

Accessibility and Websites

Instructor for this Workshop:

Eddie Konczal

Web Developer/Trainer, SAS IT Services (Web Development Group)

konczal@sas.rutgers.edu

Date & Time:

July 15, 2026, 10:00am – 12:00pm

TABLE OF CONTENTS

Accessibility and Websites	3
What Is Accessibility and Why Is It Important?.....	3
Roles and Responsibilities	3
Accessibility Testing.....	3
Limitations of Automated Testing	3
Using the axe DevTools - Web Accessibility Testing extension for Chrome	4
Demonstration: Fixing Accessibility Issues on a Web Page.....	7
Logging on to the Front-End	7
Find and Edit Article 1	8
Heading levels should only increase by one.....	9
Links must have discernible text.....	10
Headings should not be empty	12
Elements must meet minimum color contrast ratio thresholds	13
Images must have alternative text.....	15
Setting alternate text for your images.....	15
Things not recognized as errors that we still need to check	17
Alternative Text.....	17
Headings	19
Important text only indicated by color	23
Scan the page again after all issues have been addressed.....	24
Practice: Resolving Accessibility Issues	25
Find Article 2	25
Test Article 2 Using axe DevTools.....	25
Edit Article 2	25
Re-Test Your Page	26
Additional Information.....	27
Course Accessibility Guidelines	27
Videos	27
Accessibility for Videos	27
Rutgers YouTube Channel.....	27
Kaltura.....	27
Additional Documentation	27
Future Workshops	27

ACCESSIBILITY AND WEBSITES

WHAT IS ACCESSIBILITY AND WHY IS IT IMPORTANT?

Accessibility is the extent to which anything (such as websites, mobile devices, computer software, or anything with a user interface) can be used or understood by anyone, regardless of whether or not they have a disability. When we say that a website is “accessible,” we mean that the information on it can be equally accessed by anyone.

There are many reasons why we should make our websites as accessible as possible:

- It improves the usability of the website for everyone – not just people with disabilities
- Approximately 26% of Americans have some kind of disability
- Almost everyone will experience some kind of disability at some point in their lives (e.g. injury or aging)
- It’s the law (Public universities must comply with Americans with Disabilities Act)
- It’s the right thing to do

ROLES AND RESPONSIBILITIES

- The SAS IT Services web team scans websites for accessibility issues related to web pages and documents.
- The SAS IT Services web team remediates issues related to web pages.
 - You can help reduce the number of web issues by following the guidelines in the section of this workshop titled “Demonstration: Fixing Accessibility Issues on a Web Page”
- The SAS IT services web team sends your unit a list of documents that contain accessibility issues.
 - You have several options for dealing with these documents:
 - **Remove** documents that are no longer needed (and the links to the documents)
 - **Replace** documents with web pages (Joomla! articles) where possible
 - **Archive** documents that exist only for reference, research or recordkeeping. The SAS IT Services web team can assist with archiving documents.
 - **Remediate** documents following the steps outlined in the workshop “Document Remediation.”

ACCESSIBILITY TESTING

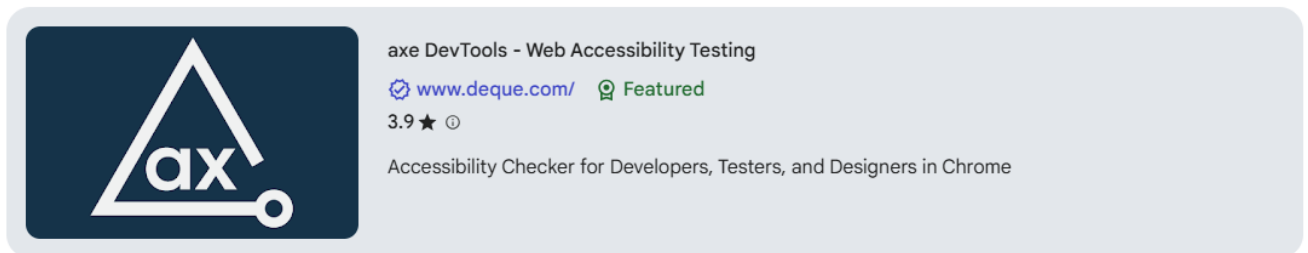
For this workshop, we will use the **axe DevTools - Web Accessibility Testing extension for Chrome**. This tool scans a web page and reports any accessibility problems it finds. (Note: axe DevTools does not scan the entire website, only the current page in your browser).

LIMITATIONS OF AUTOMATED TESTING

Some accessibility issues can’t be automatically detected by software. This is because software applications can’t always interpret the meaning of content. Something may be technically correct as far as the software is concerned but may still present issues for users with disabilities. We will learn how to identify and fix some of these problems.

USING THE AXE DEVTOOLS - WEB ACCESSIBILITY TESTING EXTENSION FOR CHROME

1. Open the Chrome browser on your computer
2. Go to the Chrome Web Store at: <https://chromewebstore.google.com/>
3. At the top, in the “Search extensions and themes” field, enter “**axe DevTools**”
4. Select **axe DevTools - Web Accessibility Testing**:



5. Click the **Add to Chrome** button:

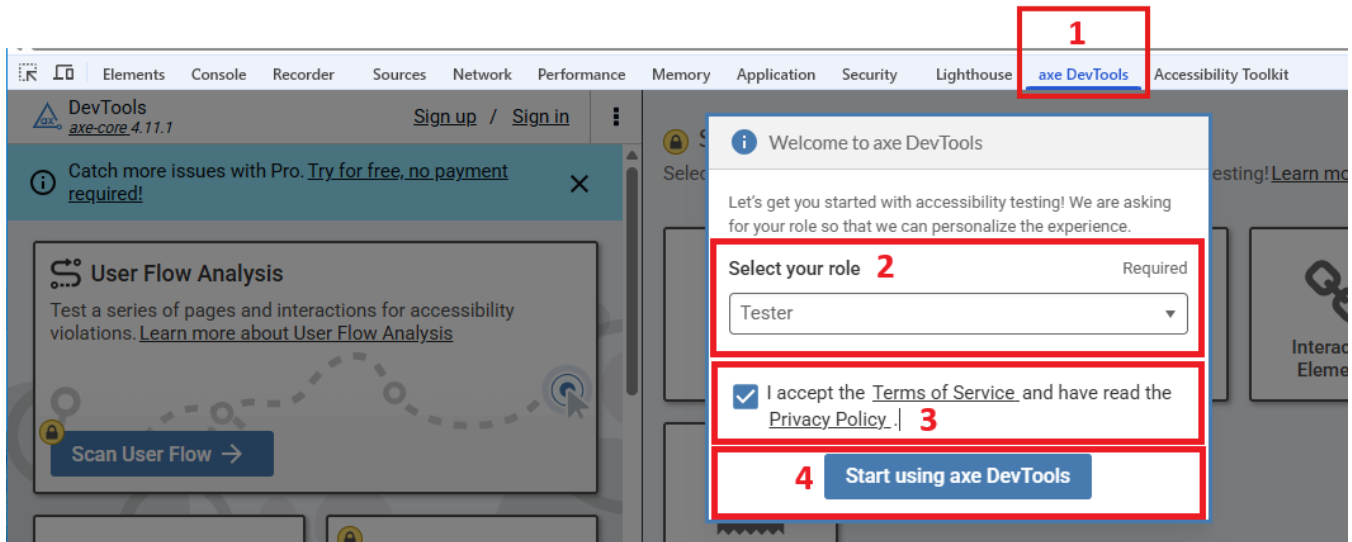
axe DevTools - Web Accessibility Testing

 Deque Systems Inc  Featured 3.9 ★ (123 ratings) ⓘ Share

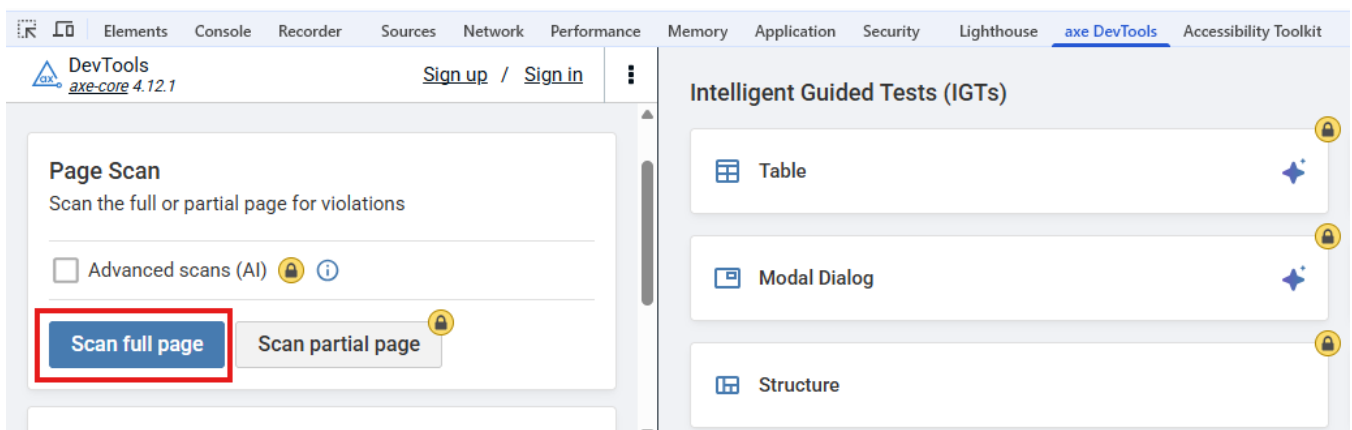
Extension Accessibility 400,000 users

Add to Chrome

6. Click the **Add extension** button
7. Go to the web page to be tested for accessibility issues
8. Hit the “**F12**” key to open the browser tools; they will appear at the bottom of the browser.
9. In the browser tools menu, select **axe DevTools** (see #1 below)
10. For “Select your role” select “Tester” (see #2 below)
11. Click the check box for “I accept the Terms of Service Link and have read the Privacy Policy Link.” (see #3 below)
12. Click **Start using axe DevTools** (see #4 below):

