Using E-Learning Platforms for Inclusive Teaching

Accessibility of E-Learning Resources

Objective: Understand How to Evaluate and Improve the Accessibility of Digital Learning Content

Digital4All

Background Image Reference: LearningMole, McSweeney Centre, 31 Henry Pl, Belfast BT15 2AY, UK. Harnessing Digital Tools: Enhancing Tech Skills for Primary School Teachers, https://learningmole.com/wp-content/uploads/2024/09/image-26.jpeg

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Education and Culture Executive Agency (EACEA). Neither the European Union nor EACEA can be held responsible for them. Project number: 2023-1-FI01-KA220-HED-000152599.

Co-funded by the European Union

Learning Outcomes:

Digital4All

- **Define Accessibility in E-Learning**: Understand the importance of making digital content accessible for all learners, including those with disabilities.
- **Explain Key Accessibility Standards**: Describe WCAG 2.2 and UDL principles, understanding their application to e-learning resources.
- **Identify Accessibility Barriers**: Recognize barriers in digital content, such as perceivability, operability, understandability, and robustness, and how these affect learners.
- **Evaluate E-Learning Resources Using Accessibility Tools**: Utilize tools like WAVE and Axe to assess digital content for accessibility compliance.
- **Apply Manual Accessibility Testing Techniques**: Conduct manual evaluations with screen readers, keyboard navigation, and multimedia captioning to ensure usability.
- **Assess and Enhance Course Content Accessibility**: Evaluate text, multimedia, and assessment content to ensure compliance with accessibility guidelines.

Co-funded by
the European Union

Learning Outcomes:

Digital4All

- **Design Accessible Assessments**: Provide flexible assessment options and ensure accessibility features like extended time and alternative formats.
- **Improve Document and LMS Accessibility**: Ensure documents like PDFs are accessible and evaluate LMS platforms for inclusive design.
- **Optimize Mobile Accessibility for E-Learning**: Ensure that e-learning resources are accessible on mobile devices.
- **Address Common Accessibility Issues**: Implement best practices to improve contrast, text readability, and multimedia accessibility.
- **Reflect on Challenges in Accessibility Implementation**: Discuss common challenges in accessibility evaluation and improvement, and brainstorm solutions.

Co-funded by
the European Union

Introduction to Accessibility in E-Learning

What is Accessibility?

- Ensuring that all learners, including those with disabilities, can engage fully with digital content.
- The World Wide Web Consortium (W3C)'s **Web Accessibility Initiative (WAI)** is an effort to improve the accessibility of the World Wide Web for people with disabilities - https://www.w3.org/WAI/

Image Reference: 3 Ways To Support an Effective Digital Learning Environment, International Society for Technology in Education (ISTE), (www.iste.org) , Arlington, Virginia, USA https://iste-prod.imgix.net/Choosing_Digital_Tools.jpg

Co-funded by the European Union

Importance of Digital Accessibility in Higher Education

Why Accessibility Matters?

- Ensures equal learning opportunities
- Promotes inclusion
- Improves learning outcomes

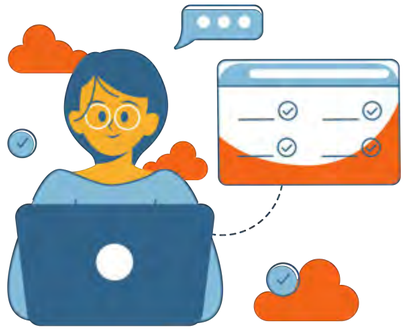


Image Reference: https://aeldata.com/digital-accessibility-important-in-higher-education/

Co-funded by
the European Union

Key Accessibility Standards for E-Learning Resources

- WCAG 2.2 and E-Learning:
- How WCAG applies to e-learning resources (e.g., video captions, k eyboard navigation)
- WCAG Evaluation Guide links to resources to help evaluate web accessibility. https://www.w3.org/WAI/test-evaluate/

Image Reference: https://zilliobit.com/exploring-wcag-2-2/

Co-funded by
the European Union

Identifying Accessibility Barriers (1)

Perceivable Content

- Ensure content is perceivable by everyone for example:
  - Offer alternative text (alt text) for images, charts, and non-text content so that screen readers can describe them.
  - Include closed captions and transcripts for videos to support learners with hearing impairments.
  - Present content in various formats (text, audio, video, interactive elements) to accommodate different learning preferences.
  - Use high-contrast color combinations for text and background to aid learners with visual impairments.
  - Allow users to adjust text size without losing readability or content structure.
- W3C's Perceivable Content Guidelines aims to make information and user interface components presentable to users in ways they can perceive.
  https://www.w3.org/WAI/WCAG22/quickref/#principle1

https://www.deque.com/wcag/

Identifying Accessibility Barriers (2)

Operable Interfaces

- Ensure all functionalities are keyboard accessible (e.g., dropdown menus, forms).
- W3C's Operable Content Guidelines aims to make user interface components and navigation operable. https://www.w3.org/WAI/WCAG22/quickref/#principle2

https://medium.com/swlh/identifying-barriers-to-accessibility-1b9518936be

Co-funded by
the European Union

Identifying Accessibility Barriers (3)

Understandable Content

- Ensure language and instructions are clear, and content is predictable.
- W3C's Understandable Content Guidelines aims to make information, and the operation of the user interface understandable.
- Ensure content is compatible with assistive technologies and future developments.
- W3C's Robust Content Guidelines aims to make content robust enough which can be interpreted by a variety of user agents and assistive technologies.
  https://www.w3.org/WAI/WCAG22/quickref/#principle4
- https://www.w3.org/WAI/WCAG22/quickref/#principle3

Co-funded by the European Union

Evaluating E-Learning Resources:

Step-by-Step Guide

1. Identify the platform used.
2. Use automated accessibility checkers (e.g., WAVE, Axe).
3. Manually assess for WCAG compliance.

