



# Gauging Awareness of Accessibility in Open Educational Resources

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**Abstract.** Open Educational Resources (OERs) have been widely promoted in the higher education community in recent years. However, the accessibility of OERs for people with disabilities has received relatively little attention. This paper presents the results of interviews carried out with people at higher education institutions worldwide who are involved in the creation and implementation of OERs. The goal is to gauge the awareness of accessibility issues in OERs. This paper raises the following research questions: How much do OER creators know about accessibility? What measures are needed to ensure accessibility in OERs? Results suggest that OER creators are aware about some issues around accessibility, but they still need further training on how to solve them. OER creators lack time, skills, and awareness to create accessible OERs. Support from specialists and colleagues and hands-on trainings can help cope with these challenges.

**Keywords:** Open educational resources · Accessibility awareness · Higher-education

## 1 Introduction

The term “Open Educational Resources” (OERs) was first adopted by the UNESCO in 2002 [1]. OERs are defined as educational materials (i.e., for teaching, learning, and research) that can be used, adapted, and redistributed by anyone, free of charge and with no or few limitations [2]. These materials are often in digital format, though not always.

Digital technologies offer tremendous potential for inclusion of people with disabilities. Online materials are usually more accessible than materials given in the classroom [3]. At the same time, these same technologies can also result in further exclusion of this group if their specific needs are not considered. For instance, digital content becomes inaccessible if there are no captions in a video or if they are not compatible with screen reading software [3]. For that reason, content creators need to know how to produce accessible content.

The importance of and potential for accessibility in OERs has been noted since their beginnings. The 2007 Cape Town Open Education Declaration and the 2012 Paris OER Declaration both noted the unique opportunities offered by OERs for providing “alternative and accessible formats of materials for learners with special educational needs” [4]. More recently, in 2019, UNESCO presented a series of recommendations on

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OERs; these recommendations touch on the importance of accessibility for individuals with disabilities multiple times [4]. A recent systematic literature review found that although this political recognition has led to an increase in research on the accessibility of OERs since 2014, research remains limited to a few countries [5]. Thus, this paper seeks to highlight the importance of the topic as well as the need for further trainings.

Despite the adaptable nature of OERs, their content is not automatically accessible for people with disabilities [6]. A recent survey found that OER librarians have a basic understanding of accessibility [7], while a different study found that researchers do not know how to create accessible PDFs [8]. It is therefore not clear whether OER creators are aware of accessibility issues.

## 2 Methods: Semi-structured Interviews

Semi-structured interviews were conducted because this method provides detailed information while leaving space to identify factors that were not found in the literature. The interview script was developed based on the literature. Before starting the interviews, the script interview was tested with an OER specialist to guarantee that the script was understandable and logically structured. Interviews were led online via Microsoft Teams or Zoom.

People working at or with universities who create, teach about, or support the creation of OERs were selected for semi-structured interviews. To reach out to OER creators, various “country champions” from the OER World Map [9] were contacted. Country champions were selected because they are more likely to have extensive knowledge and experience with the creation of OERs. Lecturers registered on the OER World Map and who were active in the last year were also contacted. Additionally, a call for participants was also posted in three different networks of OER creators. Interviewees were informed that questions will be about OER accessibility. However, the term accessibility was not explicitly defined to minimize self-selection bias, i.e., to avoid that only people who know about accessibility issues for people with disabilities accept the invitation.

In total, 17 persons were interviewed. Ten of these were country champions according to the OER World Map, the remaining 7 were OER experts reached through OER university network. Interviews lasted between 15 and 60 min. Participants came from all over the world: Australia (1), Austria (1), Brazil (1), Canada (2), Chile (1), Columbia (1), France (1), Greece (1), India (1), Italy (1), South Africa (1), South Korea (1), Sweden (1), Switzerland (2), and United States of America (1). Most participants worked in a university (see Table 1) and created OERs themselves or provided support and training to create OERs.

Before starting the interviews, participants were given an overview of the aim of the research. Participants consented to record the interviews. All interviews were transcribed with automatic transcription and then corrected by a human. The transcripts were coded in two cycles: the first aimed at summarizing the information, and the second sought to find patterns in the codes [10].

