Accessibility analysis in MOOC platforms. A case study: UNED COMA and UAb iMOOC

Francisco Iniesto

School of Computer Science, UNED, Spain

GO-GN Research Track: MOOC and Open Textbooks

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United Nations Educational, Scientific and Cultural Organization

UNESCO Chair in Open Educational Resources

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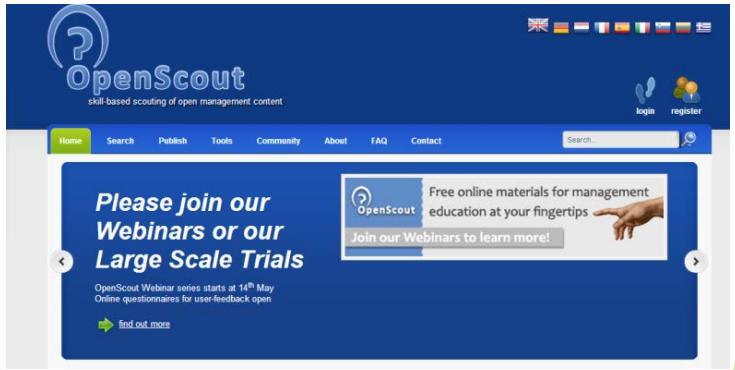
UNED

CONTEXT: PHD CANDIDATE

1. Engineer in Computer Science. Part-time PhD researcher. IT consulting
2. Connecting to creating educational materials cycle and accessibility:
   - Mst. in Languages and Computer Systems. Specialized in teaching, learning, collaboration and adaptation.
   - Master's thesis: Accessibility and standardization in the cycle of creation of educational materials.

   (Covadonga Rodrigo)
3. Connecting to OERs world: OpenScout:
   - accessibility evaluation
4. Connecting to MOOCs and PhD Research:
   - Accessibility in eLearning platforms: case study in MOOCs

   (Covadonga Rodrigo & Timothy Read)



CONTEXT: OERS AND MOOCS

- The change from closed educational platforms to open learning environments, such as the case of MOOCs (Massive Open Online Courses) have been nothing more than the evolution of open education on the Internet that have made it possible for thousands of people to follow different educational initiatives

- The quality of the education has not been guaranteed by the use of new technologies but that any new teaching methodology through the Internet supposes both a technological change and qualification for all of the participating agents

- A basic characteristic of MOOC courses, independently of its type, is the high degree of interactivity that it facilitates and reinforces the bidirectional communication between the students and the mediators

CONTEXT: GOING PAN-EUROPEAN WITH MOOCS: OPENUPED

- Openness to learners
- Digital openness
- Learner-centred approach
- Independent learning
- Media-supported interaction
- Recognition options
- Quality focus
- Spectrum of diversity
- OpenupEd Label

Mulder (2013) Going pan-European… with OpenupEd MOOCs

Context: ICT and disabilities. Accessibility definition

- It is the art of ensuring that, as far and wide as possible, resources (such as web access) are available for individuals, whether or not deficiencies of one kind or another.

Accessibility definition by Sidar Foundation

CONTEXT: ICT AND DISABILITIES

- The possibilities that Information and Communications Technologies (ICT) offer people with disabilities to improve their wellbeing and the possibility of their insertion into the work market