- WAVE is a suite of evaluation tools that helps authors make their web content more accessible to individuals with disabilities.
  https://wave.webaim.org/

Co-funded by
the European Union

Automated Accessibility Tools (1)

WAVE Tool

- How to use WAVE to check accessibility of web-based e-learning content.
- WAVE from WebAIM (Web Accessibility In Mind) can identify many accessibility and Web Content Accessibility Guideline (WCAG) errors, but also facilitates human evaluation of web content. https://wave.webaim.org/aim/

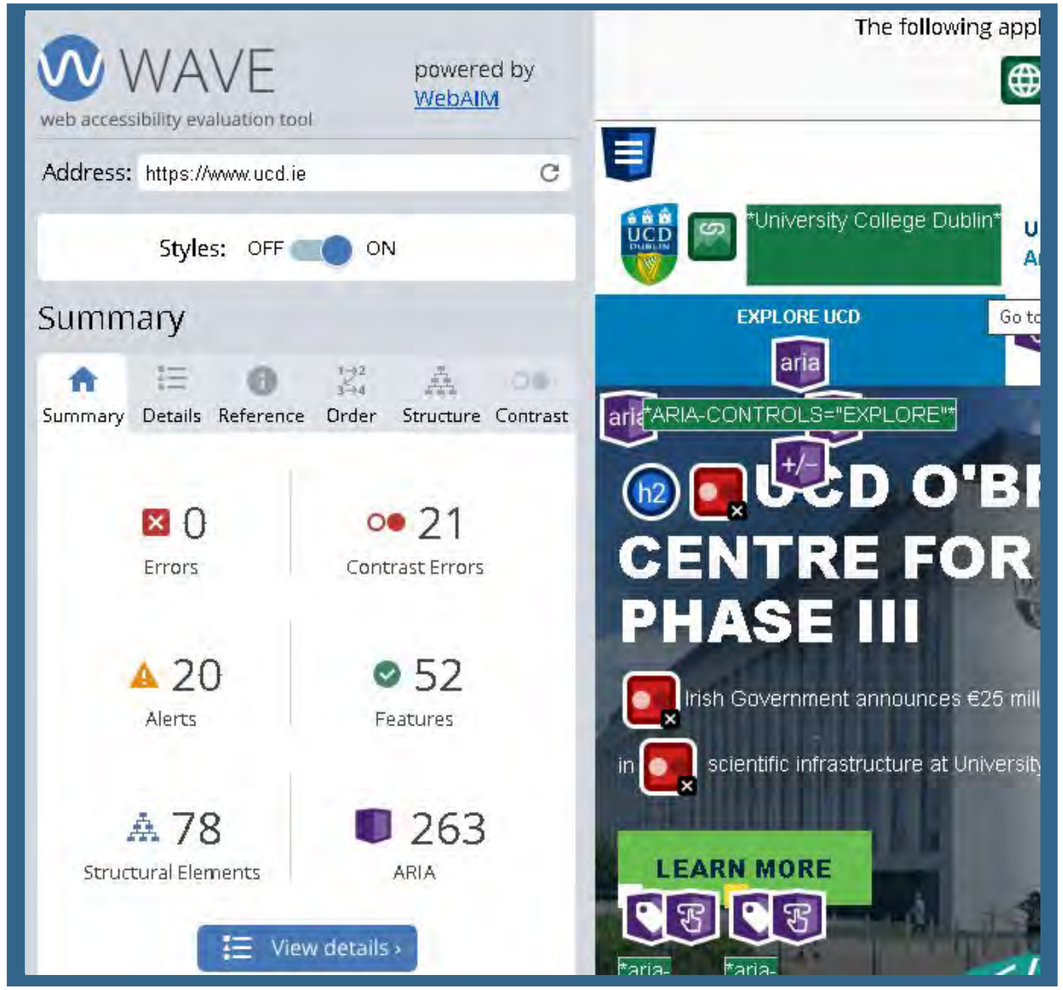


Image Reference: Screenshot of WAVE analysing University College Dublin website (https://www.ucd.ie)

Automated Accessibility Tools (2)

Axe Accessibility Tool

- Free browser extension for automated accessibility checks.
- Reference: Deque's Axe accessibility testing tools help making websites, mobile apps & digital content accessible. https://www.deque.com/axe/