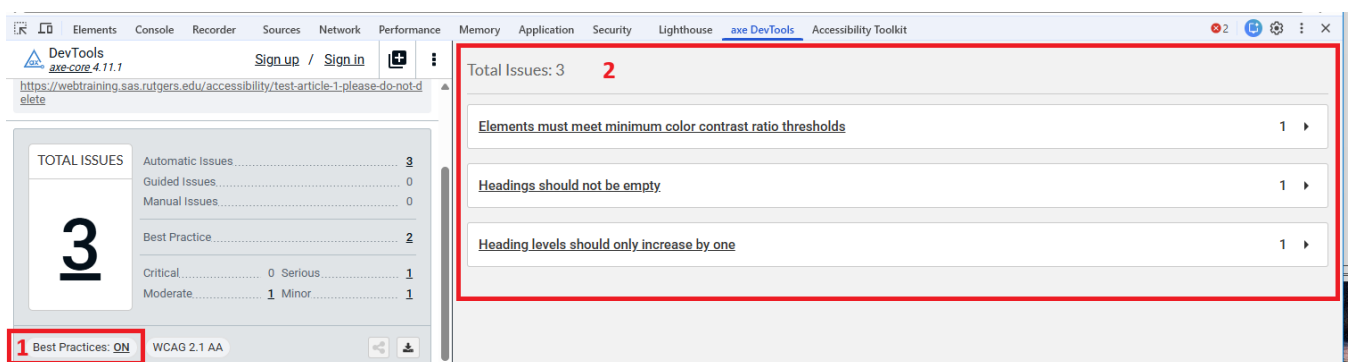


13. On the left, scroll down and select **Scan Full Page**:



14. On the left, scroll to the bottom and click the “Best Practices” button to change “OFF” to “ON” (see #1 below)

15. The list of accessibility issues will appear to the right (see #2 below)



16. You can select an issue, then click the **Highlight** button below the issue to see where it appears on the web page:

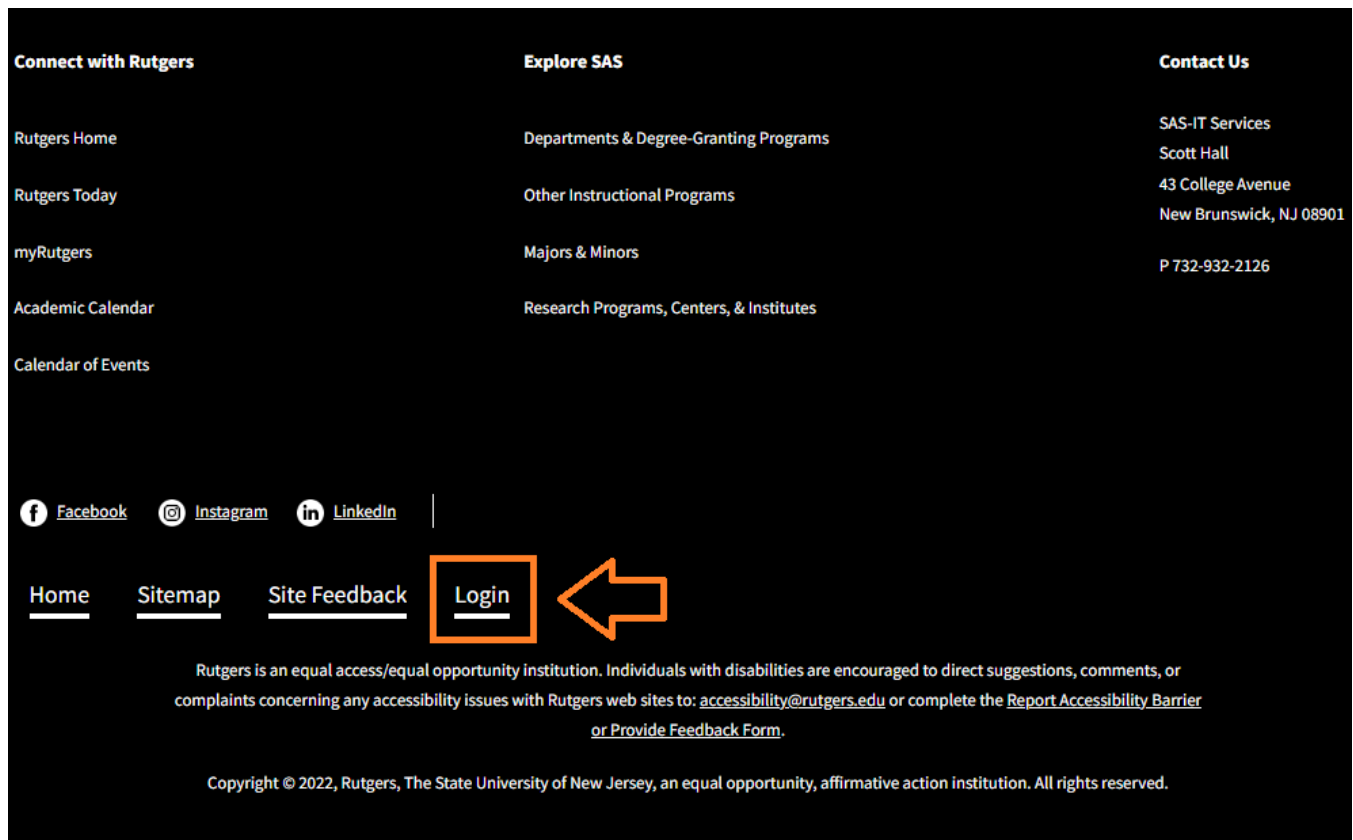
The screenshot shows a web browser displaying the SAS Web Training page. The page header includes the Rutgers-New Brunswick School of Arts and Sciences logo and navigation links: SAS Events, SAS News, rutgers.edu, SAS, Search People, and a search icon. The main navigation bar includes links for About, Advanced Content Editing, Accessibility (highlighted), Academics, People, News, Demos, and Contact Us. The page content features a contact information section with a heading 'Contact Information' and a link 'Click here'. A purple box highlights the 'Contact Information' heading, and a tooltip shows its properties: h4, 1320 x 24, Contrast 15.23, Role heading, Accessible Text, and Contact Information. Below the heading is a paragraph of placeholder text. The browser's DevTools Accessibility panel is open, showing a list of issues. The first issue, 'Elements must meet minimum color contrast ratio thresholds', is highlighted in purple. The panel also shows a summary of issues: 3 Total Issues, 3 Automatic Issues, 0 Guided Issues, 0 Manual Issues, 2 Best Practice, 0 Critical, 0 Serious, 1 Moderate, and 1 Minor. The 'Highlight' button is visible below the issue list.

Our goal will be to address as many of the issues as possible.

DEMONSTRATION: FIXING ACCESSIBILITY ISSUES ON A WEB PAGE

LOGGING ON TO THE FRONT-END

1. Go to the SAS Web Training website at: <https://webtraining.sas.rutgers.edu/>
2. Click the Login link at the bottom of the website; then login with your NetID:



FIND AND EDIT ARTICLE 1

1. Click on the **“Accessibility”** link on the main menu (*see #1 below*)
2. Find and click on the article starting with your name and ending in “Article 1” (*see #2 below*)
3. Press the F12 key to launch the browser tools, then scan the web page using axe DevTools as demonstrated in the previous section.

