

Beyond localization: Making learning spaces accessible to all

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ABSTRACT

When addressing localization within Translation Studies, we think of translating web content for a new linguistic and cultural reality. At times, localization is seen as making a text “adequate” to the new readership taking into account local sensitivities and requirements. When the addressees of a given web-based product have a disability, localization alone will not be sufficient to guarantee true access, for the needs and requirements will entail and also go beyond language and culture. This paper is highlighting the issues that need to be addressed to make online learning spaces accessible to all. The take on transadaptation, in the context of accessibility to educational environments, is holistic in nature, given that online learning platforms are required to be set up in line with WCAG directives from inception and that all uploaded content is made available in a variety of formats, among which are alternative texts, captions, audio description, sign language, just to name a few. Only in so doing with the service providers be guaranteeing that users with (sensory, cognitive or physical) impairment will benefit from such educational offers. To convey clearer understanding of the specificities of inclusive online education, two institutions from Portugal are presented in this paper showing the problems they faced and their efforts to make online learning spaces and MOOC accessible: the Polytechnic Institute of Leiria and the Open University. Examples are given from ongoing exercises, and reflections are shared on the cycles of improvement that are necessary to ensure the highest possible standards of inclusion. Included is a comparative analysis of the needs and challenges expressed by students with either hearing or visual disabilities to ensure access to all types of online contents, including spontaneous content (e.g. messages in forums, collaborative online tools).

Keywords: eLearning, transadaptation, accessibility, online learning platforms, MOOC

1. BACKGROUND

In 1999, the World Wide Web Consortium (W3C) made available a set of web accessibility recommendations, which has been updated according to the new computer specifications. These recommendations should be applied by web and software developers and web providers – Authoring Tool Accessibility Guidelines (ATAG) and User Agent Accessibility Guidelines (UAG) – and web content producers – Web Content Accessibility Guidelines (WCAG). In the last two decades, with rapid technological developments, interactions, interfaces, tools, and content format have undergone profound changes globally, posing permanent challenges in the various areas of society and in the inclusion of the largest number of profiles, skills, and cultures. It is during this period that the issues

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of localization, translation, and transadaptation related to web accessibility have been investigated in several contexts.¹⁻¹² In addition to the known problems (related to interfaces and content) already pointed by several authors, in the eLearning context, pedagogical issues should be considered, as is the case of the strategies used to promote and evaluate learning, to communicate and to cater for diversified student skills and abilities. If, from the instructional design point of view, most of these aspects can be controlled and worked in advance, others cannot be previously worked on by the institution. It will be the case of the work developed by students and other content that may result from online communication, which we call spontaneous content.¹³ To clarify the dimensions and variables involved in accessible e-learning, we have developed the scheme shown in Figure 1.