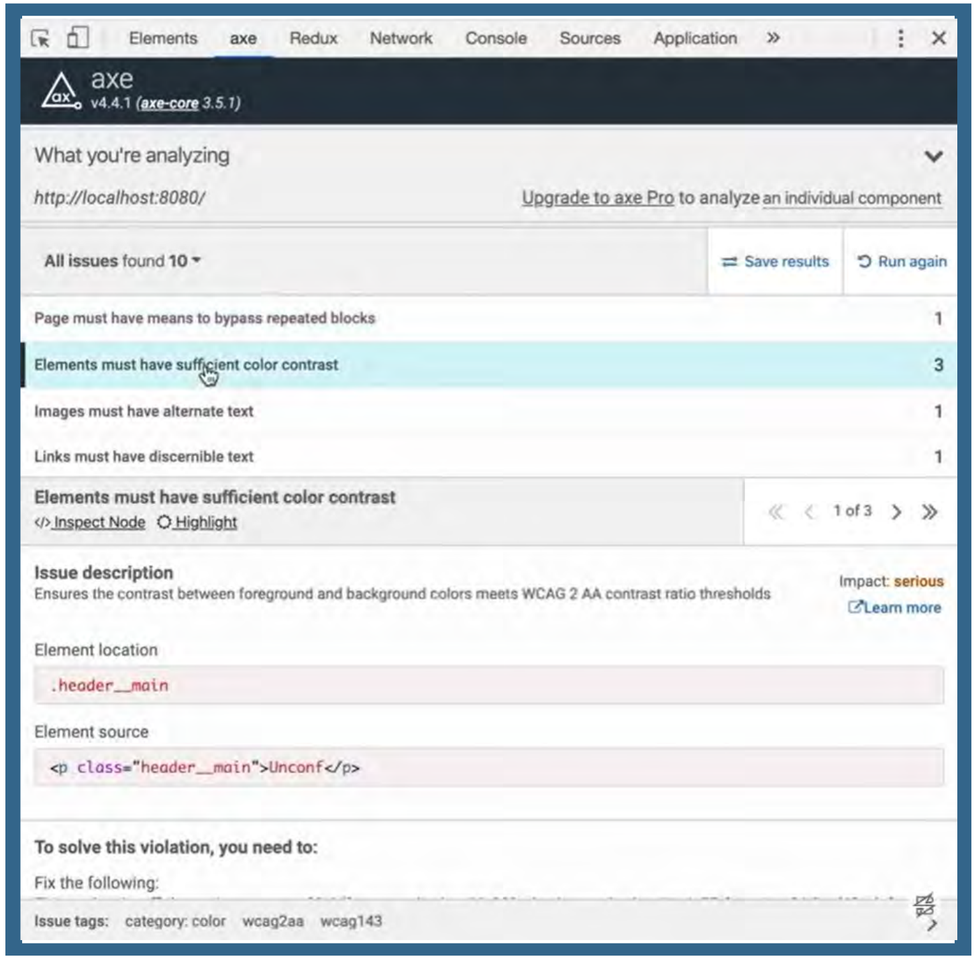


Image Reference : Axe DevTools Chrome Extension in action

Co-funded by
the European Union

Manual Evaluation Techniques (1)

Testing with Screen Readers

- Why it's important to manually test e-learning resources with screen readers (e.g., NVDA, JAWS).
- NonVisual Desktop Access (NVDA) is a free and open-source, portable screen reader for Microsoft Windows. - https://www.nvaccess.org/

Image Reference: https://www.acadecraft.com/blog/what-is-a-screen-reader-and-their-benefits-for-blind-people/

Co-funded by
the European Union

Manual Evaluation Techniques (2)

Keyboard Navigation Testing

- Ensure all interactive elements (e.g., forms, links) are accessible via keyboard alone.
- W3C's Keyboard Accessibility Guide aims to make all functionality of the content to be operable through a keyboard interface. https://www.w3.org/TR/WCAG21/#keyboard-accessible

Manual Evaluation Techniques (3)

Captioning and Transcripts for Multimedia

- Assess if all videos have captions and audio content has transcripts.
- The Amara Editor, a cloud-based do-it-yourself software solution supports generating manual and automated video captioning.
  https://amara.org/caption-generator/
  https://amara.org/video-captions/

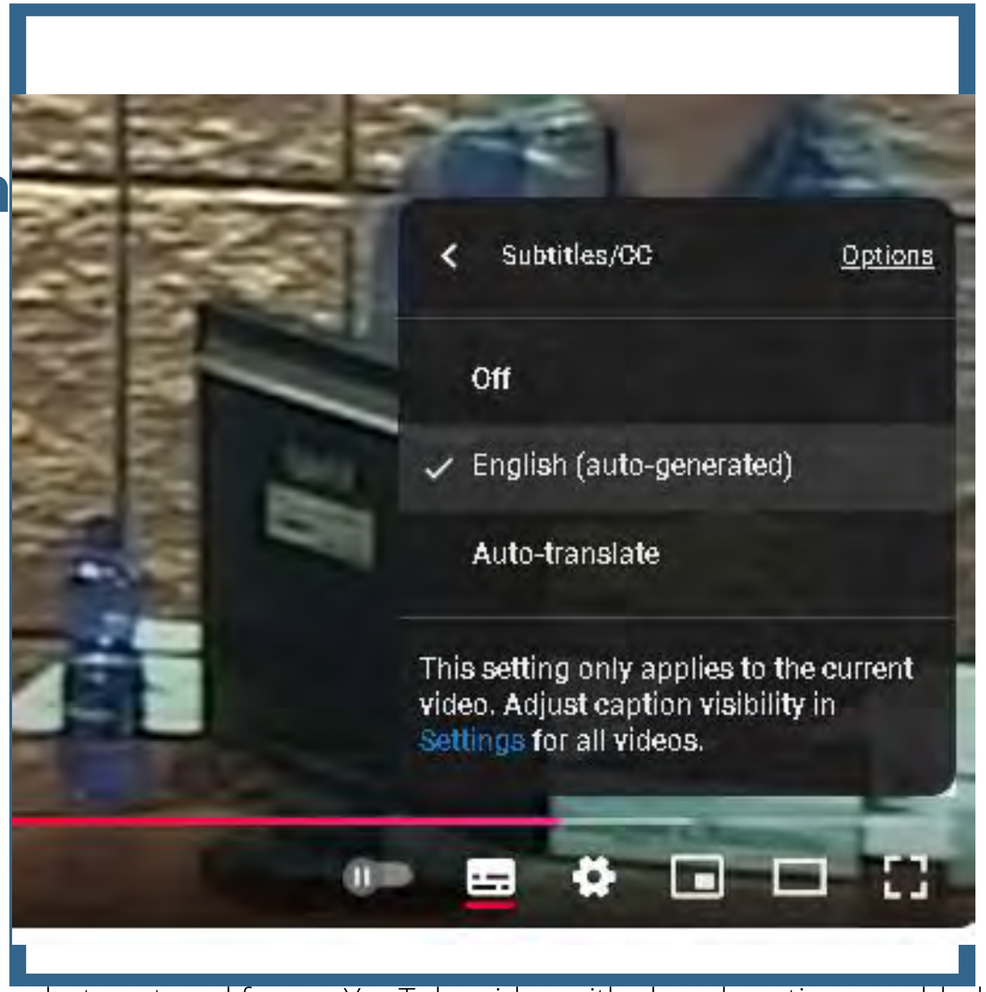


Image Reference: Screenshot captured from a YouTube video with closed captions enabled.