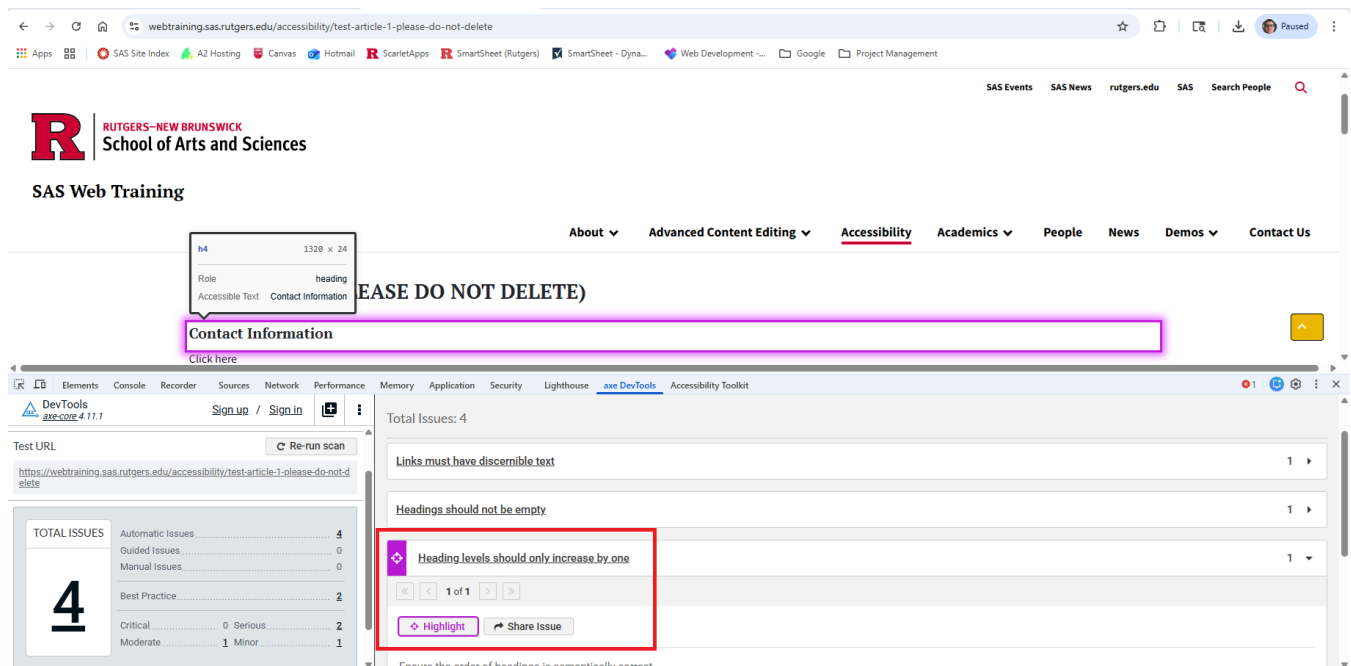
The screenshot shows the Rutgers-New Brunswick School of Arts and Sciences website. The top navigation bar includes the Rutgers logo, the school name, and links for 'rutgers.edu', 'SAS', 'Search People', and a search icon. Below this is a 'SAS Web Training' section with a main menu containing 'About', 'Accessibility' (highlighted with a green box and the number 1), 'Advanced Content Editing', 'Academics', 'People', 'News', 'Contact Us', and 'Registered Menu'. On the left is a 'User Menu' with links for 'Manage News Items', 'Manage my content', and 'Manage Gallery'. The main content area is titled 'Accessibility' and features a table of articles. The table has two columns: 'Title' and 'Edit Article'. The row for 'Eddie K - Article 1' is highlighted with a green box and the number 2. The 'Edit Article' link for this row is highlighted with a green box and the number 3. A dropdown menu in the top right corner shows '50' and a downward arrow.

Title	Edit Article
Article 1 11	Edit
Article 1 12	Edit
Article 2 11	Edit
Article 2 12	Edit
Eddie K - Article 1 2	Edit 3
Eddie K - Article 1 (test)	Edit
Eddie K - Article 2	Edit
Eddie K - Article 2 (test)	Edit

Now we can work through the errors and alerts that axe DevTools found on our web pages.

HEADING LEVELS SHOULD ONLY INCREASE BY ONE

Axe DevTools displays “Heading levels should only increase by one:”



Skipping heading levels (for example, jumping from **Heading 2** to **Heading 4**) causes problems for screen reader users. Vision-impaired users can navigate web pages by having their screen reader software read the headings to them and then jump to the desired heading. Skipped heading levels disrupt their ability to navigate the page.

To fix this problem, change the **Heading 4** to a **Heading 3**:

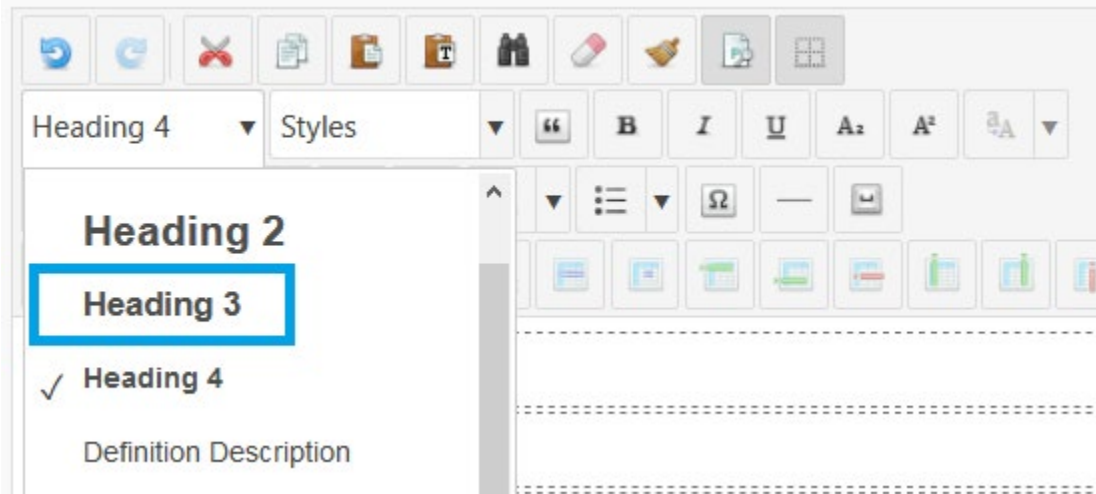
1. Edit your Joomla! article by clicking the **Edit** link to the upper right:

Eddie K Article 1 (test)

Contact Information

[Edit](#)

2. Click somewhere on the line incorrectly marked as a Heading 4
3. Select “Heading 3” from the “Paragraph” dropdown menu (found to the left of “Styles”):

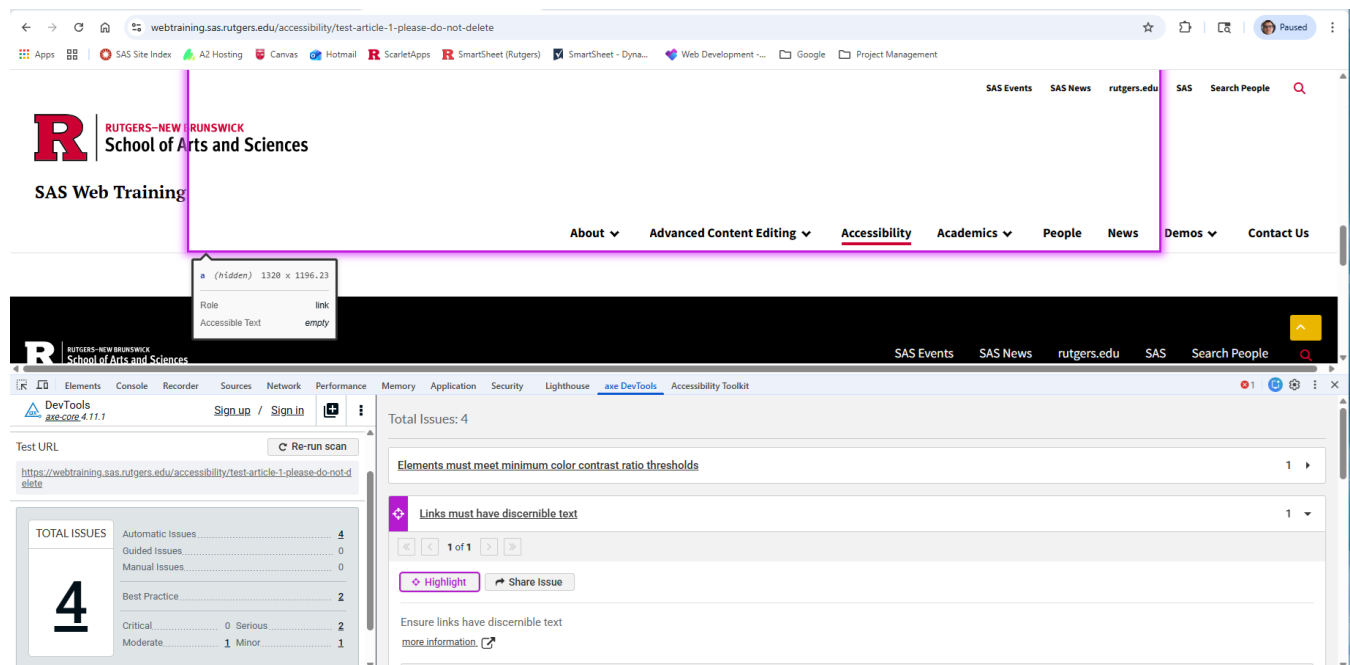


4. Click **Save** or **Save & Close** below the article editing area.

Note that **Heading 1** is reserved for page titles and is therefore not available. Use **Heading 2** for top-level headings in your article, **Heading 3** for sub-headings, and **Heading 4** for sub-sub-headings.

