

Digital Accessibility Guide

Project Result 2



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Executive Summary

The Digital Accessibility Guide, a core result of the Map4accessibility project co-funded by Erasmus+, is a thorough resource crafted to boost your proficiency in developing digitally accessible content. The full guide, available in English, comprises eight distinct chapters and an additional annex, offering learning activities to enrich understanding and practical skills.

Each chapter of the guide dissects different elements of web and digital accessibility, both in a broader context and specifically within higher education environments. This resource, tailored for practitioners, allows quick, easy access to vital information, which can either be consumed in its entirety or broken down into select chapters of interest. The guide, acknowledging the complexity of digital accessibility, frequently presents similar information from varying perspectives.

Chapter I of the guide serves as an introductory roadmap, detailing the overall goal and general structure to orient the reader.

Chapter II focuses on defining disabilities, highlighting the unique needs of people with different abilities, and suggesting appropriate digital content to meet those needs.

Chapter III delves into the key aspects of digital accessibility in education, addressing target groups, fundamental concepts, and strategies for needs identification.

Chapter IV provides more detailed advice for the design and development of digital content in an educational context, including accessible iconography, online meetings, documents, and website design. This chapter also includes a case study, showing how the implementation of these principles can promote inclusivity.

Chapter V provides a broad overview of enabling technologies, standardization, and legislation concerning accessible web content. It allows readers to understand the key elements of making digital content more accessible.

Chapter VI meticulously arranges the standards and legal requirements for developing accessible web content, referencing WCAG 2.1, and relevant European standards and legislation.

Chapter VII offers a sneak peek into the Map4A11y project's initial findings, outlining its challenges and best practices in progressive web app development. Considering the project is only halfway through its implementation, the guide commits to regular updates to keep users informed about its future developments.

The guide concludes by consolidating all insights and providing practical web accessibility strategies for education, summarising the tips and tricks into concise, easy-to-digest one-page infographics or fact sheets which you will find in your local language. This comprehensive guide thus serves as a go-to resource for enhancing digital accessibility in education. We hope you enjoy the read and find it immensely useful!

I. Introduction

Higher education institutions (HEIs) in Europe are facing significant challenges in ensuring the accessibility of their digital content as the world rapidly shifts towards digital resources and workflows. In the age of the "new normal," meeting the digital needs of people with disabilities has become more critical than ever. The COVID-19 pandemic has accelerated this shift and made it even more urgent for HEIs to prioritise accessibility.

Yet, recent research conducted by the WebAIM organisation found that most websites are not designed to be fully accessible. In fact, the study showed that "97.8% of homepages from the one million most visited websites failed to meet Web Content Accessibility Guidelines (WCAG) 2.0 standards for web accessibility"¹. This is particularly true concerning higher education institutions (HEIs), as digital content plays a critical role in teaching and learning, research, and administrative functions. When digital content is not designed with accessibility in mind, it can **lead to significant barriers for students and staff with disabilities and hinder their ability to fully participate in the academic community.**

While some HEIs are still struggling to meet accessibility requirements, there is a growing awareness of the importance of accessibility in higher education and the multiple resources supporting universities to navigate the digital accessibility process. The [Web Accessibility Initiative](#) provides guidelines and support to improve digital accessibility. In their efforts to address the challenge, multiple universities across Europe are finding creative ways to increase their digital accessibility accommodating a wide range of disabilities and ensuring that everyone has equal access to digital content and services.

The present digital guide provides versatile examples to address its main purpose – ensuring that HEIs design digital technologies with accessibility in mind.

¹ WebAIM. (2020). One million homepages, year 2020 edition. Retrieved from <https://webaim.org/projects/million/>
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II. Fact Sheets: Digital Assets

Accessibility Tips for Education

With over 135 million people in Europe, or 18% of its population, living with disabilities, ensuring digital accessibility is crucial for inclusivity and equal opportunities in educational settings². Digital accessibility further creates benefits for the elderly, people with temporary impairments, and users with situational limitations. Indeed, accessible e-learning resources positively impact both disabled and non-disabled students' learning experiences, proving that accessibility is vital for creating a more equitable and effective educational landscape³.