Co-funded by
the European Union

Evaluating the Accessibility of Course Content (1) - Text

- Text Content:
  - Ensure proper heading structure, contrast, and readability.
  - For example: Assessing headings, lists, and paragraph structures for clarity.

Image Reference: Headers and Paragraphs, Purchase College State University of New York
https://www.purchase.edu/live/image/gid/194/width/574/height/403/5976_heading-markup-example.rev.1507744824.webp

Evaluating the Accessibility of Course Content (2) - Multimedia

- Multimedia Content:
  - Ensure
    - Images have alternative text, and
    - Videos are captioned.
- YouTube added the ability to automatically transcribe and generate captioning on videos named as YouTube Automatic Captioning. - https://support.google.com/youtube/answer/6373554

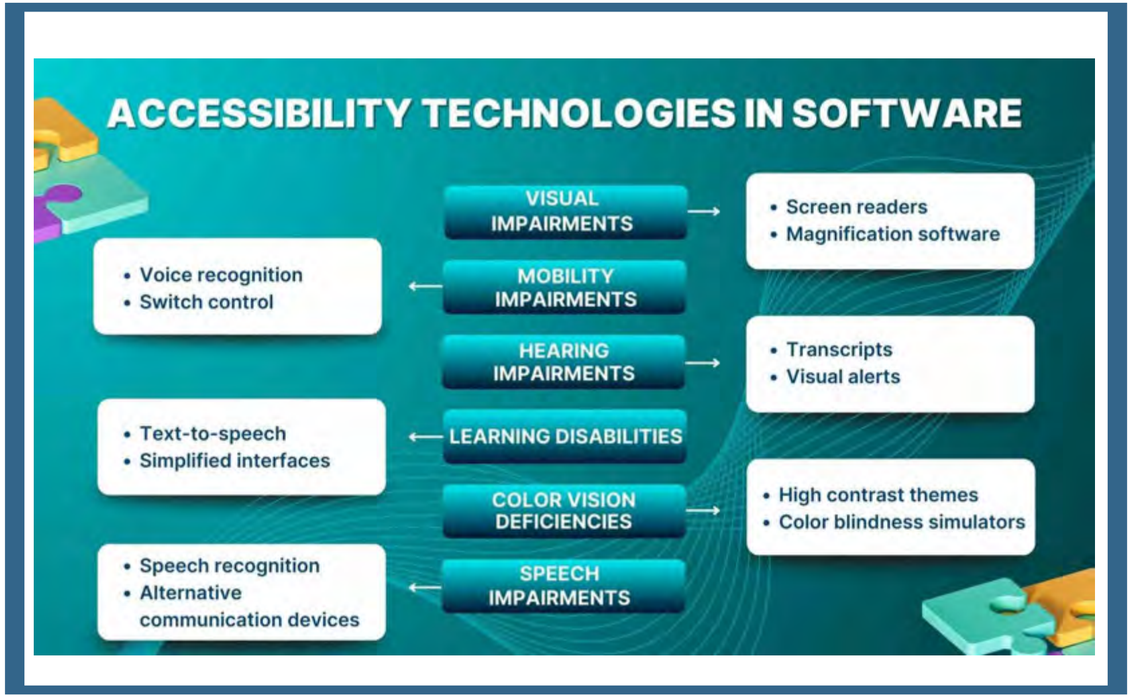


Image Reference: https://www.frugaltesting.com/blog/best-tools-and-techniques-of-accessibility-testing-in-2024

Co-funded by the European Union

Ensuring Accessibility in Assessments (1)

Assessment Accessibility

- How to design quizzes and assessments that are accessible to all students.
- For example: Ensuring timed quizzes allow flexibility for students with disabilities.

https://www.nomensa.com/aa/

Co-funded by
the European Union

Ensuring Accessibility in Assessments (2)

Alternative Formats for Assessments

- Provide assessments in different formats (e.g., audio, video, text).
- Center for Applied Special Technology (CAST) prepared UDL Guidelines & UDL Tips for Assessments to expand learning opportunities for all individuals. https://cast.org/products-services/resources/2020/udl-tips-assessments & https://udlguidelines.cast.org/