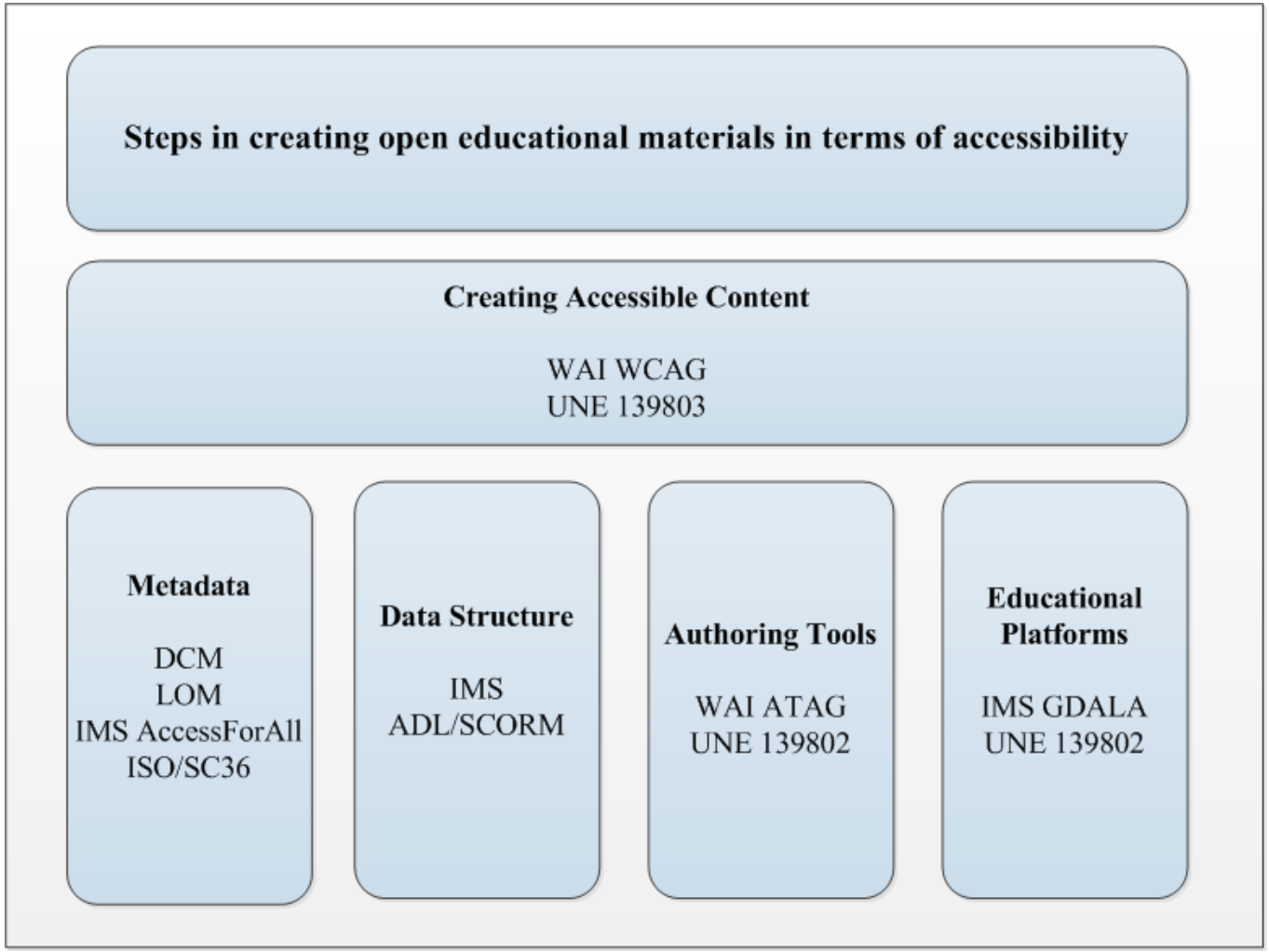
- 100% consider that the incorporation of ICT into the workplace has increased their work possibilities.

(Access and use of ICT for people with disabilities. Acceso y uso de las TIC por las personas con discapacidad. Vodafone Foundation Spain 2013)

CONTEXT: ICT AND DISABILITIES

- There is a growing proportion of these students who have an officially recognised disability who choose distance education universities for their studies
- The enrolment at the UNED was 8,068 students in the 2012/2013 academic year, approximately 50% of university students with a disability in Spain
- These students look for the so-called permanent learning or lifelong learning paradigm, which integrates education, work and personal life in a continuous process and allows the citizens to be able to access the knowledge and develop it both personally and through work

Context : Creating Accessible OERs. The importance of standards



PROBLEM DEFINITION

- In order to achieve the minimum required level of accessibility in this type of platform, two significant aspects will have to be taken into account:
  - Make possible and guarantee access to the content by means of the platforms.
  - Produce the content accessible in itself: in this sense, add locutions, alternative content in the form of subtitles, audio description, etc. also aiming to satisfy basic usability aspects both graphical and visual, and respecting the most accessible font types and sizes, optimal levels of contrast, etc.

Problem definition: What must the model of the accessible MOOC platform be?

- **The receiver of the MOOC is a student**

Therefore it is necessary to evaluate the access conditions, the knowledge and the handling of the technological platforms. In the case of access, it will have to be previously guaranteed that the registering procedure (if there is one) also complies with the minimum accessibility requirements.