Hence, we have designed the below fact sheets to provide a **compilation of best practices, tips, and tricks for creating fully accessible web content and digital assets for education**. These encompass various aspects of digital accessibility, including iconography, documents, presentations, online meetings, websites, video, and audio content (e. g. podcasts), online courses, learning management systems (LMS), and social media. They represent a curated selection of (as of 2023) open-source, free, and/or freemium tools to facilitate the implementation of these accessibility guidelines. The below fact sheets have been designed to be practical and brief, but they are not exhaustive in covering all aspects of accessibility requirements or scenarios. It is essential to regularly consult with comprehensive accessibility guidelines, such as the Web Content Accessibility Guidelines (WCAG) by the World Wide Web Consortium (W3C), outlined in Chapter VI in this guide, and engage with your target audience to gather feedback and address any potential barriers.

Building a more inclusive and accessible society goes beyond merely addressing accessibility requirements; it involves fostering a culture of inclusivity that values diversity and encourages the active participation of all individuals⁴. Creating truly inclusive environments requires a collective effort that engages educators, designers, developers, and policymakers in embracing diverse perspectives and designing solutions that cater to a wide range of abilities and needs. Thus, with this guide it is our humble aim, to address accessibility in education to promote, at least partially, a more inclusive society that caters to the diverse needs of its population.

² <https://www.who.int/europe/news-room/fact-sheets/item/disability#:~:text=In%20Member%20States%20of%20the,Europe%20live%20with%20a%20disability.>

³ Seale, J., Nind, M., & Parsons, S. (2018). Inclusive e-learning: the role of the teacher. *Journal of Interactive Media in Education*, 1(7). <https://doi.org/10.5334/jime.469>

⁴ Loreman, T., & Deppeler, J. (2020). Creating inclusive environments: the importance of working together. *International Journal of Inclusive Education*, 24(7), 717-729. <https://doi.org/10.1080/13603116.2018.1441910>

Iconography

Tips for **Iconography**

- 1 **Clear and Simple Design:** Create icons with simple, uncluttered designs that convey their meaning effectively and are easy to recognize. Tools to use include [Figma](#) or [Inkscape](#).
- 2 **Consistent Style:** Use a consistent visual style for all icons within a set or application to create a cohesive and professional appearance. [Material Icons](#) offer a wide range of icons in consistent styles to ensure a cohesive appearance.
- 3 **Sufficient Size:** Design icons with an adequate size, ensuring they are easily clickable or tappable and visible for users with visual impairments.
- 4 **High-Contrast Colours:** Utilize high-contrast colours between the icon and its background to improve visibility for users with low vision or colour blindness.
- 5 **Inclusive Symbolism:** Select universally recognizable symbols and avoid culturally specific or potentially offensive imagery to ensure inclusivity. [The Noun Project](#) and [Iconfinder](#) provide a wide range of inclusive and universally recognizable icons.
- 6 **Alt Text and Labels:** Provide alternative text or labels for icons to aid screen reader users in understanding their purpose and function.
- 7 **Scalability:** [SVGOMG](#) and [Vectr](#) allow you to create scalable vector icons that maintain clarity across different devices and screen resolutions.
- 8 **Focus Indicators:** Ensure focus indicators are visible and distinguishable when users navigate using a keyboard or assistive technology.
- 9 **Accommodate Customisation:** Allow users to customize icon appearance, such as size, colour, or contrast, to suit their preferences and accessibility needs.
- 10 **Test and Iterate:** Conduct usability testing with tools like [UsabilityHub](#) to gather feedback from a diverse audience and optimize your icons for all users.

Documents

Tips for Documents

- 1 Structured headings and clear language:** Use built-in heading styles to create a logical and organized structure for your document, and write in simple, clear language to make the content easier to understand.
- 2 Accessible typography:** Choose legible, sans-serif fonts (e.g., Arial, Helvetica, or Verdana) with appropriate font sizes and sufficient line spacing. Avoid using text within images.
- 3 Organised lists and linear layouts:** Use bullet points or numbered lists to organize information and avoid using columns or ensure proper reading order in multi-column formats.
- 4 High-contrast colour:** Choose colours that provide adequate contrast (check the [Colour Contrast Analyser](#)) for people with visual impairments, and avoid using colour as the only means of conveying information.
- 5 Descriptive hyperlinks and bookmarks:** Use meaningful link text for hyperlinks (instead of generic phrases like "click here") and create bookmarks to facilitate navigation to specific locations within the document.
- 6 Language tags and meaningful file names:** Identify the language of the document using language tags and use descriptive file names for easier identification and organisation.
- 7 Table of contents and navigation aids:** Include a table of contents to help users navigate the document and use other navigation aids such as page numbers or section summaries.
- 8 Learning-friendly text:** Enhance the learning experience by listing objectives at the beginning of each section or chapter, clearly outlining expectations and helping users focus on key takeaways.
- 9 Alternative text and table header:** Add descriptive text alternatives for images, graphs, and charts, and use clear table headers to provide context for screen reader users.
- 10 Using templates and testing:** Use accessible templates when creating documents and regularly test your document for accessibility, e.g., via the Accessibility Checker in the Microsoft Office documents.