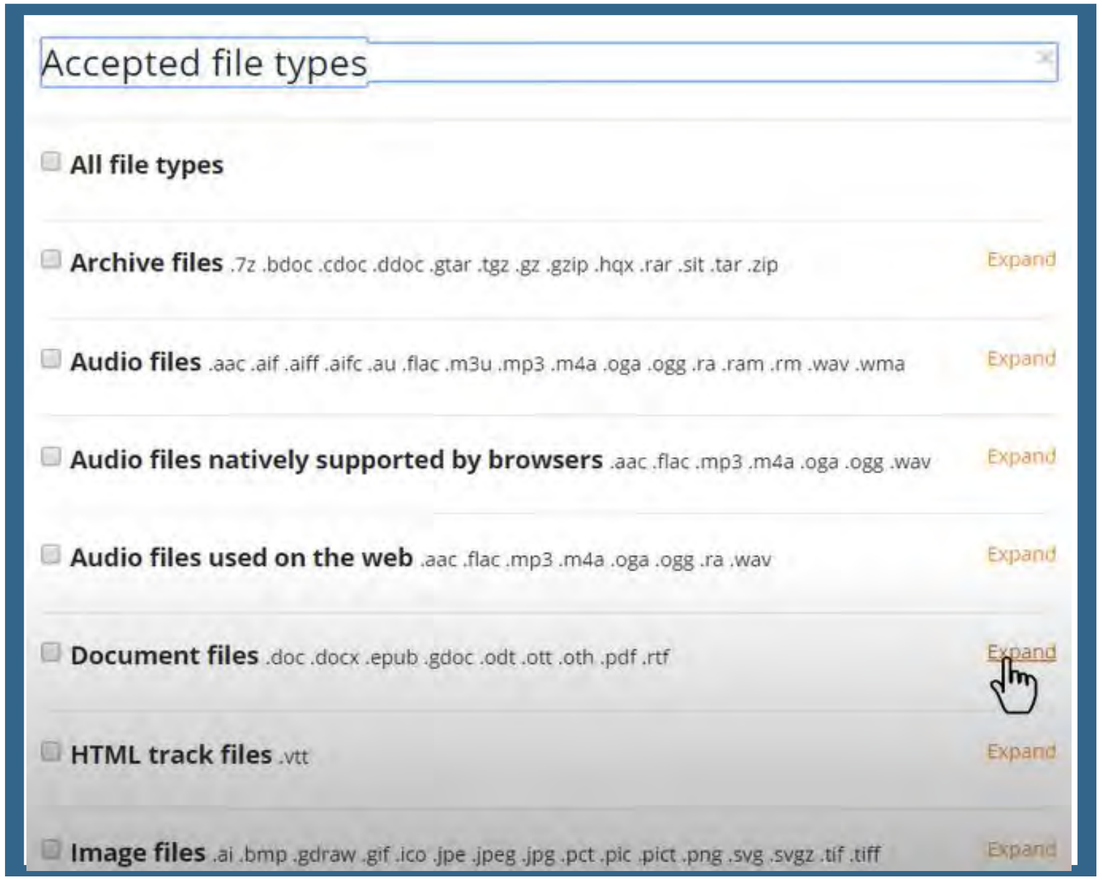


Image Reference: Screenshot captured from official Moodle's YouTube channel video, explaining multimodal assessment types.

Video URL: https://www.youtube.com/watch?v=vN1DIHeZkw4

Co-funded by the European Union

Tools for Evaluating Document Accessibility

- PDF Accessibility:
  - How to ensure PDFs are accessible (e.g., using tags, headings, and alt text).
- Accessibility features in Adobe Acrobat make it easier for people with disabilities to use PDF documents with and without the aid of assistive technology software and devices. https://www.adobe.com/trust/accessibility.html