LINKS MUST HAVE DISCERNIBLE TEXT

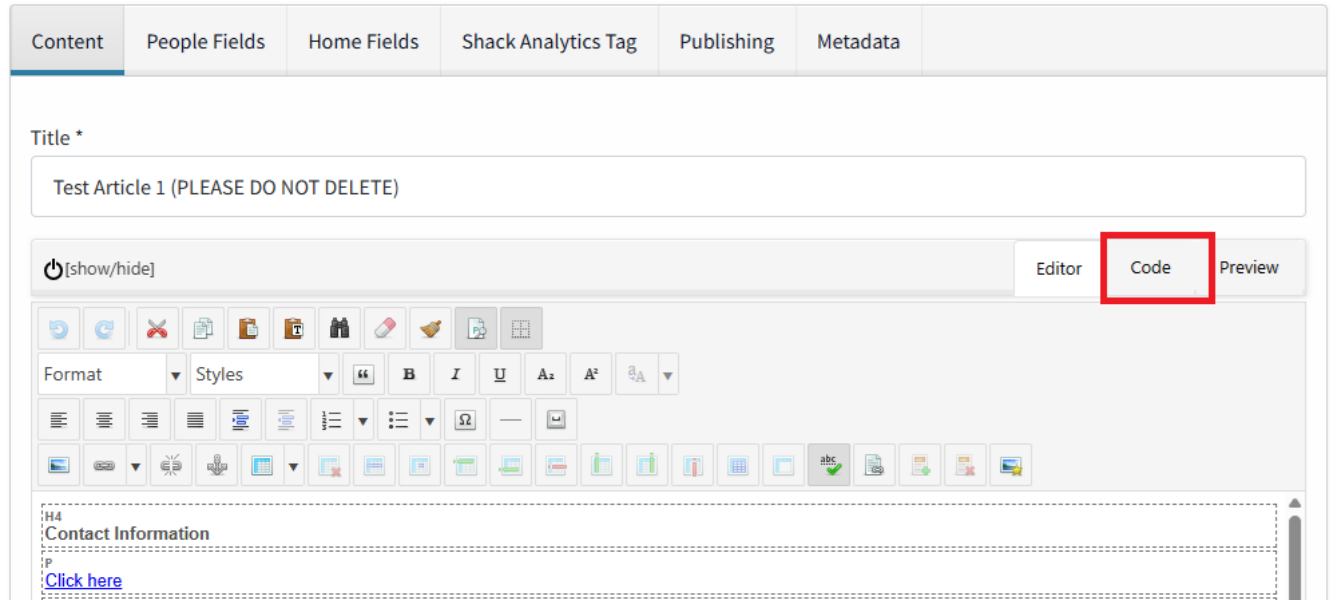
Axe DevTools displays “Links must have discernible text:”



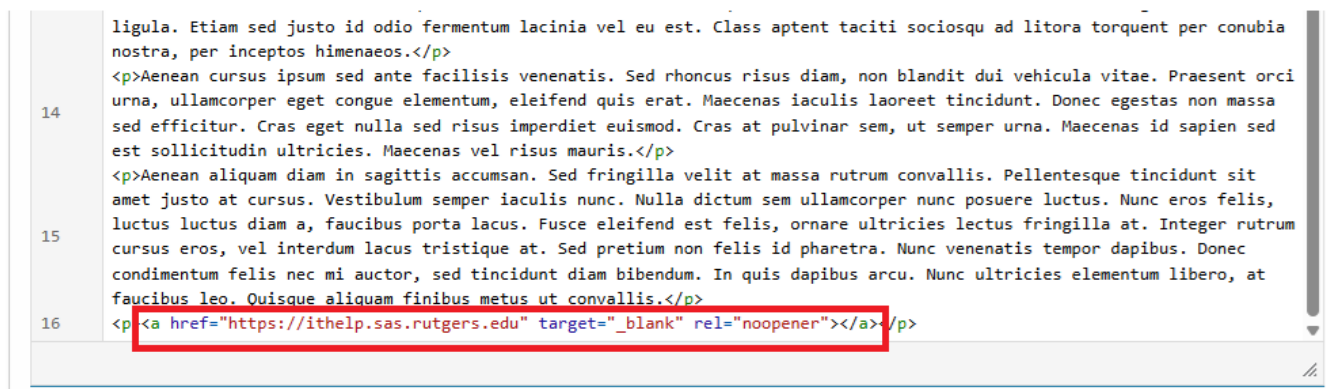
Linked text should always describe the destination of the link. Screen reader software can read a list of links on the page to users. If a link does not have any text, screen reader users won't get any information about the targets of the links.

To fix this problem:

1. Edit your Joomla! article
2. Click the “Code” tab above the editing toolbar:



3. Search the code for any <a> tags that do not have text between them:



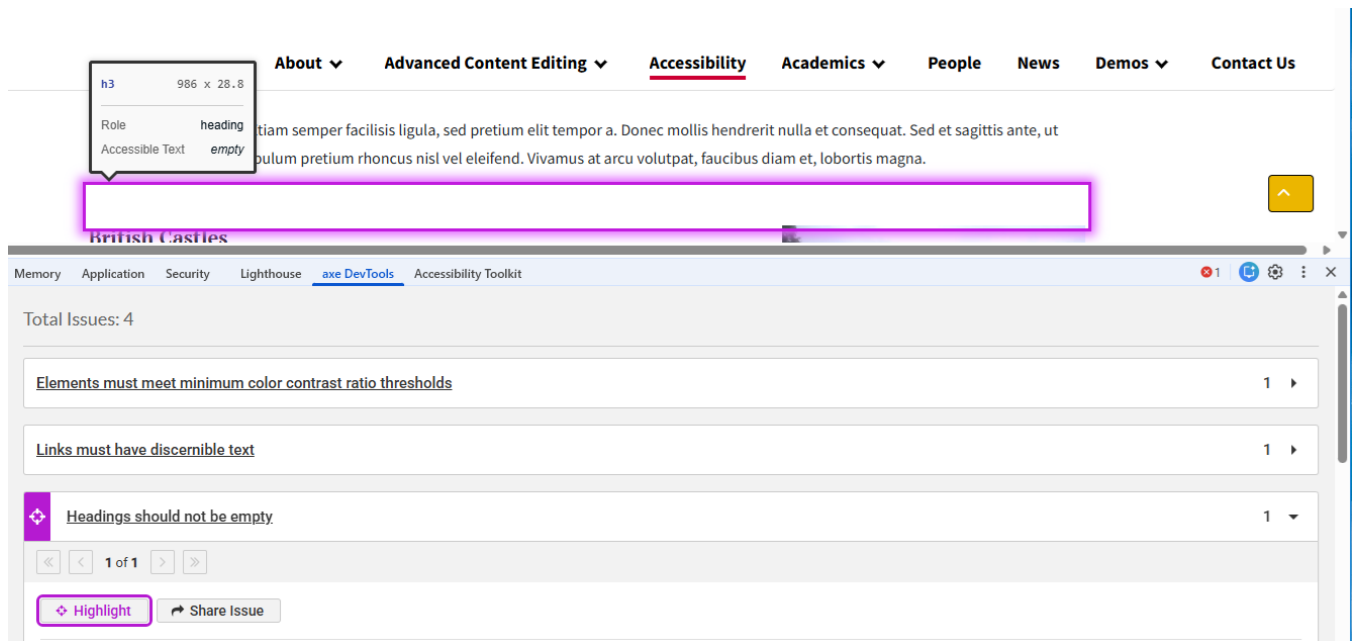
4. If the link belongs there, enter a description of the link target between the <a> tags; otherwise, delete the tags:

```
<a href="https://ithelp.sas.rutgers.edu" target="_blank"
rel="noopener">Request help from SAS IT Services</a>
```

5. Click **Save & Close** below the article editing area.

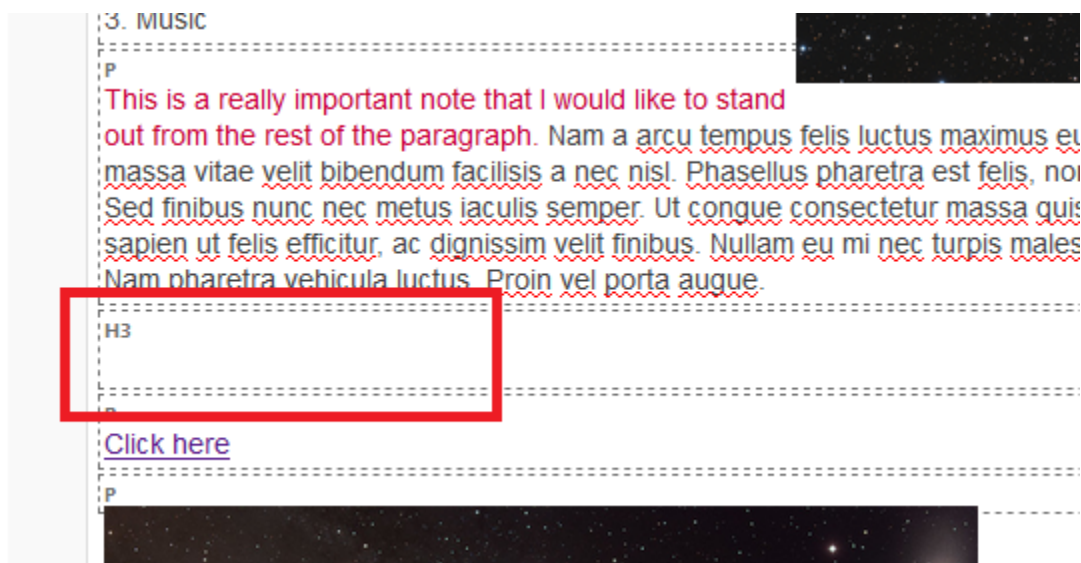
HEADINGS SHOULD NOT BE EMPTY

Axe DevTools displays “Headings should not be empty:”



Empty headings are bad for accessibility for the same reason as skipped heading levels: they prevent screen reader users from successfully navigating the web page.