- **The technological platform.**

The degree of usability of a series of Web services offered to the student will depend on the design of the user interface, of the interaction with the computer, and even the graphic design of the content.

Problem definition: What must the model of the accessible MOOC platform be?

- **The students must be able to access the content**

Using assistive technologies and adapt their presentation in accordance with the specific needs.

- It is necessary to offer alternative textual descriptions for multimedia content (such as images or videos).

- Assistance must be provided to those students who have encountered problems or barriers to accessibility.

OBJECTIVES OF THE RESEARCH

- Finding a useful assessment methodology to see the weaknesses in accessibility: based on five different assessment approaches
- Provide a standards-based methodology that is not a rule but a tool to improve educational platforms
- Provide assessment results in a way that tells us weaknesses so that we can resolve them
- That these results can be disaggregated by disability
- Incorporate accessibility criteria into QA label e-learning standard

METHODOLOGY

A selection of a set of Web pages as a representative example of a platform

- *Evaluation through automatic accessibility tools. AAT*
- *Evaluation through disability simulators. DS*
- *Evaluation through testing tools. TT*
- *Evaluation through usability criteria. UC*
- *Evaluation through the educational content. EC*

The applicable regulations are the accessibility guidelines for Web WCAG 2.0 content. (World Wide Web Consortium W3C, Web Content Accessibility Guidelines (WCAG) 2.0, 2008)

METHODOLOGY: *Evaluation through automatic accessibility tools*

- eXaminator:

eXaminator tool adjudicates a score of between 1 and 10 as a rapid indicator of the accessibility of the pages and at the same time incorporates values in accordance with their impact on a series of user profiles

  - Total limitation in seeing
  - Serious limitation in seeing
  - Limitation of the higher members
  - Limitation in understanding
  - Limitations derived from age

METHODOLOGY: *Evaluation through disability simulators*

- aDesigner:

Is a disability simulator which helps the designers to guarantee that the content and the applications are accessible and usable to people with a visual disability

  - Blind person simulator.
  - Simulator for people with reduced vision.

METHODOLOGY: *Evaluation through testing tools*

- SortSite:

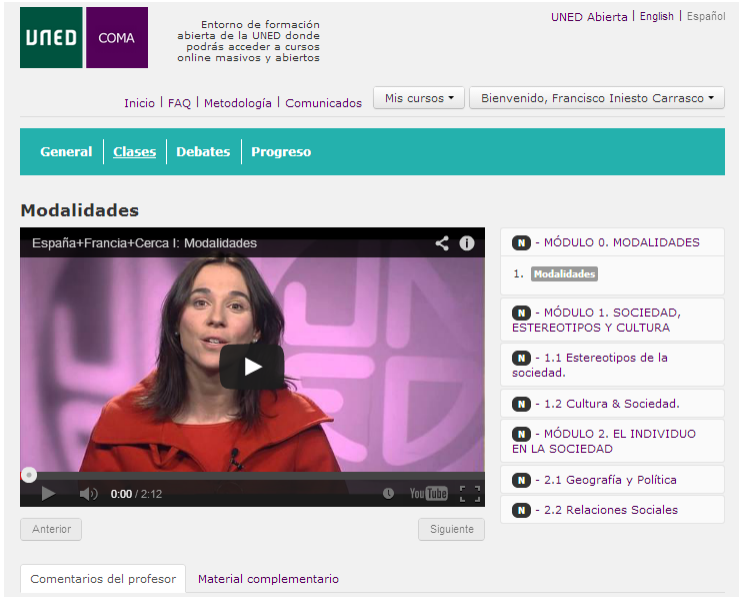
SortSite is a very comprehensive tool that not only allows to validate the accessibility of a Web page but also checks other aspects such as usability, SEO, browser compatibility, code errors, privacy and validation standards. Blind person simulator.