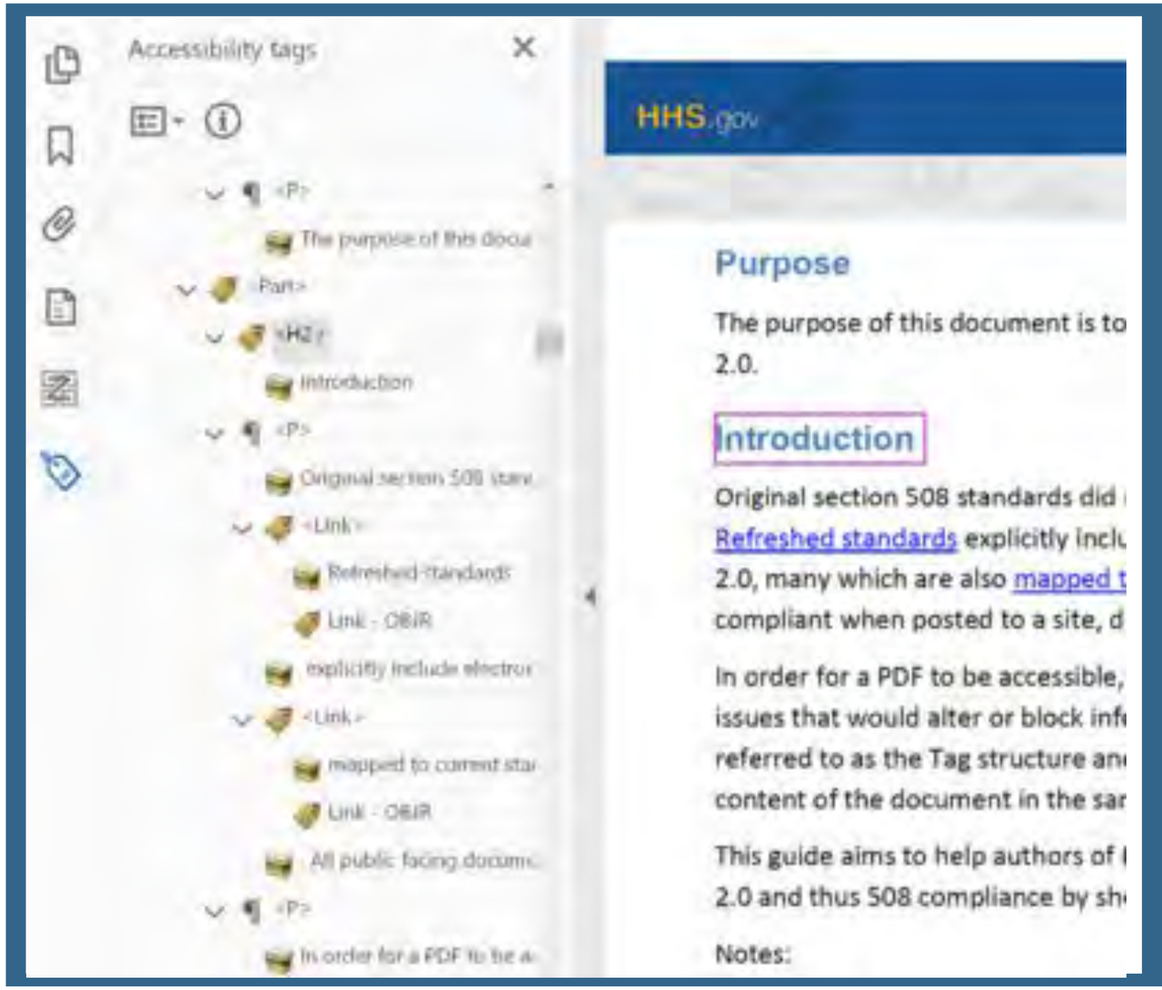


Image Reference: How do I make a PDF accessible?, The Digital Accessibility Program (DAP) Berkeley IT https://dap.berkeley.edu/sites/default/files/styles/width_400/public/screenshot_pdf_tags_example_web.png

Co-funded by the European Union

Tools for Evaluating LMS

Accessibility

- Accessible Learning Management Systems:
  - Features to look for in an LMS (e.g., Moodle, Blackboard) that support accessibility.
- Moodle LMS version 4.0 achieved WCAG 2.1 AA Accessibility compliance. https://moodle.com/functionality-with-moodle/moodle-accessibility/

https://www.tiny.cloud/blog/accessibility-in-learning-management-systems/

Co-funded by
the European Union

Evaluating the Mobile Accessibility of E-Learning Resources

- Mobile Accessibility:
  - Ensure that e-learning resources are accessible on mobile devices.
- WAI aims for Mobile Accessibility and ensures that the core W3C technologies support accessibility, including those that are essential for the mobile web.

https://www.w3.org/WAI/standards-guidelines/mobile/

https://www.keg.com/news/improving-accessibility-online-learning

Co-funded by
the European Union

Addressing Common Accessibility Issues (1)

Text and Contrast Issues:

- Ensure sufficient contrast between text and background for readability.
- For example: Evaluating color contrast using tools like Color Contrast Analyzer.
- W3C's Contrast Checker aims to make the visual presentation of text and images of text has a contrast ratio suitable for everyone. https://www.w3.org/TR/WCAG21/#contrast-minimum

https://www.zeepalm.com/blog/10-best-color-contrast-checker-tools-for-accessible-app-design

Co-funded by
the European Union

Addressing Common Accessibility Issues (2)

- Non-Text Content Issues:
  - Ensure all images, graphs, and diagrams have alternative text or descriptions.
- WebAIM (Web Accessibility In Mind) has provided a comprehensive guidance article focusing solely on Alt Text. https://webaim.org/techniques/alttext/
- Video and Audio Content:
  - Ensure captions, transcripts, and descriptions are provided.
  - For example: Adding descriptive audio for visually impaired students.

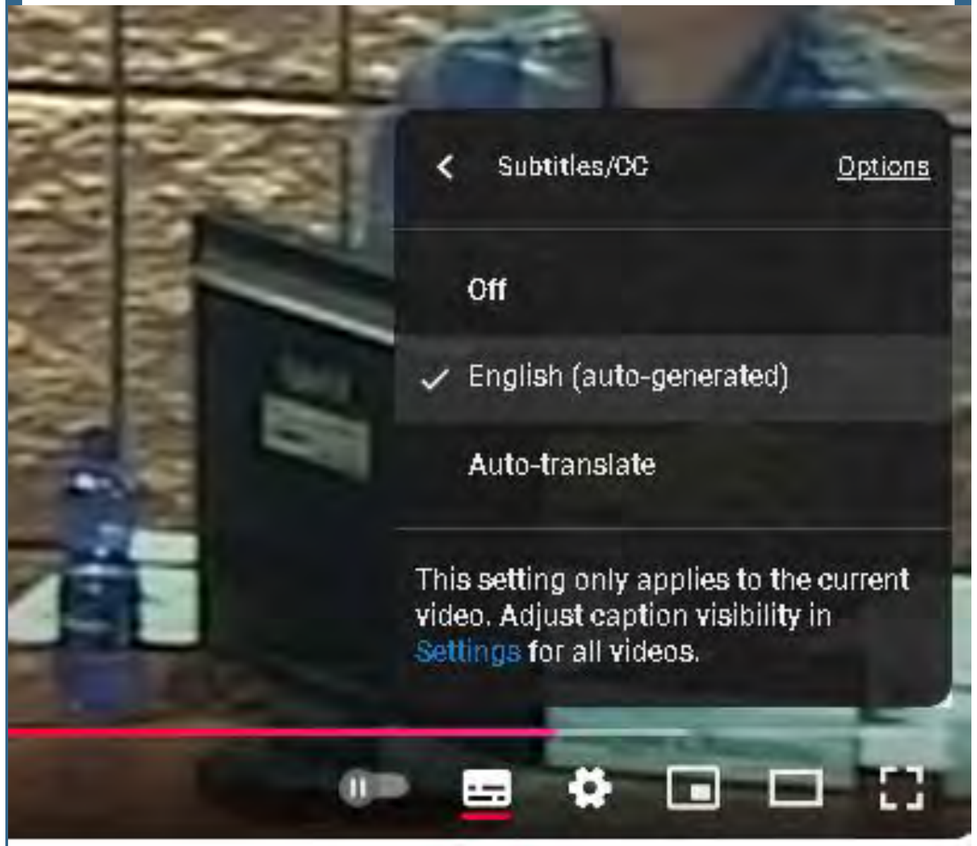


Image Reference: Screenshot captured from a YouTube video with closed captions enabled.