To fix this problem, edit the article, then click on the blank line marked “H3” and add some text (if there should be a heading there), or press [Backspace] until the blank line and “H3” marker disappear. Then click **Save & Close**.



ELEMENTS MUST MEET MINIMUM COLOR CONTRAST RATIO THRESHOLDS

Contrast errors occur when there is not enough difference between the font color of text and the background color behind the text. These issues create problems for users with low vision or colorblindness. In fact, if the contrast is low enough, even users with normal vision may have difficulty reading the text.

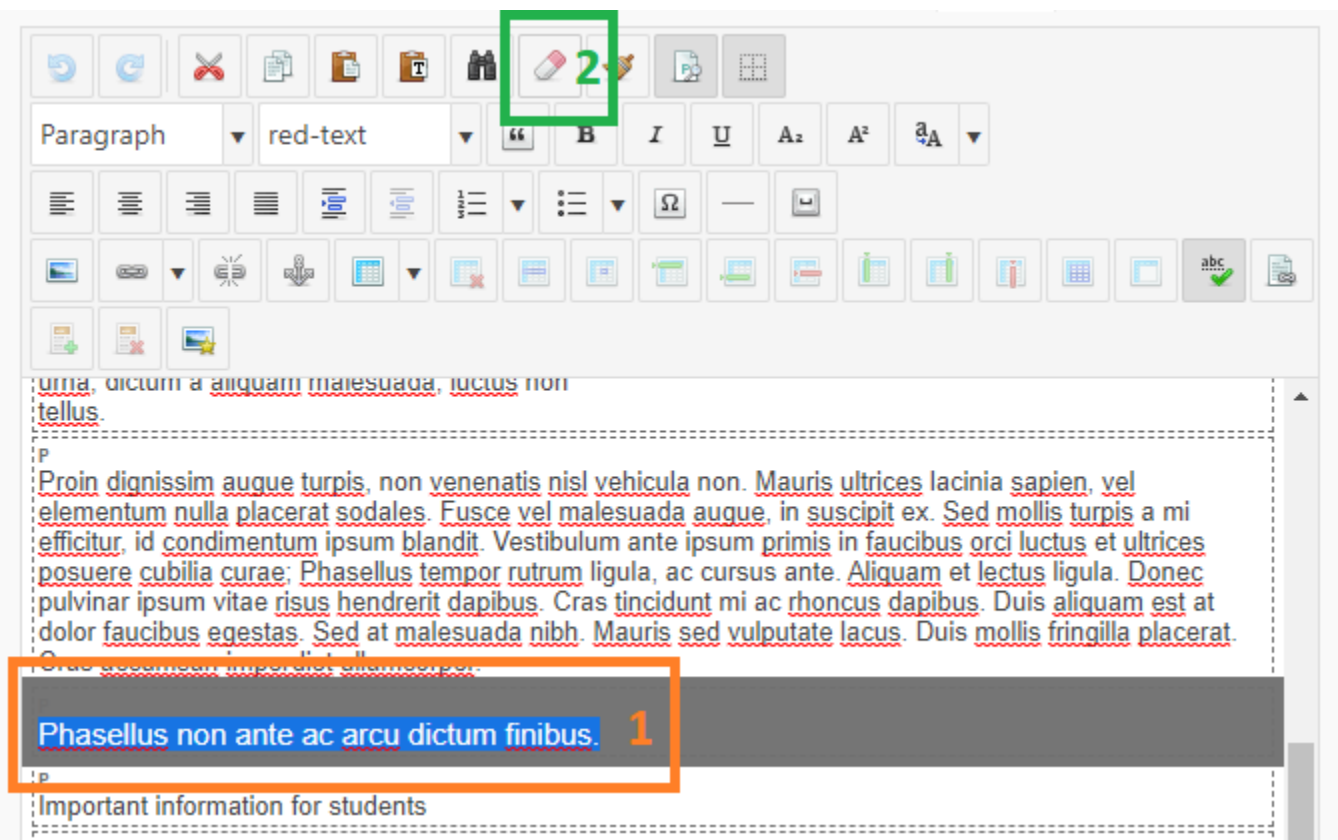
The standard template used for SAS websites is designed to ensure that there is enough contrast between the text and the background. However, contrast errors can still occur if two or more incompatible styles are applied to the same text.

When there is a contrast error, axe DevTools displays “Elements must meet minimum color contrast ratio thresholds”. In the below example, there is very little contrast between the red text and grey background:

The screenshot shows a web browser displaying the SAS Web Training page. The page header includes the Rutgers-New Brunswick School of Arts and Sciences logo and navigation links. A red text element is highlighted by axe DevTools, indicating a contrast error. The DevTools interface shows the error message "Elements must meet minimum color contrast ratio thresholds" and a list of issues. The error is highlighted in a red box, and the text "span.red-text" is visible. The DevTools interface also shows a "TOTAL ISSUES" section with "Automatic Issues" at 5 and "Guided Issues" at 0.

To fix this problem, we need to highlight the text and eliminate the styles that create low contrast when combined:

1. Edit the article
2. Highlight the text that axe DevTools has flagged with the “Very low contrast” error (see #1 below)
3. Click the “Remove formatting” button on the editor toolbar to remove the styles (see #2 below)
4. Click **Save & Close**



IMAGES MUST HAVE ALTERNATIVE TEXT

Visually impaired users who cannot see images rely on their screen reader software to read the alternative text (“alt text”) for the images to them, so they can hear descriptions of the images. When alt text is missing, screen reader users cannot access an image description.

When alt text is missing, axe DevTools will display “Images must have alternative text:”

The screenshot shows a web page from Rutgers-New Brunswick School of Arts and Sciences. The page has a header with the Rutgers logo and navigation links. The main content area contains placeholder text. An image of a stone wall is highlighted with a red border. A tooltip shows the image's role as 'img' and its accessible text as 'empty'. The axe DevTools toolbar is visible at the bottom, showing a total of 5 issues. The 'Images must have alternative text' issue is highlighted, with a description: 'Ensure elements have alternative text or a role of none or presentation'. A 'Highlight' button is shown next to the issue.

SAS Events SAS News rutgers.edu SAS

R | RUTGERS-NEW BRUNSWICK
School of Arts and Sciences

SAS Web Training

About Advanced Content Editing Accessibility people News Demos

Donec nec rhoncus ipsum. Pellentesque gravida tempor turpis, et commodo turpis blandit sit amet. Cras risus arcu, pretium eget interdum feugiat, pretium at metus. Pellentesque vel nisl, gravida ut quam at, varius porttitor dolor. Mauris nec feugiat eros, vel dapibus ante. Fusce accumsan urna sit amet ipsum ornare maximus.

Pellentesque sed egestas orci. Phasellus ac velit id augue sollicitudin gravida at eget urna. Integer at nibh eget nisi interdum congue eu in nulla. Duis ne

axe DevTools

DevTools
axe-core 4.11.1

Sign up / Sign in

Overview Guided Tests

Test Name Save Test

Test URL Re-run scan

<https://webtraining.sas.rutgers.edu/accessibility/test-article-1-please-do-not-delete>