  - General Errors: Broken links, Server configuration, ASP, ASP.NET and PHP script errors, Internet RFCs
  - Compatibility: Internet Explorer, Firefox, Safari, Opera, Chrome, iOs, Android, BlackBerry
  - Privacidad: EU Privacy Regulations 2003
  - Search Guidelines: Google, Bing, Yahoo, Robots.txt, Search
  - Standards: W3C HTML/XHTML, W3C CSS Validation, W3C Style Guide, W3C Deprecated Features
  - Usability: W3C Best Practices

METHODOLOGY: *Evaluation through usability criteria and educational content*

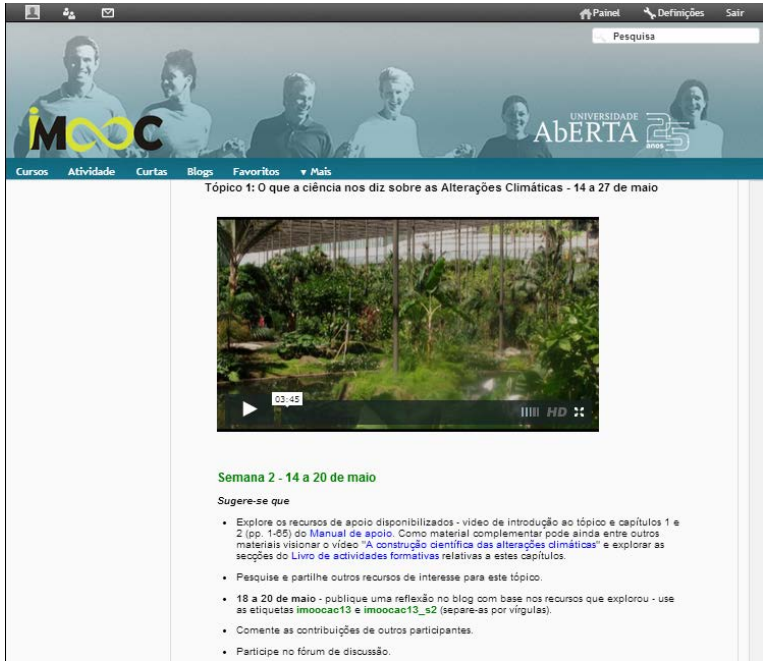
- Usability criteria: heuristic evaluation (present and future work)
  - Define user cases to evaluate a correct accessibility
  - Virtual users, scenarios
- Educational content evaluation :
  - Documents:
    - PDF, Word. Follow accessibility standards
  - Videos (pills)
    - Include subtitles. This subtitles should be embedded within the video
    - Sign Language Interpreter
    - Include alternative text to the video content. Textual description

A case study: UNED COMA and UAb iMOOC



- España + Francia + Cerca 1

- As alterações climáticas - or contexto das experiências de vida

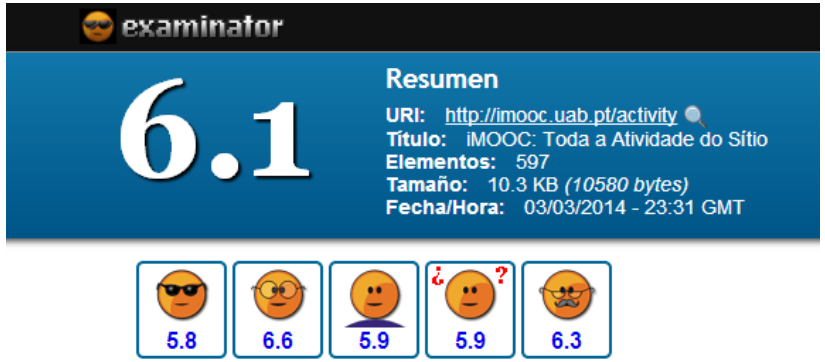


Evaluation through automatic accessibility tools

UNED COMA	Excelent	Regular	Bad	Very Bad	Score	Compliance
Beginning UNED COMA	7	1	3	2	6,6	53,8%
Methodology	7	2	0	1	7,7	70%
FAQ	7	0	3	2	6,8	58,3%
Communiques	7	2	2	2	6,7	53.8%
Course Beginning	7	1	4	3	5,9	46,6%
Debates	6	2	4	1	6,2	46,1%
Average Value					6,6	54.7%
UAb iMOOC						
Beginning UAb iMOOC	7	6	4	5	4,8	31,8%
Courses	8	3	1	4	5,8	50%
Activity	8	3	1	5	6,1	47%
FAQ	9	4	2	4	5,8	47,3%
Blogs	9	4	2	4	5,9	47,3%
Favorites	9	4	2	4	5,9	47,3%
Files	9	4	2	4	5,9	47,3%
Groups	9	3	3	3	6	50%
Members	9	3	2	3	6,2	52,9%
Average Value					5,8	41,5%