Co-funded by
the European Union

Best Practices for Improving E-Learning Accessibility

- Practical Strategies:
  - Use clear headings, high-contrast colors, alt text for images, and accessible media.
- Microsoft offers inclusive classroom tools aims to enable accessibility in education.
- https://www.microsoft.com/en-us/education/products/learning-tools

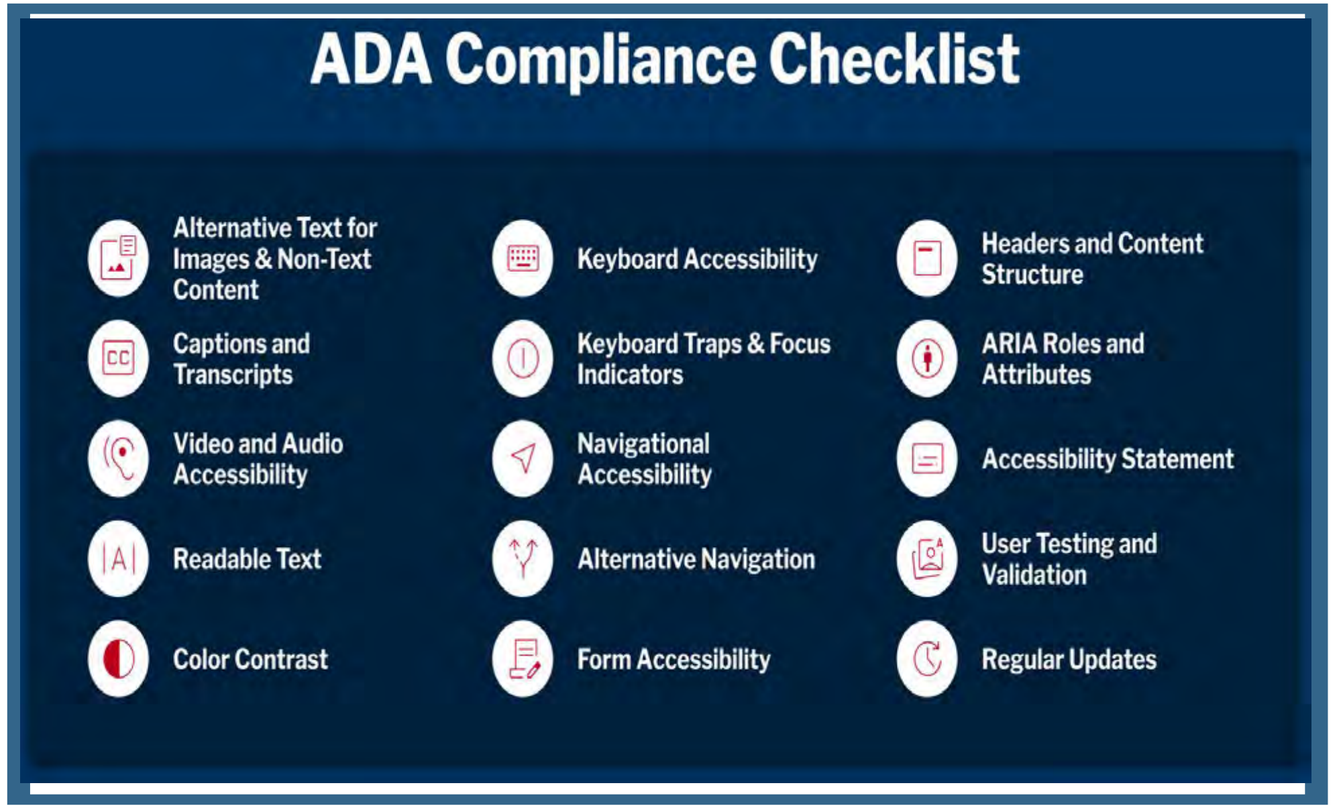
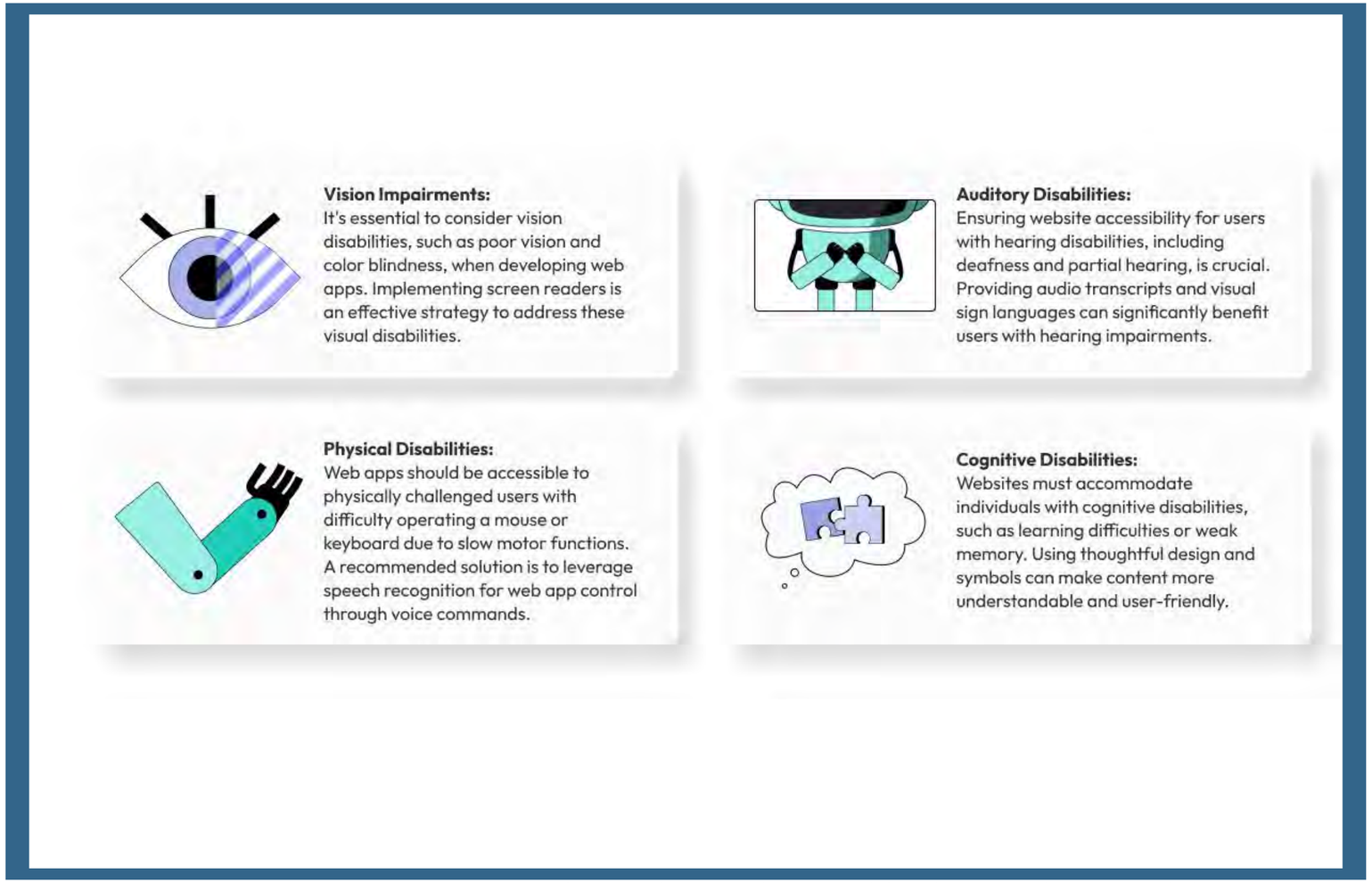