TOTAL ISSUES

Automatic Issues	5
Guided Issues	0
Manual Issues	0
Best Practice	2

5

Total Issues: 5

Elements must meet minimum color contrast ratio thresholds

Images must have alternative text

1 of 1

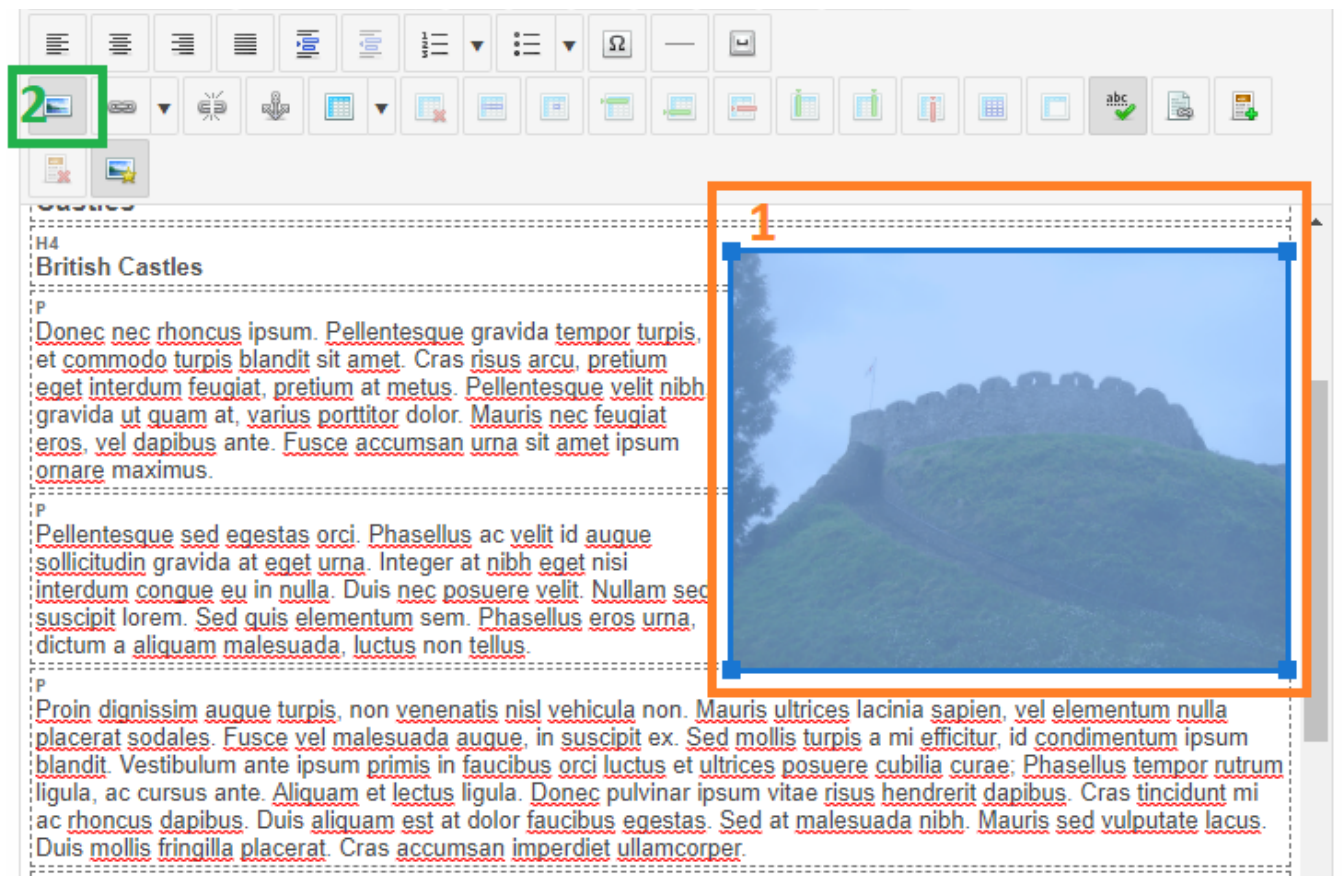
Highlight Share Issue

Ensure elements have alternative text or a role of none or presentation

[more information](#)

SETTING ALTERNATE TEXT FOR YOUR IMAGES

1. Edit the article
2. Select the image (see #1 below)
3. Click the “Insert Image” button (see #2 below)

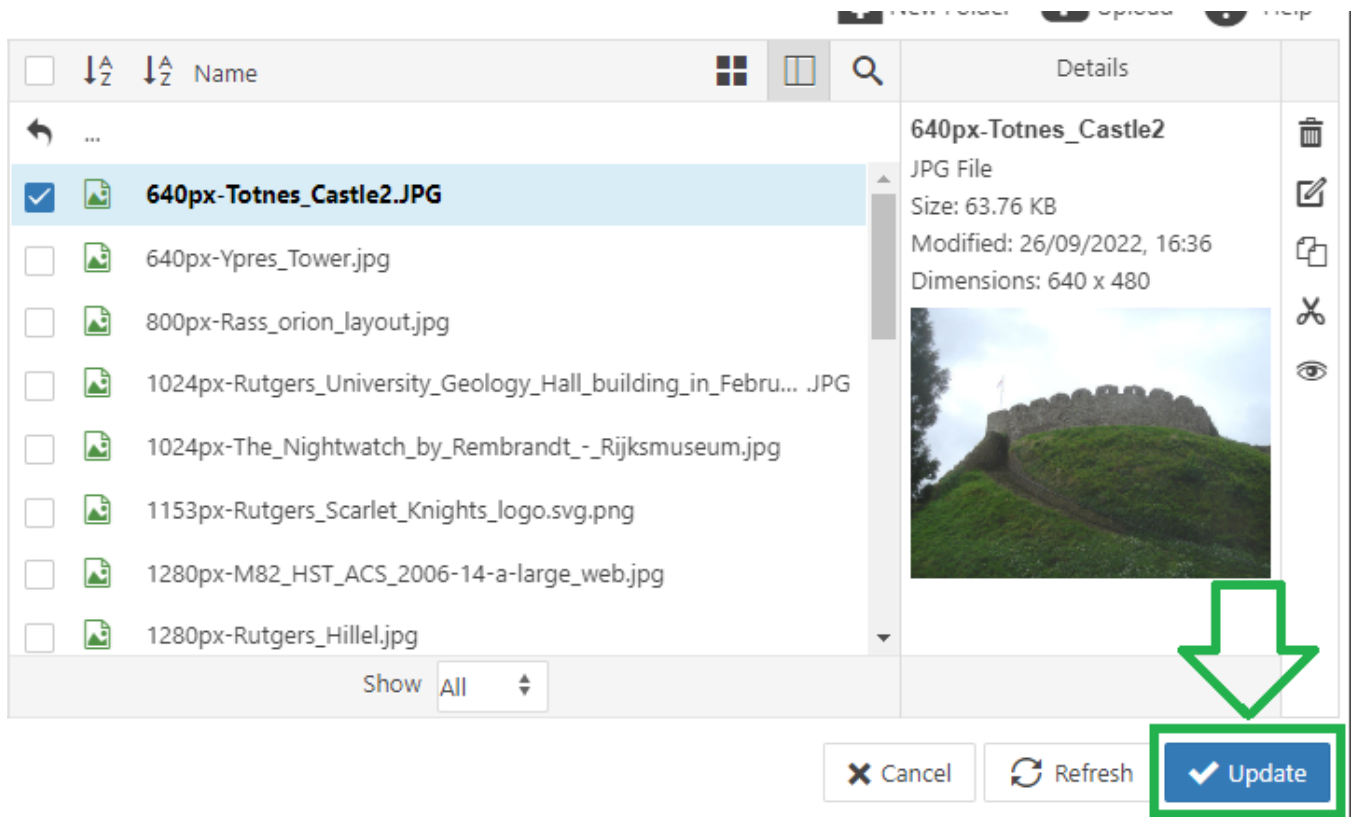


4. Enter a short description of the image in the “Alternate Text” field:

Image Manager

Image	Rollover	Advanced
URL	images/administrator/640px-Totnes_Castle2.JPG	
Alternate Text	Totnes Castle	
Dimensions	300 × 225 ☒ Proportional	
Alignment	Right Clear --Not Set--	
Margin	Top Right Bottom 10 Left 10 ☐ Equalize	
Border	Width 0 Style solid Colour # 999999	

5. Click **Update** to the lower right:



6. Click **Save & Close** to the lower left to save your changes.

THINGS NOT RECOGNIZED AS ERRORS THAT WE STILL NEED TO CHECK

ALTERNATIVE TEXT

Tools like axe DevTools can only determine if the alternative text (“alt text”) attribute for an image is missing or not. They can’t interpret the alt text to determine if it’s accurate. It’s up to us to check the alt text value and make sure it’s correct.

Incorrect Alternative Text

If alternate text does exist for an image, axe DevTools will not display an error. You can check the “alt” value for an image by right-clicking it, then selecting “Inspect” from the menu. The code corresponding to the image will then be displayed in the “Elements” tab of the browser tools:



Just because alternative text is present does not mean that it is correct. In the above example, “image00001” does not properly describe the image.

Also, note that the above image has some embedded text. If this text is important, it should also be included in the alternate text or shown somewhere else on the page (for example, in a caption for the image).

We can resolve this issue the same way we did for missing alt txt (see “Setting alternate text for your images” above for screenshots).

1. Edit the article
2. Select the image
3. Click the “Insert Image” button
4. Enter a short description of the image in the “Alternate Text” field
5. Click **Update** to the lower right
6. Click **Save & Close** to the lower left to save your changes

HEADINGS

Only use Heading Styles to designate actual headings for information in your article. As discussed earlier, vision-impaired users use headings to navigate the web page.

Headings Not Marked as Headings

If text that *should* be a heading does not have a heading style, a screen reader user can't easily navigate to it.

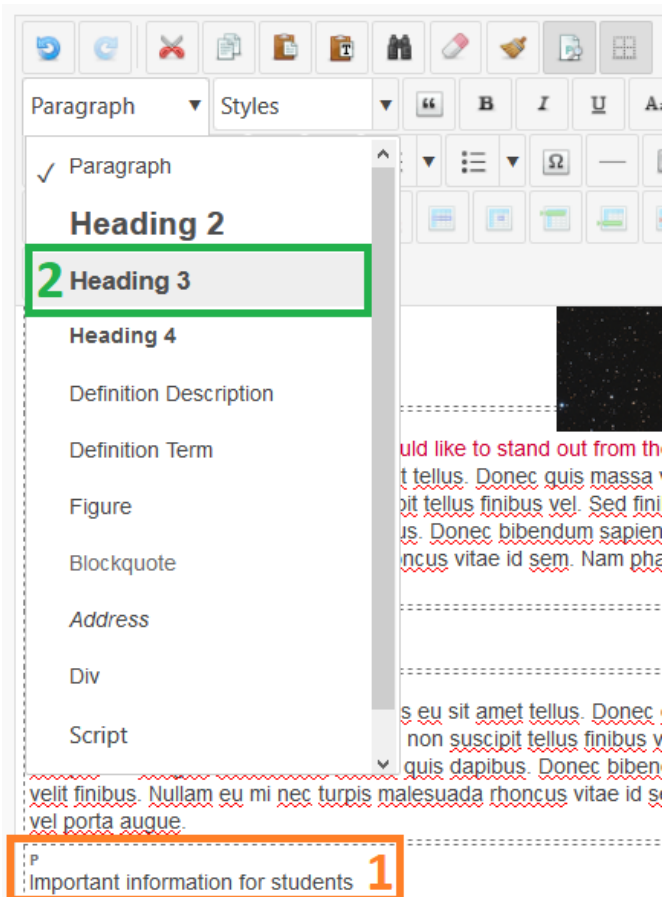
In this example, the text “Important information for students” describes the text below it but does not have a heading style. A vision impaired user won't hear this text when their screen reader announces the list of page headings.