**Table 1.** Repartition of the participants' workplace.

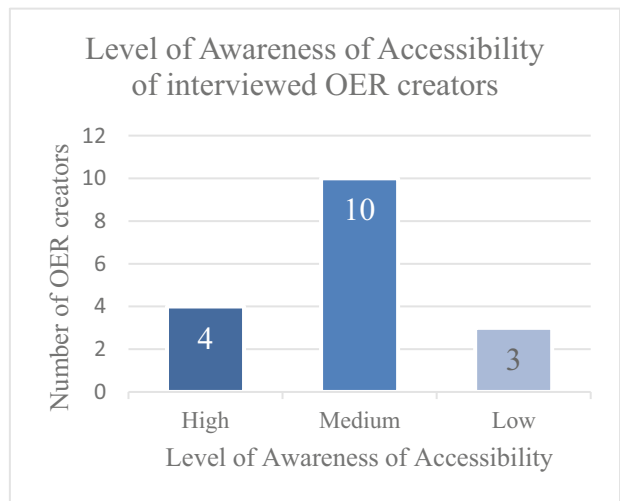
Workplace	Number of participants
University	13
Non-governmental organisation	2
Library	1
International organization	1

### 3 Results

#### 3.1 Awareness with Accessibility and Definition

##### Level of Awareness.

Overall, interview participants had at least heard about accessibility (Fig. 1). Most of the participants (10) have a medium level knowledge of accessibility of digital content. They could name some issues that people with disabilities face with digital content, but they recognized that they still have more to learn. Only four participants had a high-level knowledge of accessibility, i.e., they assessed themselves as very familiar, could name several issues, and routinely consider accessibility in their design. Three participants had a rather low level of awareness, i.e., they had heard of accessibility but did not know much about existing solutions.



**Fig. 1.** Level of awareness of accessibility of the interviewed OER creators (N = 17)

**Definition of Accessible OERs.** Participants usually reckoned that the term accessibility has several meanings. Twelve participants mentioned that accessible OERs means accounting for the needs of learners with disabilities.

Still, many participants defined accessibility as focusing on users' needs and their background. In that case, the term of accessible OERs was defined broadly, it went beyond the focus on the needs of persons with disabilities. Participant 1 gave a good example of this broader definition of accessibility:

*“It’s putting the end user first, thinking about who is going to use this. [...] And then knowing your audience. At [our university], [...] we have a cohort that includes a lot of people who are low socioeconomic status. A man who works 20 or more hours a week on top of studying. They often have families. So, knowing the people, and then putting yourself in their shoes and saying “OK well, what would make this difficult for me to access?””*

Apart from these definitions, seven participants defined accessibility as ensuring that materials are free on the internet and that it is legally allowed to use and reuse OERs thanks to open licenses.

### 3.2 Promotion of Accessible OERs

The fifteen interview participants who organize trainings or hold presentations to advocate for the creation of OERs were asked whether they promote accessibility for people with disabilities in their activities. A large majority of participants only promote accessibility partially by mentioning some accessibility issues or advising to use a list to check for accessibility issues. Many take on a universal approach without calling it accessibility. They will emphasize that it benefits everyone. For instance, participant 15 explained:

*“But I always highlight the needs for like metadata, for no music in the background, for the availability of transcripts, but not in a very professional way that a person who is expert in the field could say “oh, this is really a helpful introduction to accessibility”. It’s more like highlighting that the people should be aware of this. And it’s not only meant for people with certain disabilities or needs. It’s like typically all these things are helpful for quite normal people as well.”*

Only one person said that she always mentions accessibility in her talks on OERs. Four persons explained that they have specific trainings or support on the accessibility of OERs.