Evaluation through automatic accessibility tools

UNED COMA	totally blind	difficulty in seeing	members	Understanding	age
Beginning UNED COMA	7,2	6,4	6,9	5,7	6,5
Methodology	7,8	7,7	6,9	8,1	8,5
FAQ	7,4	6,5	6,5	6,5	7,1
Communiques	7,1	6,6	6,9	6,2	6,5
Course Beginning	6,5	5,7	5,8	5,3	6,0
Debates	6	6,5	6,6	5,8	6,1
UAb iMOOC					
Beginning UAb iMOOC	5	4,9	4,9	4,3	5
Courses	5,8	6,1	5,3	5,6	6,1
Activity	5,8	6,6	5,9	5,9	6,3
FAQ	5,7	6,1	5,9	5,4	5,9
Blogs	5,8	6,2	6,0	5,5	6,0
Favorites	5,8	6,2	6,0	5,5	6,0
Files	5,8	6,2	6,0	5,5	6,0
Groups	5,9	6,3	6,1	5,6	6,1
Inicio UAb iMOOC	6,2	6,5	6,1	5,8	6,3



Evaluation through automatic accessibility tools

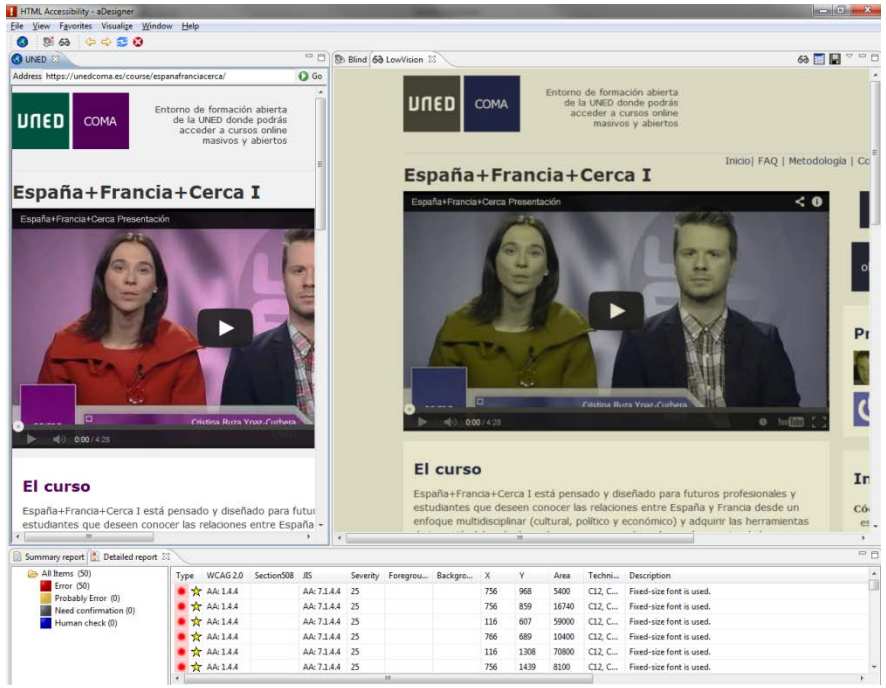
- Positive results
  - There are link elements for surfing.
  - Heading elements and attributes are used.
  - Elements to control the visual presentation are not used.
  - The main language of the page is identified with the code "en".
  - The page has a "title" element.
  - The forms have a send button.
  - The images have a textual alternative.

Evaluation through automatic accessibility tools

- Negative results
  - There are links with the same text but different destinations.
  - There are "iframe" without "title" elements.
  - The first link of the page does not take you to the main content of the page.
  - Absolute values are specified for the font size.
- UNED COMA
  - There are images without textual alternatives.
  - There are no links to leap blocks of content.
- UAb iMOOC
  - There are form controls without associated labels or a "title" attribute.
  - Text justified in the CSS is used.
  - The headings are not added correctly.

