ELEARNINGNEWS ARTICLE

Year 6 - number 218 Wednesday 5 october 2022

Web and accessibility: how to achieve inclusive E-learning

Strategies for building an inclusive Web site that is accessible to all

The Web has become a place for training, meeting, learning and entertainment. But online platforms are not always accessible to everyone. Sometimes, the interface, the usability of the site and the tools made available to the user are not adapted to the needs of all the people who would like to take advantage of them, rather representing limitations. For this reason, making **e-learning inclusive**, by providing training paths that can be used by an increasing number of people is essential, because it means breaking down all those barriers that hinder users with limited abilities or those different from the average ones required of those who intend to enter the online world.

This need takes on a meaning of even greater value in the cases of e-learning, that is, when training goes through the Net, because it is necessary for schools, universities or workplaces to reach all their pupils or workers in training paths, regardless of the abilities they possess. Making e-learning accessible and inclusive requires the timely design of the site and the tools needed to break down any barriers.

Web accessibility

Web accessibility refers to the ability of computer systems to serve every person who wants to use them, including those with disabilities or special needs. The European Parliament has defined accessibility as the guarantee to provide "the ability to easily access information and functions available on the Internet" to all "persons with a wide range of abilities."

The goal is the elimination of **barriers** that make it difficult for some people to learn information from the Internet, ensuring equal access for all users, regardless of the individual's abilities, the device they use, and the environment in which they operate. This is a not insignificant challenge, which involves adapting Web sites also, so that they are available for reference to all.

Web accessibility becomes especially important when it comes to **education**. Making e-learning inclusive, in fact, means making online training courses usable for all users, even those with limited abilities compared to the average population. This need has developed hand in hand with the expansion of the Internet, which over the years has encompassed all the information and learning functions once reserved for the offline world. Then, with the pandemic, Web accessibility became a necessity, and the lockdown exposed the fragility of a Web that was still too fragile to the needs of people with limited abilities.

To create concrete learning inclusiveness, it is now essential to make e-learning courses accessible to all. Achieving this goal is not easy, but possible, thanks to the many technologies that now make it possible to adapt tools and methods and thanks to specific content design that follows criteria designed specifically for people with different abilities.

The four principles of accessibility

To make a website inclusive, developers must keep in mind four basic principles, found in the Web Content Accessibility Guidelines (WCAG). These are:

- **Perceivability**, to make sure that information and UI components are presented to users in a way that they can perceive them. Content, therefore, should be available in at least one of the user's senses (e.g., visually impaired people would need an auditory description).
- **Usability** of the user interface components, so that the person can interact with the website. Content can be controlled through various means, including keyboard, mouse, or touch on the screen, depending on the user's needs.
- **Comprehensibility**, i.e., ensuring that the interface is intuitive and the content understandable, so that it is written clearly and simply, with highly readable fonts.
- **Soundness** of content, so that it can be interpreted by different browsers, devices, and platforms, ensuring users accessibility in different modes.

If any of these principles are not met, users with disabilities will not be able to use the Web and access online sites. To make e-learning courses accessible, it is necessary to enable every user, regardless of any disability or difficulty, to use the content and materials provided by the online course, easily and effectively.
Making an online course accessible to all means making sure that it is intuitive, with an interface that is easy to understand and use, intuitive and predictable, perceivable by a wide range of users, including those with various types of disabilities, and navigable from different devices and with different tools (mouse, keyboard, or touch).

How to make the web accessible to all

To make online courses accessible to all, it is necessary to ensure the full participation of all users in the Web. According to World Wide Web Consortium, there are five factors to keep in mind to achieve inclusiveness:

1. **Perception**: some elements on the site, such as any flashing ads, music in the background, or particular colors, may be difficult for some users to perceive. Also, a small font and a lack of contrast between background and text could create difficulties in perceiving the content of a website for some people with reduced abilities. Help in this area could come from the use of images, tables, and drawings, which can be inserted to support the written parts. The use of a highly readable font is also helpful in allowing the content of sites to be better perceived. There are, in addition, tools that can be supportive for people with disabilities. For example, blind people can rely on the screen reader, which reads the contents of a web page. Also the Braille display can convert the text on the screen to Braille writing, making the Web accessible to people with a visual impairment.
2. **Comprehension**: to make an online page more understandable, attention to language is critical. The use of simple, clear and not too technical terms can help users understand the content correctly. Again, images, videos and tables can be useful tools to facilitate understanding. Finally, the ability to magnify the screen is critical to increase the readability of the site and, consequently, the comprehension of the content.
3. **Interaction and navigation**: to allow any user to easily access the site, it must be optimized for any type of device, so that content can be accessed by everyone at any time. In addition, interaction with the web page should be made as easy as possible, for example, by facilitating the use of links on the site, providing for the possibility of clicking on them directly with the finger. In addition, a website should be designed to allow users to use only the keyboard as well. Several tools have been developed to increase the ease of interaction and navigation of a site, which can be helpful for people with disabilities. For example, tools that capture the user's eye movements are available.
4. **Contribution**: user input to the site is critical to understanding the effectiveness of online content and training. To enable people to actively participate on web platforms, comment sections are often included, which allows users to leave feedback, expressing their opinions on a content or product. It is also possible to come in contact with other users, to exchange opinions. Again, some tools can come in support of people with disabilities. In order to receive appropriate feedback, the manager of the page can also provide forms to be filled out online, where a spell-check can also be provided, highlighting any errors in red. One difficulty might be associated with people with color-blindness, for whom it might be worth using different types of markup, such as bold or underline, instead of various colors.

In order to be able to **create an accessible online course**, it is necessary to take into account the difficulties that users may face and to act by trying to eliminate them. Some useful strategies might include:

- The addition of subtitles to videos so that even deaf people can understand the content;
- The use of a highly readable font, to aid reading and comprehension;
- Inserting images, graphics and tables to support the written text;
- Provide for the use of specific tools for artificial reading of written text to make the page accessible to blind users as well;
- Use high-contrast colors to make words easily readable.

Web accessibility allows anyone to interact with the Web and take advantage of content and information contained in online sites, making e-learning a mode of learning that can reach every user. This is the main reason for platform managers to pay attention to the aspect of inclusiveness.

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