

## Workshop for “Creating accessible digital educational content”

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**Abstract.** The workshop “Creating accessible digital educational content” is aimed at teachers conducting virtual training, and its objective is training for teachers to create digital educational content that any student can use, whether or not they have some kind of physical or sensory disabilities. The workshop is organized by participants in the cooperation project ESVI-AL. A previous version of this workshop has been carried out in Latin America with positive results. This paper presents a new version of this workshop for teachers of non-speaking Spanish countries.

**Keywords:** Accessibility, Digital Educational Content, Course, Workshop

### 1 Introduction

Ensuring inclusive education systems at all levels and lifelong learning are a commitment of the States that are part of the United Nations, who in 2006 signed the Convention on the Rights of Persons with Disabilities [1], by which each country should ensure that people with disabilities have access to primary and secondary education, higher education, job training, adult education and lifelong learning, without discrimination and on an equal basis with others.

To move towards an inclusive education, progressively and substantially increasing alternative education practices based on Information Technologies and Communications (ITC) is needed through the implementation of accessible virtual learning, understanding accessibility as "extent to which products, systems, services, environments and facilities can be used by people from a population with the widest range of characteristics and capabilities to achieve a specified goal in a specified context of use" [2].

Extending this concept of accessibility to the virtual educational context [3], in which teachers use digital educational content, it should be ensured that the content is accessible, i.e. understandable, usable and perceivable by any student who has the prior knowledge required to enroll in the training, and that having any kind of disability is not a barrier to complete the training [4].

WCAG (Web Content Accessibility Guidelines) [5] is a well-known recommendation that contains accessibility guidelines to create accessible web

content, but there are also other methods and/or mechanisms to make all digital content accessible. For these reasons, a workshop has been created, which teaches the main techniques that a teacher has to know for creating accessible digital educational content in the most commonly used formats in virtual training, such as text documents, slide presentations, PDF files, videos, audiobooks or web pages.

A course called “Creating accessible digital educational content” is aimed at teachers conducting virtual training, and its objective is to provide training for teachers to create digital educational content that any student can use, whether or not they have some kind of physical or sensory disabilities. The workshop is organized by participants in a cooperation project called ESVI-AL [6], which aims to move towards virtual inclusive higher education in Latin America.

This paper presents a new workshop about creating accessible educational content. In the Goals and Competences sections the objectives to be attained by the completion of the workshop and the competences to be achieved are presented, respectively. The next section analyzes the contents of the workshop and then the methodology of teaching and assessment set to pass the course. Finally, conclusions and future work are discussed.

## **2 Goals**

The objective of the workshop is to train teachers so they can create digital educational content in a way that is accessible to any student, whether they have or not any physical or sensory disability. Thus, a teacher will be able to create accessible educational content in different formats after finishing the workshop.

The specific objectives of the workshop are:

- Contribute to specific training of teachers, teaching them to create text documents, slide presentations, PDF documents, audiovisual content and accessible web pages.
- Create awareness among participants about the problems that students with disabilities have while studying subjects virtually.
- Participants to acquire skills needed in the use of tools for creating and reviewing accessible virtual educational content.
- Achieving teachers who learn this course become multipliers, actively involved in the training of other teachers.

## **3 Competences**

The main competences to be acquired in the course are:

- Analyzing and correcting accessibility issues that a document created with a word processor such as Microsoft Word or OpenOffice Writer may have.
- Creating accessible documents using word processors such as Microsoft Word or OpenOffice Writer.

- Analyzing and correcting accessibility issues that a slides presentation created with a presentation tool such as Microsoft Power Point or OpenOffice Impress may have.
- Analyzing and correcting accessibility issues that a PDF document may have.
- Creating accessible PDF documents.
- Analyzing and correcting accessibility issues that a video may have, adding captions and audio-descriptions.
- Creating audiobooks from accessible documents.
- Analyzing accessibility issues that a web page may have and solving them [5].

#### 4 Content of the workshop

The workshop is composed of five mandatory lessons. The main topics to be explained in each lesson are shown in Fig. 1.



**Fig. 1.** Syllabus of the workshop

Lesson 1. How to create accessible text documents.

- Guidelines for creating accessible content in Microsoft Word. Some guidelines are explained, such as "the content should be written in brief and simple language", "indicate the language of the document", "use a sans-serif font of at least 12 points", etc.
- Accessibility evaluation tools. Some tools to evaluate accessibility in documents are shown, such as Microsoft Office and AccessODF.

Lesson 2. How to create accessible presentations.

- Creating accessible Microsoft PowerPoint presentations. Good practices for designing and creating accessible presentations are explained, and some general tips are given for creating effective presentations and presenting in an accessible way.
- Checking the accessibility of Microsoft PowerPoint presentations. In this section, students learn how to execute the accessibility checker and interpret the information about the issues found.

Lesson 3. How to create accessible PDF documents.

- Accessibility in PDF documents. Basics. In this section, an accessible PDF and how people with disabilities access the content of a PDF are explained. The characteristics of an accessible PDF, some WCAG principles applicable to PDF documents and tools for analysis and correction are also explained.

- Creating accessible PDF documents. This part explains how to create accessible PDF documents from other accessible documents already created. How to evaluate the accessibility of a PDF document is also explained, as well as how to make an initial checking for detecting issues that require modifying the source document, and how to correct accessibility issues directly in a PDF file.

Lesson 4. How to create accessible audiovisual content.

- Properties of an accessible video. This section explains what an accessible video should contain (transcription in text format, captions, audio description, sign language interpretation) and some tools to create accessible audiovisual content.
- Creating accessible video tutorials. Best practices to create effective video tutorials are explained, as well as some techniques for creating and editing videos, and uploading them to YouTube.
- Accessible educational content with audio. This section explains how to create accessible audiobooks from Word documents with a tool called Balabolka. How to insert audio in PDF documents is also explained.
- Checking the accessibility in video and audio files. One checklist for accessibility in audio documents and another one for accessibility in videos is provided.