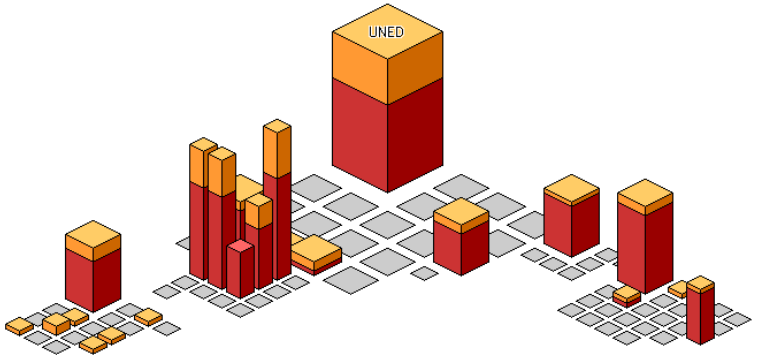
Evaluation through disability simulators

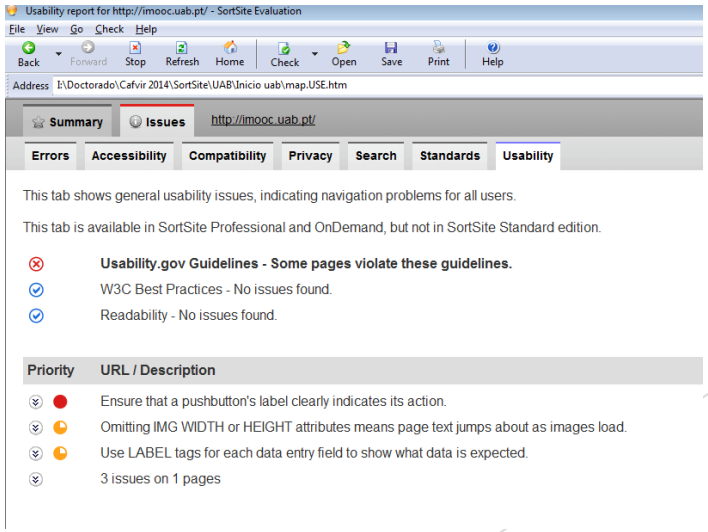
- Negative results
  - "iframe" element without title.
  - Use of redundant textual information
- UNED COMA
  - Imagines without the "alt" attribute.
  - The page has several "body\html" elements.
- UAb iMOOC
  - Lack of attribute or label to identify the form.
  - Avoid the use of implicit labels.



Evaluation through testing tools

- Negative results
  - Privacy and Electronic Communications Regulations 2003. Use of privacy with cookies
  - Bing and Google Guidelines.
  - Usability
    - Omitting IMG WIDTH or HEIGHT attributes means page text jumps about as images load
    - Use LABEL tags for each data entry field to show what data is expected
    - Use link text between 3 and 80 characters so it's long enough to be understood, but avoids line wrapping





METHODOLOGY: *Evaluation through usability criteria and educational content*

- Documents

	UNED COMA
Sans-serif style	No, Times New Roman
Visual hierarchy	Correct
Contrast	Correct, black and white
Underline	Correct
Adjust the sound volume	Correct
Text, symbols or pictures for auditory materials	Not provided
Images must be high resolution	No, low resolution
Graphs and tables with titles and abstracts	Not provided

- Videos

	UNED COMA	UAb iMOOC
Include subtitled	No	No
Sign Language Interpreter	No	No
Textual transcription	No, Videos in French only.	No

Conclusions of the study

- UNED COMA and UAb iMOOC are two innovative MOOC platforms in their respective countries
- Serious problems have been found in this collective accessing the education facilitated in this type of platform
- Both platforms obtain average results of between 5 and 6 which are very improvable
- Both platforms have different average values but none of them achieve values that could be considered reasonable (higher than 60%)
- Both in UNED COMA and in UAB iMOOC the lowest scores are related to the limitation in understanding
- In some cases, it is the home page of the course that suffers from critical accessibility problems. These pages are compulsory for any student to access and should be, conceptually, the first to be accessible

Present and future work

- Measuring the success rate of the students belonging to vulnerable groups
- The difficulty is how to make these results useful for each situation. How to show the information in a visual and friendly way?
- Provide additional accessibility related indicators to enrich OpenUpEd labelling
- How to provide minimum QA accessibility level for a platform?
- Usability criteria: define cases and virtual users and scenarios. Find more disability simulators

Thank you for your attention!

- Contact : finiesto@gmail.com