Presentations

Tips for Presentations

- 1 Use simple and consistent design:** Use a simple and consistent design for your slides, with consistent font, colour, and layout.
- 2 Use slide titles:** Use descriptive slide titles to provide a summary of the content of each slide.
- 3 Use simple and clear language:** Use simple and clear language that is easy to understand and avoid using jargon or technical terms.
- 4 Use slide notes:** Use slide notes to provide more detailed information about the content of each slide, making it easier for users who rely on screen readers to understand the presentation.
- 5 Use headings:** Use the built-in heading styles to create a logical and organized structure for your presentation.
- 6 Use high-contrast colours:** Choose colours that provide adequate contrast for people with visual impairments. Use [WebAIM Color Contrast Checker](#) to assist you with this.
- 7 Use alternative text for images:** Add a descriptive text alternative for images, graphs, and charts to provide information for users who rely on screen readers.
- 8 Use keyboard navigation:** Ensure that your presentation can be navigated using keyboard shortcuts, making it easier for users with disabilities to navigate your slides.
- 9 Use closed captioning:** Use closed captioning to provide a text alternative for audio content, making it accessible to users who are deaf or hard of hearing.
- 10 Use meaningful file names:** Use descriptive and meaningful file names, rather than generic names such as "presentation1" or "file2."

Online Meetings

Tips for **Online Meetings**

- 1 Clear agenda and discussion points:** Use clear and concise descriptions for any agenda items or discussion topics, making it easier for users to understand and follow the meeting.
- 2 Screen reader-friendly platform:** Use an online meeting platform that is accessible to users who rely on screen readers, such as [Zoom](#) or [Microsoft Teams](#).
- 3 Clear instructions:** Provide clear instructions for users on how to join the meeting, how to participate, and how to access any shared files or resources.
- 4 Simple language:** Use clear and simple language that is easy to understand and avoid using jargon or technical terms.
- 5 Adjustable font size:** Allow users to adjust the font size of the content, making it easier for users with visual impairments to see and understand.
- 6 Captions or transcripts:** Provide captions or transcripts of the audio content of the meeting using tools like [Subtitle Horse](#) making the meetings accessible to users who are deaf or hard of hearing.
- 7 High-contrast colours:** Use high-contrast colours for text and backgrounds, making it easier for users with visual impairments to see and understand the content.
- 8 Keyboard-friendly navigation:** Ensure that your online meeting can be navigated using keyboard shortcuts, making it easier for users with disabilities to navigate.
- 9 Alternative formats:** Provide alternative formats for any visual content, such as slides or diagrams, making it accessible to users with visual impairments.
- 10 Clear and descriptive file names:** Use clear and descriptive file names for any shared files, rather than generic names such as "meeting1" or "file2."

Website Design & Development

Tips for Websites

- 1 Perceivable:** Ensure all content is presented in formats users can perceive, such as offering text descriptions for images, captions for videos, or audio descriptions for visual content.
- 2 Operable:** Make all interactive elements and navigation accessible through keyboards or assistive devices, including buttons, links, and sliders.
- 3 Understandable:** Use clear and concise language, provide explanations for complex content, and label form fields with descriptive text.
- 4 Robust:** Use standard HTML elements and semantic markup to ensure compatibility with various user agents and assistive technologies.
- 5 Compatible:** Regularly test your website with popular screen readers and other assistive technologies to guarantee compatibility.
- 6 Text Alternatives:** Use alt text for images, transcripts for audio, and captions for videos to convey information for users who cannot perceive visual or auditory content.
- 7 Audio and Video Controls:** Implement accessible controls for media, ensuring that they are keyboard-operable and compatible with assistive technologies.
- 8 Colour Contrast:** Opt for high contrast colour combinations for text and backgrounds to improve readability for users with low vision or colour blindness.
- 9 Easy to use:** Organize content logically, use descriptive headings, and implement clear navigation menus to facilitate understanding and ease of use for all users, including those with disabilities.
- 10 Adaptable:** Offer customization options, such as adjustable font sizes, alternative colour schemes, and flexible layouts, to accommodate users' needs and preferences.

Bonus tip Ensure that **focus indicators** are clearly visible and distinguishable for all interactive elements, such as buttons, links, and form fields, to help users with keyboard navigation and assistive technologies know where they currently are on the page.