Lesson 5. How to create accessible websites.

- Developing an accessible website. Some guidelines to develop an accessible website are given, such as identifying the language, including the title of the page, not using color as the only visual means of conveying information, etc.
- Accessibility of the elements of a webpage. This section explains how to make the elements of a webpage, such as images, multimedia (audio, video, presentations), forms, tables, etc. is explained.
- Global evaluation of the accessibility of a web page. Some techniques to evaluate the accessibility of a web page are explained.

## 5 Methodology

The workshop is taught using a blended learning model, with educational online activities throughout its duration and weekly classroom activities. The workshop requires a commitment of 50 hours per student.

The expected duration is 6 weeks of online work for the mandatory part of the workshop, with a commitment of the learner to complete between 5 and 6 hours weekly online, and 15 classroom hours. Another 5 hours may be considered to finish some of the classroom tasks online.

Based on the European Credit Transfer System (ECTS), the mandatory part of the workshop yields 2 credits, since this system considers that 25 hours of student work equate to one ECTS credit.

### 5.1 Methodological strategies

The same methodology is applied in each lesson, which consists of performing the following teaching activities:

- Study educational content: Students must spend time reading and assimilating the contents of the lesson, which are presented in a sequence of interactive web pages. Students have the opportunity to download the contents of a lesson in one PDF or DOC file, if they want to read in these formats. The educational contents of a lesson are available in the learning platform on the first day of the week assigned to that lesson in the calendar.
- Conducting a self-assessment of knowledge: in order for students to check they have properly assimilated of educational content, they can perform a self-assessment at any time during the study of a lesson and check their level of knowledge.
- Participation in a discussion forum: The tutor of a lesson raises a discussion topic related to the content of the lesson, and the participant students discuss it during the week assigned to the lesson.
- Study of a case study solved: Students have available a practical case related to the theoretical content of the lesson, as well as the solution to that exercise, which enables learning how to solve similar cases.
- Viewing videos: In each lesson students are offered at least three short videos with captions, which can be played and viewed at any time. They are:
  - A presentation video of the lesson.
  - An explanation video of a topic of discussion in the forum.
  - An explanation video of a practical exercise solved.
- Conducting practical classroom activities: one week is dedicated to perform practical classroom activities, in 5 sessions of 3 hours each. In these sessions, the tutors-students interaction is promoted, performing practical cases and discussing the results in common.

As a proof of completion of classroom activities, students must send a description of the work completed in the classroom sessions to the tutors. They can do this at the end of the week or later to have the opportunity to review the written work and, if necessary, improve it before sending it to the tutor.

### 5.2 Educational contents and resources

The main materials used in the workshop are:

- Online content: The online training content is offered in various formats: web, PDF, Word, PowerPoint and video.
- Resources for practical work: Students are offered the statements of the practical work to be performed in each lesson, and the software needed to solve it is given. The software is generally free to use, except in the case of the Microsoft Office 2007 or 2010 suite for lessons 1 and 2. If students do not have the required programs, a corresponding exercise can be performed with a similar free editor, such as Libre Office, although the content is

designed for Microsoft Office because it offers tools to evaluate automatically the accessibility of documents and presentations.

- Resources for classroom practices: In general, the same programs are used in classroom practices as in online practices.. The classroom practices are conducted in a classroom equipped with a computer per student, with the necessary software already installed.

## 6 Assessments

Different activities of students' assessment are carried out in order to check the acquisition of the competences provided in each lesson of the workshop.

Assessment activities have been planned for the online part and the classroom part. The total maximum grade that can be obtained in the workshop is 100%, but the workshop can be passed with a grade of at least 60%.

The online part represents 60% and the classroom part represents 40% of the total, based on the following distribution:

1. Online phase (60%): Participating in 5 lessons online represents 60% of the grade, according to the following breakdown:
  - a. Assessment test of theoretical knowledge of the lessons (20%): The test consists a questionnaire with a maximum score of 4% per lesson.
  - b. Participation in the discussion forum of the lessons (10%): The level of students' participation and discussion in the forum of each lesson is assessed, with a maximum score of 2% per lesson.
  - c. Online practical work of the lesson (30%): Students must solve a practical case raised in the lesson and send their solution to the tutor. The maximum score of the practical work is 6% per lesson.
2. Classroom phase (40%): When performing classroom activities and the quality of the work that will be sent submitted after the week are valued.
  - a. Assistance in classroom activities (10%).
  - b. Level of participation in classroom activities (10%).
  - c. Personal work sent to the tutor as evidence of the classroom activities performed (20%).

## 7 Conclusions and future work

The workshop created allows students who perform it to create accessible digital educational content. So far this workshop has been launched in different test groups in Latin America and the results have been positive. The results obtained in these pilot groups will be analyzed and studied in the near future, and the results and the gathered experience in these first workshops will be published.

In these pilot groups, some obstacles to make accessible existing documents were observed: one obstacle is that an extra effort is required to make accessible an existing document. Furthermore, if the document previously created has been incorrectly

created (i.e.: ignoring the general best practices for creating documents, presentations, etc., e.g. not using templates, titles, styles, ...) it could be difficult to make accessible an existing document and it could be interesting to create again the document following the best practices.

We are currently working to create a version of this workshop in MOOC (Massive Open Online Course) format so that it can reach a wider audience and the workshop can be completed entirely online, and that the classroom part of the workshop is not an obstacle. We think this way awareness about the importance of creating accessible educational digital content may be broader and may widely throughout the world.

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