Image Reference: Comprehensive ADA Compliance Checklist for Section 508 (US Rehabilitation Act) and Beyond, Americaneagle.com Brighton, UK https://resources.americaneagle.com/aecom-blobs/images/default-source/blog-images/ada-compliance-checklist-.png

Co-funded by the European Union

Interactive Activity: Accessibility Evaluation

- Evaluate a sample e-learning resource for accessibility using WCAG guidelines.



https://luxequality.com/blog/how-to-do-accessibility-testing/

Co-funded by
the European Union

Discussion: Common Challenges in Ensuring Accessibility

- What challenges have you encountered in evaluating or improving accessibility?
- How can they be addressed?

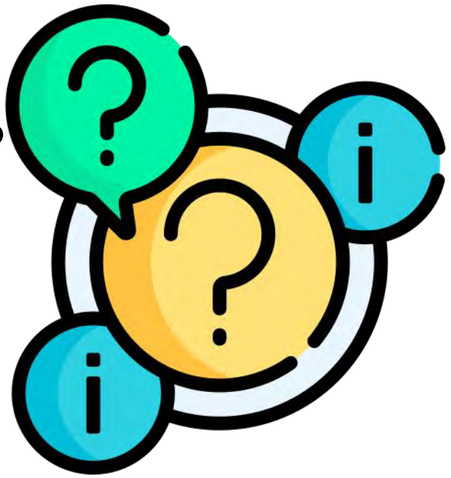


Image Reference: Flaticon - Conversation icons created by MindWorlds - Flaticon & Help icons created by Freepik - Flaticon
https://www.flaticon.com/free-icons/conversation & https://www.flaticon.com/free-icons/help

Co-funded by
the European Union

Conclusion & Key Takeaways

- Summary:
  - **Evaluating accessibility** in e-learning ensures that all students can participate fully.
  - **Use tools like WAVE and Axe to automate checks, but always include manual testing.**
  - **Follow WCAG guidelines** and best practices to ensure an inclusive learning environment.
- **Learning Outcome:** Identify accessibility barriers and apply solutions for inclusive e-learning resources.

https://fastercapital.com/content/E-Learning-Accessibility-Unlocking-Success--How-E-Learning-Accessibility-Drives-Entrepreneurial-Growth.html

Digital4All

Do you have any questions?

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Education and Culture Executive Agency (EACEA). Neither the European Union nor EACEA can be held responsible for them. Project number: 2023-1-FI01-KA220-HED-000152599.

Co-funded by the European Union

Åbo Akademi experiencelab

University of Nicosia

UCD Dublin

International Hellenic University

innoVADE Leadership in Innovation

All Digital

One last thing...

Digital4All

We have an evaluation survey for you to provide us feedback on the course.

You can use the QR or the link below to access it:

https://forms.gle/KNaYNnGXskLwVQvA7

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Education and Culture Executive Agency (EACEA). Neither the European Union nor EACEA can be held responsible for them. Project number: 2023-1-FI01-KA220-HED-000152599.

Co-funded by the European Union

Thank you!

Digital4All

Stay in touch

https://www.linkedin.com/company/digital4all-proje

https://www.instagram.com/digital4all_project/

https://digital4allproject.eu/

Contact us

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Education and Culture Executive Agency (EACEA). Neither the European Union nor EACEA can be held responsible for them. Project number: 2023-1-FI01-KA220-HED-000152599.

Co-funded by the European Union

Åbo Akademi

experiencelab

University of Nicosia

UCD Dublin

International Hellenic University

innoVADE Leadership in Innovation