Video & Audio

Tips for Video & Audio

- 1 Audio Descriptions and Sign Language:** Include audio descriptions for key visuals using a tool like [YouDescribe](#) and sign language interpretation for blind, visually impaired, and deaf or hard-of-hearing users.
- 2 Clear Language and Narration:** Use plain language, avoid jargon, and provide clear, concise narration. Tools like the [Readable app](#) can help improve readability and language clarity in scripts for podcasts and video content.
- 3 High-Contrast Colours and Visual Hierarchy:** Choose high-contrast colours for text and graphics and organize content with a clear visual hierarchy. [Coolors](#) is a useful tool for accessible colour combinations.
- 4 Closed Captions, Transcriptions and Podcast Show Notes:** Add closed captions, transcriptions or show notes of audio content using tools like [Subtitle Horse](#) for deaf or hard-of-hearing users and for SEO purposes.
- 5 Descriptive Headings and Episode titles:** Create meaningful, descriptive titles for each video or podcast episode, use clear filenames, and include descriptive titles and headings for screen reader users.
- 6 Adjustable Playback Speed:** Allow users to adjust the video or audio playback speed to suit their preferred pace and comprehension level.
- 7 Keyboard Navigation and Screen Reader Accessibility:** Ensure videos can be navigated using keyboard shortcuts and are accessible to screen reader users with alternative text for images.
- 8 Consistent Layout:** Maintain a consistent layout throughout learning videos, using headings, bullet points, and other visual cues to help users easily follow and understand the material.
- 9 Test for Accessibility:** Regularly test videos for accessibility with tools like [aChecker](#) to make necessary adjustments and cater to a diverse audience, including users with disabilities.
- 10 Customisation:** Offer customization options for elements like font size, contrast, and layout, and ensure your content is adaptable to various devices and screen sizes. Use responsive video players like [Plyr](#) to accommodate different screen sizes and devices.

Tips for Online Courses

- 1 Comprehensive Accessibility:** Provide alternative format for all course materials – e.g., transcripts, captions, and audio descriptions. Use tools like [AMARA](#) or [Verbit](#) for video captioning.
- 2 Streamlined Navigation:** Design a logical, intuitive course navigation system that is keyboard-friendly and compatible with screen readers, such as [JAWS](#).
- 3 Unified Design:** Maintain consistency in layout and design across the course, making it easy for students to locate and navigate materials.
- 4 Customizable Text Display:** Enable students to adjust font sizes, styles, and colors to meet their needs. Utilize responsive design and tools like the [UserWay Accessibility Widget](#).
- 5 High-Contrast Colors:** Opt for high-contrast color combinations for text and backgrounds to improve readability. Use color contrast checkers like [WebAIM's Contrast Checker](#).
- 6 Straightforward Language:** Simplify language, avoid jargon, and provide clear instructions to enhance comprehension. Use readability checkers like [Hemingway Editor](#).
- 7 Flexible Timing:** Offer ample time and flexibility in deadlines for assignments and exams to accommodate students who may need additional time. Use Learning Management System (LMS) features to customize deadlines.
- 8 Diverse Media Formats:** Present content in various formats, such as text, audio, video, and interactive elements, to accommodate diverse learning preferences. Use tools like [H5P](#) for creating interactive content.
- 9 Inclusive Interactivity:** Ensure interactive elements like quizzes, forums, or simulations are accessible by providing keyboard navigation, clear instructions, and compatibility with assistive technologies.
- 10 Continuous Improvement:** Regularly test your online course for accessibility and gather feedback from diverse students, including those with disabilities. Use accessibility checkers like [WAVE](#) or AXE, and make adjustments as needed to ensure an inclusive learning experience.

Learning Management Systems (LMS)