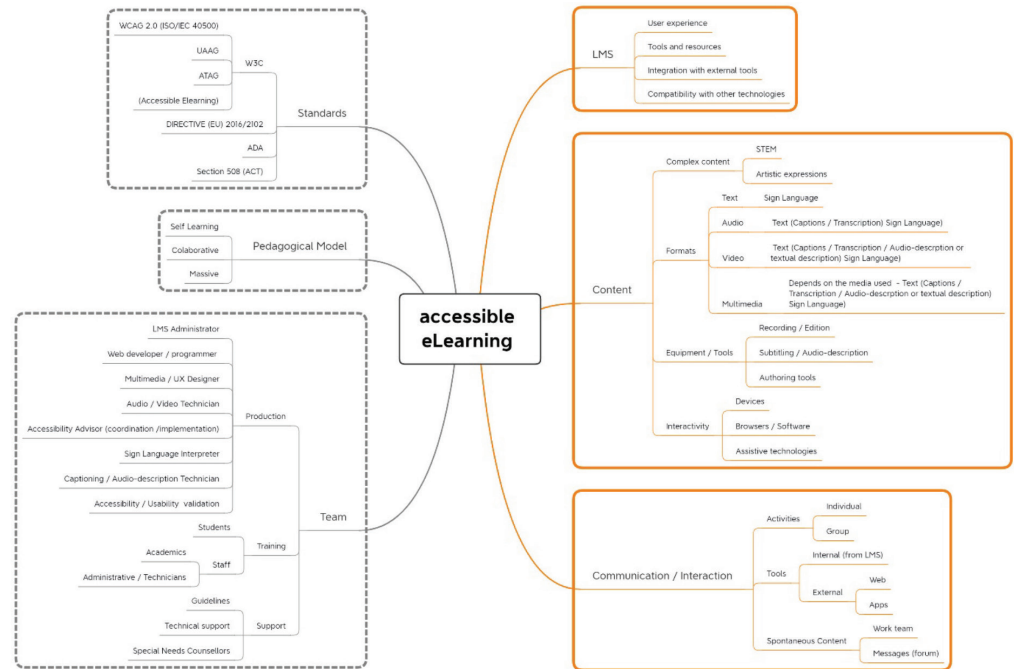


Figure 1. Scheme with the dimensions involved in accessible eLearning (detailed explanation in the following paragraph)

This scheme presents, on the right side, the dimensions related to eLearning: technological tools such as the Learning Management System (LMS) platforms, educational resources (content type and format, authoring tools, interactivity), and communication/interaction (between participants, activities, and tools) that characterize an online course; on the left side are presented the aspects to improve accessibility in online courses according to the institutional and political culture (accessibility and usability standards, pedagogical model, content and interfaces transadaptation and localization, faculty/staff training, team involved, continuous monitoring and support). This means that to create accessible eLearning courses, it is necessary to make appropriate technological adaptations/ accommodations to LMS interfaces that support the learning-teaching process, learning content, features used in activities, and tools to support all interactions and communications in order to be intuitive, responsive, and operable by assistive technologies, according to the web standards. In addition to the technological component, appropriate pedagogical adaptations to the diversity of student profiles are also necessary, considering the pedagogical model adopted, evaluation and feedback strategies, specialists (pedagogy, technology, accessibility) involved in the adaptation and localization process, teachers training to adapt strategies and communicate in diversity, as well as students training for an inclusive communication, according to the accessibility standards in force within the institution.

Although there are some studies on eLearning involving accessibility, pedagogy, and technology,¹³⁻¹⁸ it still seems to be a difficulty for many institutions to create accessible online courses. In 2008, a new type of course revolutionized distance learning and eLearning, having been called by MOOC (Massive Open Online Course) for allowing an unlimited number of participants and made available for free on the web. Four years later, after the characterization and popularization of this

course format, institutions globally adopted eLearning, following the trend of the new “massive” and “open” approach. While so far there has been some difficulty in implementing accessible eLearning in MOOC format, accessibility issues have come to the fore, and it has been found that many of the courses offered as being accessible were not fully accessible to assistive technologies and the full range of student profiles.^{19–24}

2. METHODOLOGY

Seven years upon the implementation of MOOC in Portuguese institutions, we conducted a study on these courses’ format. It was intended to analyze not only the LMS platforms, activities, and didactic resources accessibility but also the approaches to the transadaptation of the content into alternative formats. To analyze the WCAG 2.1 compliance level of the LMS (authentication process, navigation, and interaction with content and activities), we used the automatic validators WAVE (WebAIM) and AccessMonitor (Portuguese validator). For expert (manual) validation, the NVDA screen reader and keyboard navigation were used. We analyzed 30 courses hosted on Moodle and open edX platforms, offered by four different institution. This analysis was complemented with data obtained from satisfaction questionnaires, which yielded 600 responses that were analyzed. These questionnaires included a set of statements regarding the LMS “ease of use” and accessibility, educational resources, activities, and interactions between participants. For each statement, the Likert scale was used, from 1 to 5 (from “totally disagree” to “totally agree”). The questionnaire had an additional field for comments.

3. RESULTS

In line with previous studies,^{18–23,25–29} the results obtained by the automatic validators show that there are some problems with both LMS interface, namely the hierarchy of headers (main page title, content title, and subtitles), lack of efficiency with keyboard navigation (does not follow reading and visual logic), and contrast issues (low contrast or lack of consistency between same type of information or actions). The forums, although accessible, fail in usability (to many clicks). There were also recurrent problems of low colour contrast (i.e. links) due to the theme chosen by the institution. Table 1 provides an overview of the most common errors, their WCAG 2.1 compliance level, and success criteria.

Table 1. Web accessibility practices (WCAG 2.1) report from AccessMonitor.