Important information for students

Please make sure you upload your vaccination records to the student portal before the beginning of the semester!

This paragraph contains important text not related to vaccinations. Interdum et malesuada fames ac ante ipsum primis in faucibus. Donec quis ultricies purus, vel maximus erat. Sed faucibus condimentum porta. Aliquam nec fringilla dolor. Aenean vitae metus vel arcu ultricies iaculis vehicula

To fix the problem, edit the article, then click on the text and select the appropriate heading level from the “Paragraph” dropdown menu (make sure you don't skip a heading level):



Non-Headings Marked as Headings

Don't use a heading style to make important text stand out if that text would not be considered a heading. In the below example, the text "Please make sure you upload your vaccination records to the student portal before the beginning of the semester!" is not a heading; it doesn't describe the content that comes after it.

H3

Important information for students

H2

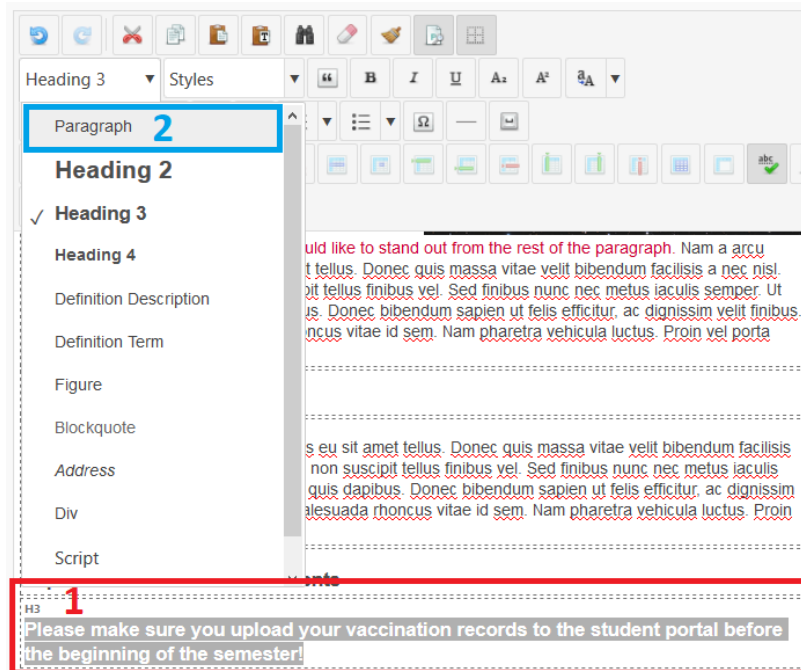
Please make sure you upload your vaccination records to the student portal before the beginning of the semester!

P

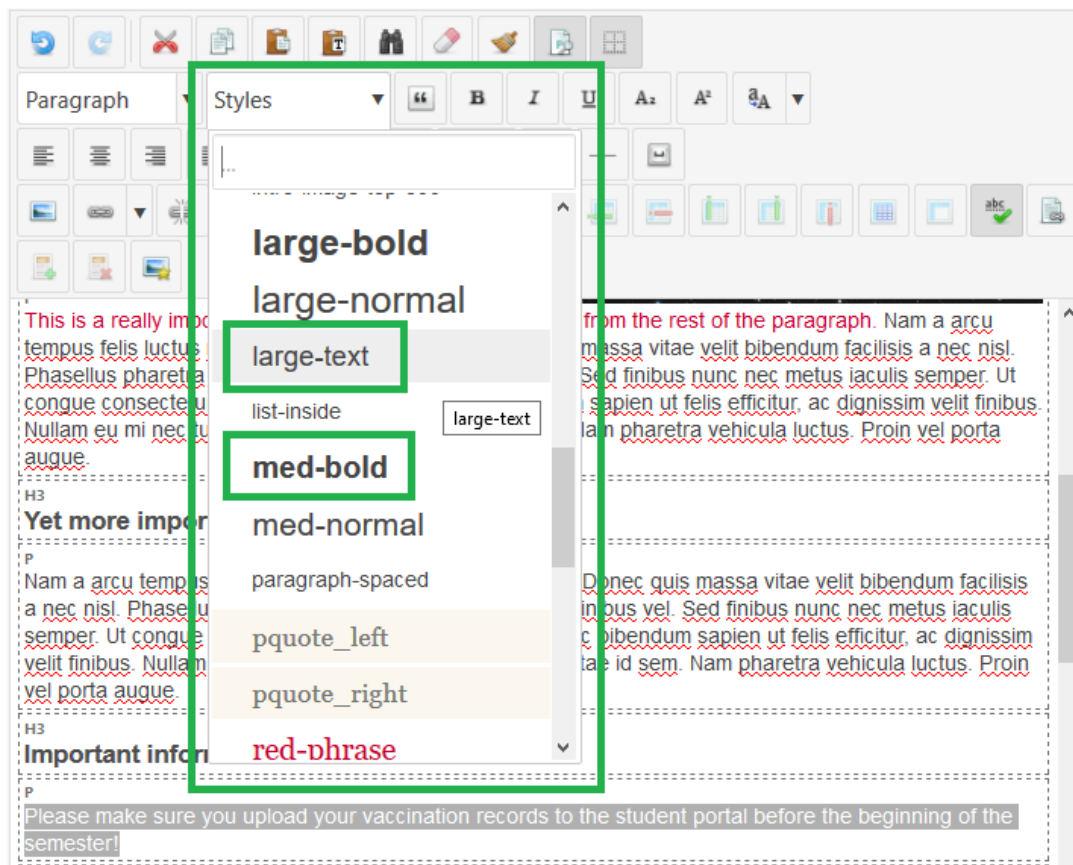
This paragraph contains important text not related to vaccinations. Interdum et malesuada fames ac ante ipsum primis in faucibus. Donec quis ultricies purus, vel maximus erat. Sed faucibus condimentum porta. Aliquam nec fringilla dolor. Aenean vitae metus vel arcu ultricies iaculis vehicula in tellus. Morbi malesuada nulla quis convallis vestibulum. Mauris pulvinar, lectus in scelerisque blandit, lorem nulla eleifend tortor, id ullamcorper magna ex nec massa. Nullam id orci eu est eleifend lobortis non ac tellus. Donec non tortor dui. Praesent dolor sem, pellentesque in mollis eget, pulvinar eu quam. Aenean sagittis ut mi sed luctus. Maecenas ac massa eget lorem placerat porttitor. Duis placerat, orci ut scelerisque mattis, purus tortor viverra lacus, quis semper neque elit id velit. Maecenas lacinia massa in velit vehicula, vitae maximus nisi egestas.

To fix the problem:

1. Highlight the text that should not be marked as a heading (*see #1 below*)
2. Select “Paragraph” from the first dropdown menu on the toolbar to change the text from a heading back to a paragraph (*see #2 below*)



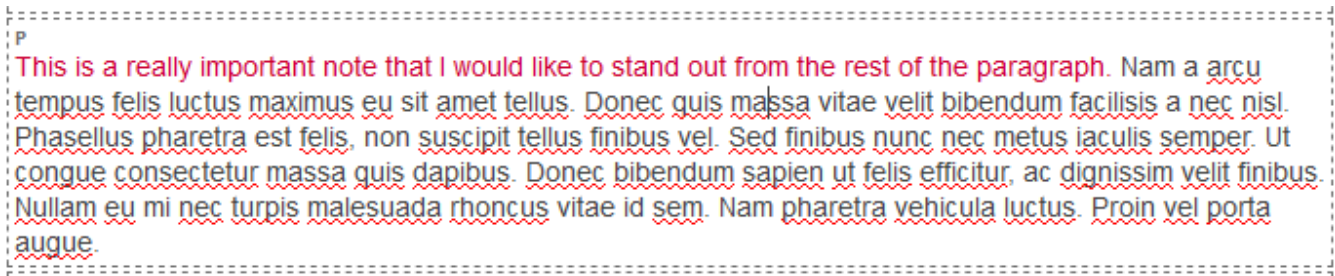
3. If you want the important text to stand out, select a large or bold style (for example, “large-text” or “med-bold”) from the “Styles” dropdown menu instead of a heading:



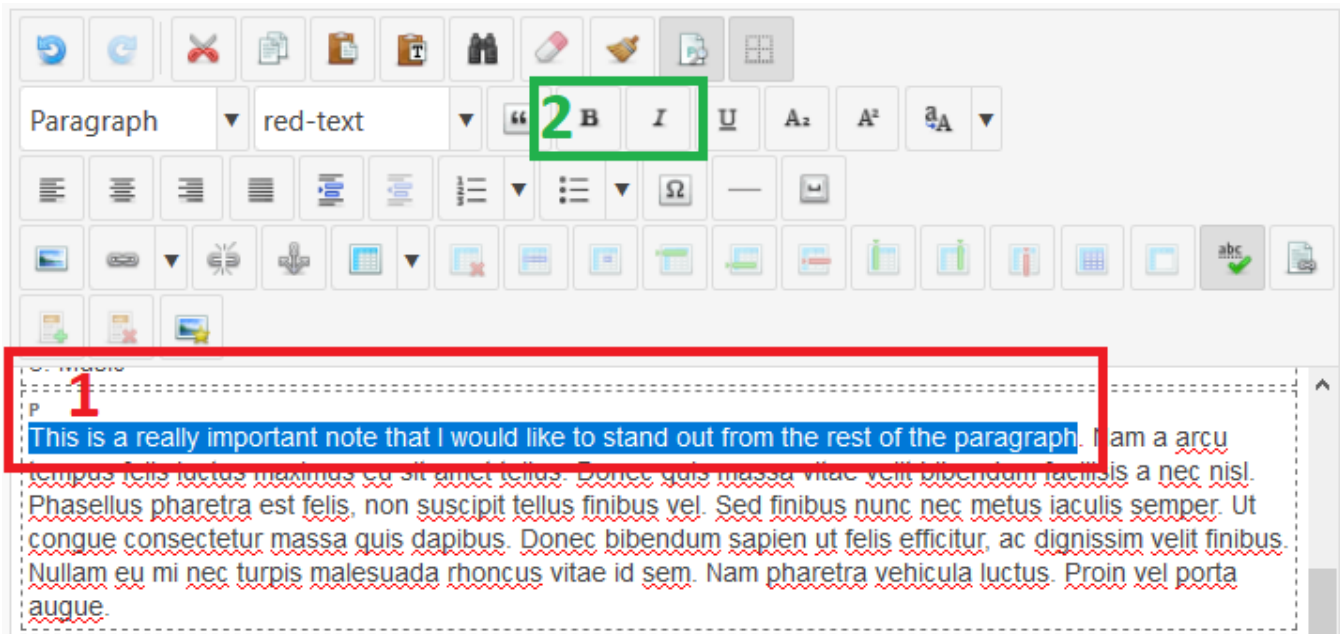
IMPORTANT TEXT ONLY INDICATED BY COLOR

Color should not be the only means of highlighting important text; also use bold or italics. Colorblind users may not be able to distinguish the text in color from the surrounding text.

In the next example, the first sentence in the paragraph is important. It has been given the style “red-text,” but a colorblind user might not see this color. Also, axe DevTools doesn’t recognize this as an error because it can’t actually read the text to determine if it’s important.



To fix the problem, select the important text (see #1 below), then click either the “Bold” or “Italics” button (see #2 below):



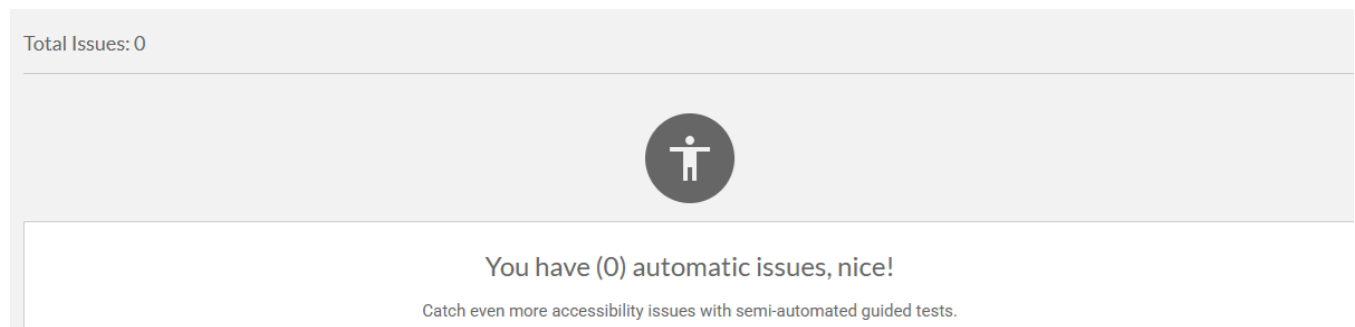
Click **Save & Close** to the lower left to save your changes.

SCAN THE PAGE AGAIN AFTER ALL ISSUES HAVE BEEN ADDRESSED

After you have resolved as many accessibility issues as possible, press the F12 key to open the browser tools.

- In the browser tools menu, select **axe DevTools**
- On the left, scroll down and select **Scan Full Page**

If you have resolved all the issues, axe DevTools will tell you “You have (0) automatic issues, nice!”



PRACTICE: RESOLVING ACCESSIBILITY ISSUES

Now, we will practice what we learned by trying to fix accessibility errors on another article.

FIND ARTICLE 2

1. Click on the **Accessibility** link on the main menu (*see #1 below*)
2. Find the article starting with your name and editing in “Article 2” and click on it (*see #2 below*)

The screenshot shows the Rutgers-New Brunswick School of Arts and Sciences SAS Web Training interface. The top navigation bar includes links for About, Accessibility (highlighted with a green box and a red '1'), Advanced Content Editing, Academics, People, News, Contact Us, and Registered Menu. The left sidebar contains a User Menu with links for Manage News Items, Manage my content, and Manage Gallery. The main content area is titled 'Accessibility' and features a table with columns for Title and Edit Article. The table lists several articles, with 'Eddie K - Article 2' highlighted by a green box and a red '2'.

Title	Edit Article
Article 1 11	Edit
Article 1 12	Edit
Article 2 11	Edit
Article 2 12	Edit
Eddie K - Article 1	Edit
Eddie K - Article 1 (test)	Edit
Eddie K - Article 2	Edit
Eddie K - Article 2 (test)	Edit

TEST ARTICLE 2 USING AXE DEVTOOLS

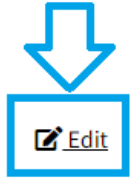
- Press the F12 key to open the browser tools.
- In the browser tools menu, select **axe DevTools**.
- On the left, scroll down and select **Scan Full Page**.
- Make a note of the issues that axe DevTools found within your article.

EDIT ARTICLE 2

1. Click the **Edit** link for your article:

Accessibility

Eddie K - Article 2 (Test)



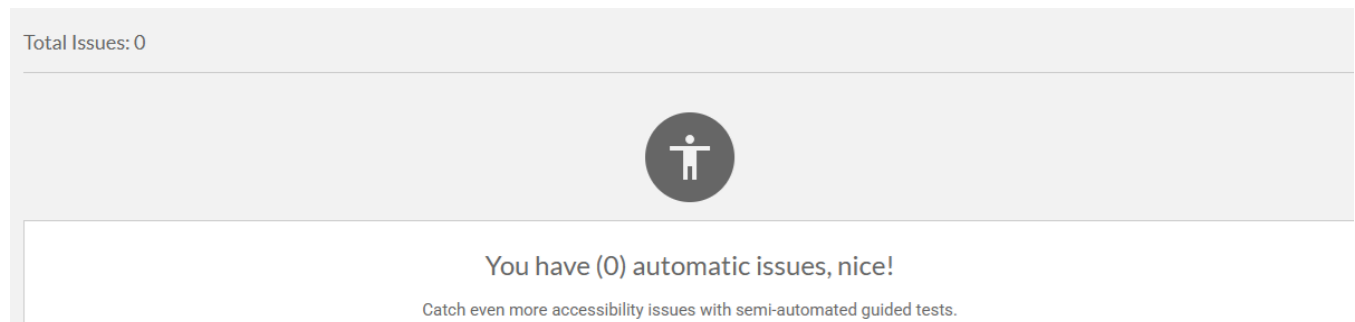
2. Fix the issues that axe DevTools reported for your article.

RE-TEST YOUR PAGE

After you have resolved as many accessibility issues as possible, press the F12 key to open the browser tools.

- In the browser tools menu, select **axe DevTools**
- On the left, scroll down and select **Scan Full Page**

If you have resolved all the issues, axe DevTools will tell you “You have (0) automatic issues, nice!”



ADDITIONAL INFORMATION

COURSE ACCESSIBILITY GUIDELINES

If your unit's website contains any course-related content, please review Rutgers' Course Accessibility Guidelines:

<https://it.rutgers.edu/it-accessibility-initiative/wp-content/uploads/sites/16/2019/01/Rutgers-Course-Accessibility-Guidelines.pdf>

VIDEOS

ACCESSIBILITY FOR VIDEOS

To comply with accessibility standards, make sure all videos are closed-captioned before you add them to your website.

RUTGERS YOUTUBE CHANNEL

We recommend that you have your videos uploaded to the Rutgers YouTube channel, managed by Rutgers Media Productions. For more information, please contact either:

Kevin Lorincz, Director of Communications, klorincz@ucm.rutgers.edu

John Munson, Senior Video Producer, john.munson@rutgers.edu

KALTURA

You can also upload videos to Kaltura, which is part of Canvas. Any videos uploaded to Kaltura will give you the option to add closed captioning automatically. Rutgers faculty or staff can request a Kaltura account. To get started with Kaltura, go to:

<https://canvas.rutgers.edu/external-apps/kaltura/>

ADDITIONAL DOCUMENTATION

Visit our Title II Resources web page: <https://sas-it.rutgers.edu/how-to-guides/title-ii-resources>

FUTURE WORKSHOPS

Please visit: <https://sas-it.rutgers.edu/it-services/web-development-and-support/workshops-and-training>