Tips for LMS

- 1 Consistent Layout:** Create a uniform layout across the LMS to help users easily navigate the platform. Consistent interface elements, such as menus and buttons, reduce cognitive load and enhance usability.
- 2 ARIA Landmarks:** Implement ARIA landmarks (navigational aids in web pages enabling screen readers to navigate content sections) help define the structure of a webpage allowing users of assistive technologies to navigate the page more easily.
- 3 Responsive Design:** Ensure the LMS is responsive and mobile-friendly, adapting to various screen sizes and devices using the [Bootstrap framework](#)
- 4 Skip Links:** Add skip links to help keyboard and screen reader users bypass repetitive content, such as navigation menus, and quickly access the main content.
- 5 Accessible Forms:** Design accessible forms with appropriate labels and error messages such as [Google Forms](#).
- 6 Multimedia Accessibility:** Offer audio description for visually impaired users and sign language interpretation for deaf users in multimedia content, ensuring a more inclusive experience.
- 7 Readable Typography:** Use legible fonts and appropriate font sizes, such as Arial, Helvetica, Verdana, Tahoma, or Segoe UI, with sufficient line spacing, to improve readability and reduce eye strain for users with visual impairments. Segoe UI, in particular, is designed for optimal readability on screens and is used as the default font in many Microsoft products.
- 8 Adjustable Time Limits:** Provide options for users to extend or disable time limits for timed activities or assessments, such as the [Quiz settings in Moodle](#).
- 9 Support Resources:** Offer comprehensive accessibility guides and resources such as [Blackboard Ally](#), for both educators and learners to enable learners with disabilities to navigate and use the LMS effectively.
- 10 Inclusive Collaboration:** Facilitate accessible collaborative tools, such as discussion boards and chat functions, e.g. via [Microsoft Teams](#), which is available in the [free Office 365 Education plan](#).

Social Media

Tips for **Social Media**

- 1 **Vibrant Visuals with Alt Text:** Enhance images with alternative text (alt text) to provide context and descriptions for users with visual impairments. There is a native alt text feature on Twitter, Instagram, and Facebook.
- 2 **Accessible language:** Simplify language and improve readability in your social media posts using [Hemingway Editor](#), a free online tool.
- 3 **Captions for video content:** Add captions to your videos using free tools like Kapwing or the built-in caption feature on platforms like YouTube and Facebook.
- 4 **High contrast colours:** Use [WebAIM's Color Contrast Checker](#) to test and adjust your colour combinations for better readability in images and text overlays.
- 5 **Hashtags:** For screen reader users, capitalize the first letter of each word in your hashtags (camel case) to make them easier to understand.
- 6 **Emojis and abbreviations:** Limit the use of emojis and abbreviations or provide context for them to ensure clarity for all users.
- 7 **Describe links:** Use descriptive text for links in your posts rather than generic phrases like "click here" or shortened URLs.
- 8 **Audio descriptions for video content:** Provide audio descriptions for important visual information in your videos. You can create simple audio descriptions using a free tool like [Audacity](#).
- 9 **Transcripts for audio content:** Use [Otter.ai](#) to create transcripts for your audio content, such as podcasts or audio clips, to make them accessible to users who are deaf or hard of hearing.
- 10 **Test for accessibility:** Use free screen readers like [NVDA](#) or VoiceOver to test your social media content for compatibility and overall accessibility.

Open-source and free tools

Open-source, free(mium) Tools

1 Website Building and Design

[WAVE](#) (Web Accessibility Evaluation Tool): Evaluate website accessibility.

[WebAIM's Contrast Checker](#): Check colour contrast for text and backgrounds.

2 Accessible Documents

[Microsoft Accessibility Checker](#): Check accessibility in Word, PowerPoint, and Excel.

[Tingun PDF Accessibility Checker](#): Evaluate PDF accessibility.

3 Accessible Online Meetings

[Jitsi Meet](#): Open-source video conferencing with keyboard shortcuts for accessibility.

[Google Meet](#): Provides live captions and keyboard shortcuts for an inclusive experience.

4 Accessible Learning Management Systems (LMS)

[Moodle](#): Open-source LMS with built-in accessibility features.

[Sakai](#): Community-driven, open-source LMS with accessibility support

5 Accessible Learning Courses

[H5P](#): Create accessible interactive content for e-learning.

[Xerte](#): Open-source tool for creating accessible e-learning resources

6 Accessible Social Media

[Facebook Automatic Alt Text](#): Automatically generates alt text for images on Facebook.

Twitter: Built-in support for alt text on images.

7 Browser Extensions and Widgets

[Accessibility Insights](#): Browser extension for web accessibility and identifying issues.

[Siteimprove Accessibility Checker](#): Browser extension for identifying accessibility issues.

8 Screen Readers

[NVDA](#) (NonVisual Desktop Access): Free, open-source screen reader for Windows.

[Apple VoiceOver](#): Built-in screen reader on Apple devices.

9 Captioning and Transcription

[Amara](#): Free tool for creating captions and subtitles for videos.

[YouTube](#): Offers automatic captions for uploaded videos.

10 Text-to-Speech and Speech-to-Text:

[Balabolka](#): Free text-to-speech application for Windows.

[Google Docs Voice Typing](#): Speech-to-text tool integrated into Google Docs.

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