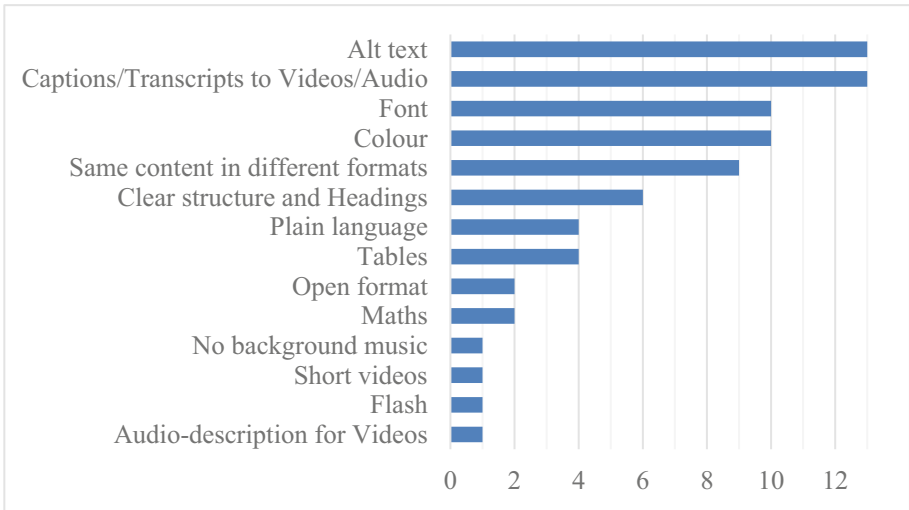
One reason for not mentioning accessibility or only partially is that accessibility is considered an advanced topic. People learning about OERs first need to learn about the legal aspects of open licenses before they can learn about accessibility.

### 3.3 Creation of Accessible OERs

**Creation Process of Accessible OERs.** In general, at the institutional level, there is no clear guidelines or policies that require OERs to be accessible. Seven participants explained that they did not have any guidelines. In comparison, only four participants mentioned the use of an official guideline by their university about accessibility.

Fourteen participants said that they reduce barriers to access OERs for people with disabilities. However, not everyone is using accessibility standards nor testing their content. In fact, among these participants, only nine test their content for accessibility issues themselves (manual checks or with automatic tools), with the help of specialists, or with co-evaluation. Four participants are also mostly following universal design.

**Type of Accessible Content.** Most common features that participants considered to create accessible OERs are alternative text for images and adding captions or transcript to video or audio (Fig. 2). Captions and transcripts are nevertheless often said to be time intensive. Participants also mentioned that they check (often manually) that colors and fonts are accessible.



**Fig. 2.** Content elements that participants pay attention to in their creation of accessible OERs (N = 17)

Although it is possible that math formulas are not common content of the interviewed participants, it appears that participants knew less about how to make math accessible. They were also less aware with how to design accessible tables.

### 3.4 Motivation for the Creation of Accessible OERs

According to de Bie et al. [11], there are five factors that can encourage lecturers to teach in a more inclusive and accessible manners: legislation, ethical obligation, pedagogical motivation, being nice, and profits. These categories were used to analyse the interviews. To the exception of two participants who mentioned the law as a reason to create accessible OERs, there are two main reasons that motivate participants to create accessible OERs. The first one is ethical obligation. Ten participants explained that for open education to be really open, it has to be accessible to people with disabilities. Some participants said that people with disabilities cannot be locked out, education is a human right, and it is a matter of epistemic justice to guarantee that content is useful to as many people as possible. Participant 1's answer summarizes well this motivation:

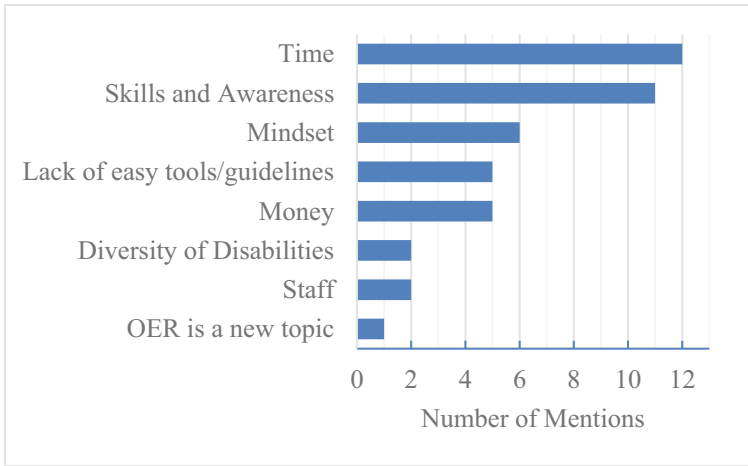
*"I think that the question should be you know why aren't we making them accessible? I think that if we are serious about making education as accessible as possible, about making it equitable, then that means thinking about everybody."*

The second motivation is pedagogical and is closely related to the first one as two participants explained that accessibility is about ensuring that students achieve learning outcomes.

### 3.5 Challenges and Opportunities for the Creation of Accessible OERs

**Challenges.**

Participants mentioned challenges that they as well as other OER creators face to create accessible OERs. Time presents a particular challenge in terms of creating accessible OERs (Fig. 3).



