a fairly detailed/advanced process which is described in this [youtube video](#) at the 28 minute mark.

508: (n) When electronic forms are designed to be completed online, the form shall allow people using assistive technology to access the information, field elements, and functionality required for completion and submission of the form, including all directions and cues.

WCAG: 2.4 Provide ways to help users navigate, find content, and determine where they are.

Accessible tests

All other Lectora question formats are accessible without any modification: Multiple choice, true/false, Multiple answer, short answer, essay, fill in the blank, number entry, Likert, and Rank/Sequence.

Timed tests

Do not include timed tests in any course for DOIU. They are inaccessible for those with physical limitations. If timed tests are included, you will need to provide a way for the learner to select additional time and with ample warning.

508: (p) When a timed response is required, the user shall be alerted and given sufficient time to indicate more time is required.

WCAG: 2.2 Provide users enough time to read and use content.

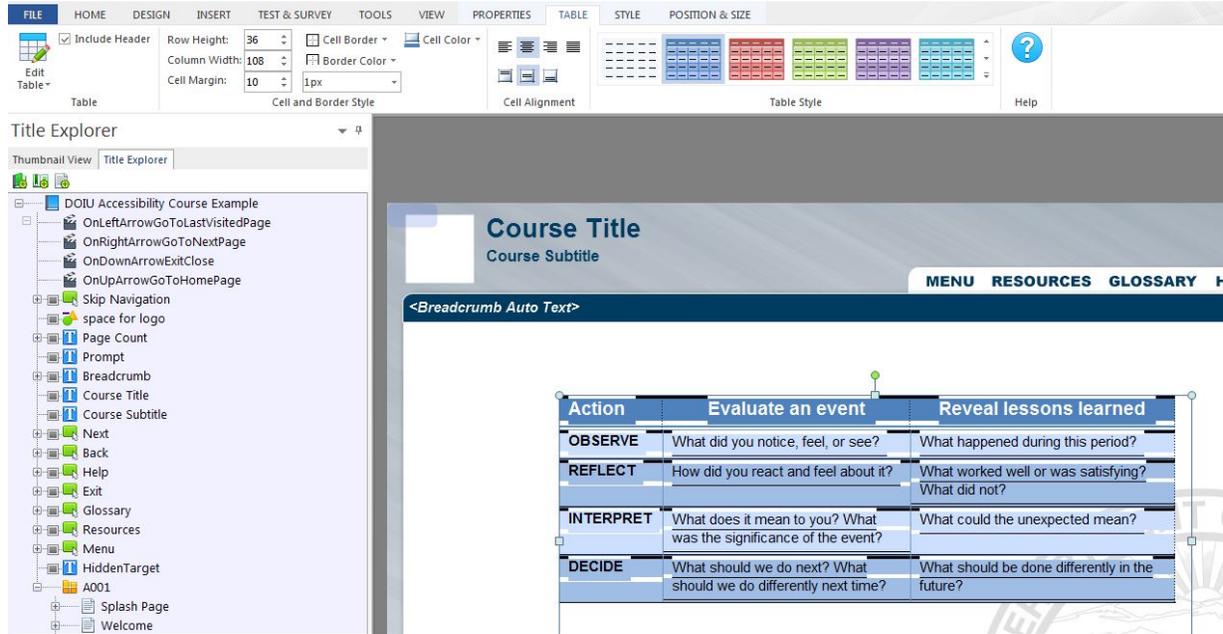


Topic: Tables

Header Rows

Table header rows must be specified. Lectora supports tables with one header row. In order to ensure that the header data is included:

- Select all of the cells of the table, and click the “Include Header” check box in the upper left corner of the TABLE tab



508: (g) Row and column headers shall be identified for data tables.

WCAG: 2.4.4 Link Purpose (In Context): The purpose of each link can be determined from the link text alone or from the link text together with its programmatically determined link context, except where the purpose of the link would be ambiguous to users in general. (Level A)

WebAim: The purpose of each link (or form image button or image map hotspot) can be determined from the link text alone, or from the link text and its context (e.g., surrounding paragraph, list item, table cell, or table headers).



Topic: Checking for 508 Compliance

508 Compliance Checker

Select the "Tools" tab, select the "508 Compliance Check" icon. This will check your course for compliance issues. If you run this function from the beginning, it will not let you add inaccessible functions to your course. While it can find several issues, it is not comprehensive enough to use as a standalone checker. Refer to the DOI Accessibility Test Plan additionally.

The screenshot shows a software interface with a 'TOOLS' tab selected. The 'Accessibility Check' icon is highlighted. Below the toolbar, a dialog box titled 'Check title for 508 and WCAG 2.0 compliance' is open, displaying the following text:

Initializing 508 and WCAG 2.0 compliance check.

- 508 1194.22 (d) / WCAG Guidelines 2.4, 3.2: The following objects are set to "Always Skip Navigation"
 - Page Count
 - Page Count
- 508 1194.22 (g,h) / WCAG 2.0 Guideline 2.4: The following text objects containing a table
 - Table
- 508 1194.22 (o) / WCAG 2.0 Guideline 2.4: Potential repetitive navigation detected at
 - OnLeftArrowGoToLastVisitedPage
 - OnRightArrowGoToNextPage
 - OnUpArrowGoToHomePage
 - Skip Navigation
 - Help
 - Glossary
 - Resources
 - Menu



Topic: Table of Contents (TOC)

Accessible Table of Contents

One of the functions that is present in all of our courses is to include a table of contents page which links to a "Menu" button. In order to make your TOC accessible, select the "Indented List" layout, and uncheck the "Use Icons" box.

The screenshot shows the Lectora Publisher interface. The 'TABLE OF CONTENTS' panel is active, showing the following settings:

- Name: Table of Contents
- Scope: For this assignable unit
- Frame: Table of Contents
- Layout: Indented List
- Use Icons: (unchecked)
- Frameless: (unchecked)
- Completed: Do not display
- In Progress: (empty)
- Not Started: (empty)
- Status Indicator: (empty)
- Text Style: Arial

The 'Title Explorer' on the left shows a tree view of the course structure:

- OnRightArrowGoToNextPage
- OnDownArrowExitClose
- OnUpArrowGoToHomePage
- Skip Navigation
- space for logo
- Page Count
- Prompt
- Breadcrumb
- Course Title
- Course Subtitle
- Next
- Back
- Help
- Exit
- Glossary
- Resources
- Menu
- HiddenTarget
- A001
 - Splash Page
 - Welcome
 - DOIU_LOGO

The main preview area on the right shows a course splash page with the following content:

- Course Title
- Course Subtitle
- <Breadcrumb Auto Text>
- Splash Page
- Welcome
- Chapter Name
 - Section Name
 - Example page
 - Image examples
 - Table
- Post Assessment
 - Question 1
 - Last test page
- Top Navigation Pages
 - Glossary
 - Resources
 - Menu

Topic:

Page

Xx