Type Error	Level	Criteria	Description
Error	AAA	1.3.1 2.4.10	A main header H1 is missing.
Error	A	1.1.1 2.4.4 2.4.9	Adjacent links pointing to the same destination. Colour combinations which contrast relation is lower than the minimum contrast ratio allowed by the WCAG, it means 3 to 1.
Error	AA	1.4.3	CSS rules that do not specify either the font colour or the background colour.
Warning	AA	1.4.3 1.4.6 1.4.8	
Error	A	1.3.1	Empty lists or an outside of the lists.
Error	A	4.1.2	Event manipulators are associated with non-interactive elements.
Error	A	3.2.2	Forms without button to submit the data to the server.
Error	A	2.4.1 4.1.2	Iframe element without title.
Error	A	1.1.1	Image without the alternative equivalent in text.
Warning	A	1.1.1	Images on the page with alt="" (alt null). Links which content is empty. In fact, it is composed only by an image and that image has as alternative text equivalent to an empty nature.
Error	A	2.4.4 2.4.9 4.1.2	

Type Error	Level	Criteria	Description
Warning	AA	1.4.4	Measure units that define the width of the content elements that exist in the HTML are expressed in absolute values.
Error	A	2.1.1 2.1.3	Redundant event manipulators are not used.
Error	A	2.4.1	The first link of the webpage does not allow us to skip to the main content.
Error	AA	1.4.4	The font size is expressed in absolute measure units.
Error	A	2.4.4 2.4.9	Title attribute of the link element only repeats the text that exists in the link.

In the manual validation, we found that most images were inserted as decorative, among which we found images that were relevant to the comprehension of the written component. The text also presented the use of complex lexicon and syntax, which makes the content difficult to understand by non-native speakers of the Portuguese language, namely deaf persons. As for videos, most do not display subtitles, captions, or their transcription. Some videos have open captions, which cannot be controlled by users. Table 2 presents some of the most common non-accessible practices, in both LMS that were analyzed, verified through manual evaluation.

Table 2. Summary of good and bad practices found in manual evaluation.

Content/activity	Good practices	Bad practices
Text	HTML5/ARIA Simple sentences, short paragraph	Long paragraphs Complex vocabulary
Image	Relevant images have alternative text Some images have long description above image (visible to all)	Image without the alternative equivalent in text. Relevant images marked as decorative
Video	YouTube player Closed captions Transcriptions	Vimeo player Open captions No transcription
Forum	General questions or information	Long debates for all participants
Quiz	Moodle or open edX quiz Simple type of questions (multiple choice)	Embedded quiz (external tools) Complex type of questions with visual challenges (Drag and drop)

The problems identified by the automatic validators and in the expert accessibility and usability validation are also pointed out by the statements of some participants who identified having vision and/or auditory limitations, as shown in Table 3.

Table 3: Greater difficulties experienced by students

Blind/low-vision students	Deaf students
Complex interface	Too much text without sign-language interpreting
Repeated links	Videos only with automatic captions
Images without textual equivalent	LMS without instructions and/or a sign-language avatar
Non-intuitive navigation on the platform videos without description	Instructors without knowledge of sign language
Preference for HTML content	Text-based interactions/activities

Some authors of these courses were questioned about the difficulties pointed out by students with sensory impairments. It was found that most course authors had never heard about localization and transadaptation in the accessibility context, are not familiar with WCAG, do not know the techniques to create accessible educational resources, nor the type of activities that are advised for the different students' profiles. Furthermore, they do not know sign language, have never had training in these areas, and do not have the time or the tools to create alternative content.

4. FINAL CONSIDERATIONS

As mentioned in previous studies, accessibility in MOOC remains an issue. Although the code used in the "core" of both LMS (Moodle and open edX) complies with accessibility standards, its level of accessibility depends on the theme chosen by the provider, the type and format of content made available, and the learning activities proposed in the courses. However, in terms of usability, these LMS can improve, particularly in communication tools (synchronous and asynchronous). An interface communicates with end users and assistive technologies. This communication must be translated and adapted to be understood, recognized, and usable not only by people but also by the technology used by people. We also believe that the accessibility level of MOOC depends essentially on content producers, instructional design, and pedagogical approaches adopted. The fact that it is "massive" implies sustainable learning activities (for those who monitor student progress), but they should be suitable for the diversity of participant abilities and skills and accessible for assistive technologies. It is important to have a commitment to training in the areas of accessibility and usability. However, in the context of eLearning (open or closed, massive or restricted courses), accessibility and usability go beyond the recommendations and standards. It is essential to consider cultural, psychomotor, and technological issues and to reflect on the localization and **trans adaptation** in the context of accessible online learning.

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