**Fig. 3.** Challenges to create accessible OERs according to interviewees (N = 17)

**Accessibility**

can be perceived as an additional work because they need adjustments to the content or because creators need to learn how to make OERs accessible.

Skills and awareness are also lacking. Participants recognized that they need to learn more and also stressed that in general OER creators are unaware of the issues.

Accessibility is also something that is not yet integrated in the mindset of people and institutions. It is not necessarily demanded by universities or OER publishers. There is not necessarily support and recognition for the work done. Two participants explained that people talk late about accessibility and is more an afterthought in the creation process.

Among other challenges are the lack of money invested for accessibility, the lack of easy-to-use tools or guidelines, the lack of staff. Two participants explained that the nature of disabilities is in itself a challenge because disabilities are diverse, there are many needs to cover. Hence, it is difficult to create an OER that is truly accessible to everyone. Furthermore, one participant explained that when OER is a new topic, they must first be convinced to provide open content and mentioning accessibility complexifies the discourse.

**Opportunities.**

Eight participants mentioned that it helps them when they get support from specialists (Fig. 4). Two also explained that OER can be co-created (with colleagues or learners). This way, different perspectives and needs can be considered in the creation process. Five participants stressed that trainings explaining why OERs must be accessible are helpful. In particular, they stress the importance to explain why OERs have to be accessible, how it impacts learners, and give examples.



**Fig. 4.** Elements that help create accessible OERs (N = 17)

provide quality standards, or scores for accessibility to indicate the OER is accessible or not. Moreover, one participant explained that her feeling of commitment towards students helped overcome challenges to create accessible OERs.

Two participants also provided workarounds to the challenge of creating accessible OERs. They explained that OERs can be adapted overtime (by the same person or others). This iterative work thus reduces the difficulty to account for all the needs at once in a restricted time.

## 4 Discussion and Conclusion

First, this paper raised the question how much OER creators know about accessibility. Similar to the results of the survey with OER librarians [6], OER creators have a basic understanding of accessibility and only about half of the interviewed participants look proactively for accessibility issues. In this study, more than half of participants were country champions which meant that they were more likely to be aware of the issues. Yet, even among them, few really knew how to address accessibility issues. This highlights that accessibility awareness is still not widespread. Moreover, accessibility is often mentioned as an advanced topic for creators starting to learn about open education. This indicates that only advanced OER creators are likely to consider accessibility issues. Moreover, accessibility is usually not required to publish OERs or integrated into OER guidelines (when they exist). This could reinforce the fact that accessibility is often considered late in the design process and is seen as an afterthought.

Moreover, several interviewed OER creators recognize that accessibility can benefit everyone. On the one hand, this can give accommodations for people with disabilities without having them to ask for it. On the other hand, the accessibility of universal design varies depending on the type and degree of disability [3]. For instance, the use of captions in videos is not systematic because it is time intensive. For someone whose native language is not the one of the lecture, captions make learning easier. Comparatively, a student who is deaf simply cannot access the content of the video without captions. Therefore, while it is helpful to emphasize that many benefit from accessible content, special needs must be addressed because they are not affected the same way.

Automated tools and open software are also said to facilitate the creation of accessible OERs. Institutions or persons in leading positions can also support the creation of accessible OERs. In particular, leaders or publishers can also help by requiring accessible OERs (thus making it legitimate to invest time and money). One participant also mentioned that platforms can

Second, this study looked for measures needed to ensure the accessibility of OERs. The lack of skills and awareness calls for hands-on trainings. Complex guidelines are an additional barrier to accessible digital content [12]. Hence, trainers must provide simple guidelines to facilitate the creation of accessible OERs. Workshops should clarify why accessibility in OERs matter. Trainers can highlight that there is an ethical obligation inherent to the open education movement that seeks to enable fair and equitable access to education. Special attention should also be drawn on the creation of accessible tables as well as math formulas.

Finally, the community of OER creators and accessibility specialists was proven useful to create accessible OERs. The co-creation of OERs as well as the effort to iteratively improve the accessibility of OERs are two manners to share the time needed to account for the various needs of people with disabilities. However, for the community to improve accessibility, they need to be themselves aware of the issues and efforts for accessibility be recognized as a standard of quality.

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