

Promising Experiences with Hybrid Instruction for the Inclusion of Accessibility in Virtual Learning Environments

Héctor R. Amado-Salvatierra¹, Rocael Hernández Rizzardini¹

¹ GES Department, Galileo University, Guatemala, Guatemala
{hr_amado, roc}@galileo.edu

Abstract. The purpose of this work is to share promising experiences with hybrid instruction in the context of a series of MOOC courses with the aim to raise awareness of the importance to design and produce accessible content within a virtual learning environment. This work describes the blended learning experiences of 19 editions of a series of courses that were performed in Ecuador (3), Colombia (1), El Salvador (1), Guatemala (3), Paraguay (3), Finland (1), Uruguay (3), Peru (1) and Spain (3). Complementary, with the recording of the face-to-face sessions, four editions were prepared as full online experiences in order to reach a greater audience. In total, 991 participants have been admitted, with a total of 432 learners that approved the training (175 men and 289 women). This massive training has had a great reception with participants from 19 different countries, representing more than 150 higher education institutions. The contribution of this work is to share the relevance and impact from hybrid instruction. For this series of courses representatives from the World Organization of Persons with Disabilities (DPI) and the Latin American Union of Blind (ULAC) were invited to share the experiences that a learner with disabilities could face while working with virtual learning content with accessibility issues.

1. Extended Abstract

In a broad sense, accessibility can be considered as the condition that environments, products, and services must meet to be understandable, usable and practical for all people, including those with disabilities. In this sense, there is a wide range of diversity of people and abilities, this is why in some terms, educators should be aware on how students with disabilities interact with computers and especially with the educational resources that educators are producing for them. In this regard, there are many reasons why people may be experiencing accessibility barriers. The diversity of disabilities can be summarized in six groups: auditory, cognitive, neurological, physical, speech and visual disabilities [1]. Nevertheless, the inclusion of accessibility features for online applications and digital content represents a very important benefit for all people, including people with age-related impairments, temporary disabilities or technological limitations.

In this work, an open online training course for educators was prepared with the goal of teaching how to design accessible virtual courses from the very beginning. As an example, educators are trained with the building blocks on how to provide alternative descriptions to images or how to evaluate the accessibility of a simple document taking into account the perspective of a student with a disability and the potential obstacles.

In this sense, teachers, tutors and instructional designers, should be encouraged to understand the needs of a diverse population of students in order to create accessible content, improve alternative teaching methods and evaluate different strategies for evaluation. However, there is an interesting question: What is the best approach to raise awareness to teachers on the importance to create accessible content? For these experiences, it was found that the face-to-face sessions and live testimonials produced a better impact than just a pre-recorded video. Specifically, representatives from the World Organization of Persons with Disabilities (DPI) and the Latin American Union of Blind (ULAC) were invited to share their experiences. As an example, an instructor with visual disability shared with the learners the different steps to visit and browse the web with the help of a screen reader (e.g. NVDA and JAWS). The learners were impressed because they did not know the limitations that could be caused by missing simple details in a document. Moreover, the face-to-face sessions were improved with hands-on activities using

assistive technologies with the help of the instructors in different scenarios. Examples of the aforementioned scenarios are the following: covering his eyes, using a speech recognition device, using just one hand, among others.

The open online training course to design accessible virtual courses was based on a methodological framework based on the standard ISO/IEC 19796 [2]. This is a common and generic framework used to describe, specify, understand and compare the components of the lifecycle of an e-learning project. The proposed methodological framework is described with seven components categories: processes, activities, tasks, products, methods, metrics and participants. The seven processes that explore on accessibility features in the phases of the life cycle for a virtual course are the following: Needs Analysis, Framework Analysis, Conception and Design, Development and Production, Implementation, Learning Process, Evaluation and Optimization. Table 1 identifies the description of the core competencies to be achieved by the educator, the type of competence and the number of specific skills that constructs the general competence. For instance, for the core competence DOC#, it is possible to identify twelve basic skills, among others. It is worth to mention the following four as an example:

- How to correct the accessibility problems presented by a document
- How to set the language of a document in different parts of itself
- Read and test a document using a supporting tool (e.g. screen reader)
- Properly structure a document, formatting using styles for further navigation

Table 1. General accessibility competencies for educators

| GENERAL COMPETENCE | DESCRIPTION | TYPE | RELATED SKILLS |
|--------------------|---|---------------|----------------|
| DOC# | Creation of accessible digital documents | Basic | 12 |
| PRE# | Creation of accessible presentations | Basic | 14 |
| PDF# | Creation of accessible portable documents (pdf) | Basic | 4 |
| AUD# | Foundations of accessible multimedia content | Complementary | 6 |
| WEB# | Foundations of accessible web pages | Complementary | 18 |

This work is an ongoing endeavor [3-5], the face-to-face complementary sessions are being prepared with the support of the ESVI-AL, MOOC-Maker and ACAI-LA projects.

Acknowledgments. This work is partially supported by European Union through the Erasmus+ programme - projects MOOC-Maker and ACAI-LA 561533-EPP-1-2015-1-ES-EPPKA2-CBHE-JP, 561997-EPP-1-2015-1-ES-EPPKA2-CBHE-JP; and the ALFA III ESVI-AL project (DCI-ALA/19.09.01/11/21526/279-146/ALFA 111(2011)-11).

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