

Open Educational Resources in Higher Education: experimental study

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Abstract: *Over the past few years the need for the adoption of open educational resources in higher education has been growing. The Covid 19 pandemic has shown the gap for the creation and development of technology mediated learning on Higher Education.*

The curricular unit of Multimedia Technologies for eLearning of the Multimedia Engineering degree from the Instituto Superior de Tecnologias Avançadas (Lisbon, Portugal) was the chosen example for the promotion and development of this kind of content.

After defining the needs arising from the teaching-learning system of the 21st century we came to the conclusion that the video effect would be the widely adopted resource. Thinking about online video consumption to captivate the attention and motivate young students was part of this study.

In this article we have tried to give a brief approach to an experiment of a higher education institution that we hope has given, besides testimony, contributions to a design of proximity between Professors and Students.

Keywords: *E-learning; Open educational resources; Education; Audio-scripto-visual.*

I. Introduction

Online education has been growing over the last few years. The easier access to open education courses provided by formal educational institutions (e.g. Khan Academy, Stanford

Online), or by educational platforms with (or without) these educational providers (e.g. Udacity, edX, Coursera, FutureLearn) with a variety of course formats (from a few weeks to full degree courses) has proven to be a formula of success. The number of new users in these platforms has grown largely during the first stage of the covid-19 pandemic compared with the previous year [1].

In the case of Portugal, even before the pandemic, the Parliament made a new legislation which encouraged the development of new training opportunities in distance learning, regulating this educational offer (Decree-Law No 133/2019). This new law regulated and opened the access to the development of courses with at least 75% of the total ECTS (European Credit Transfer and Accumulation System) in distance learning for any Higher Educational Institution (HEI), when before, this distance learning offer, was mainly available in the Universidade Aberta (Portuguese Open University). This decree-law aims to graduate 50,000 people until 2030 [2], although it still is highly dependent on Universidade Aberta or in consortiums with this HEI.

Beyond Portugal, distance learning demand and offer is also increasing in the last few years. According to Eurostat (2022) [3] in 2021, 27% of EU citizens (between 16 and 74 years old) related that they did some form of online learning (through courses or online learning materials), having all countries (except Romania) increased the share of people doing online learning when compared to the period pre-pandemic. These numbers are more relevant in ages between 16 to 24 (the majority of students in high schools and higher education institutions), where 49% of people from this group age reported using online

learning materials during 2021. The European Commission has also various online resources (Projects and Online Platforms) to promote this way of learning, some of them used in schools and/or through Erasmus+ programme, such as the online platforms School Education Gateway, eTwinning, SALTO Youth and EPALE, or the EduHack and Mutual Open and Online Skills (MOOS) EU-funded projects.

With that being said it is recognized the importance and the growth of distance learning in various parts of the world, which also means a responsibility of educational institutions, academics and policy makers to be attentive to this problem and to provide quality online educational resources.

This paper thus intends to show the relevance of open educational resources for the promotion of distance and/or technology-mediated learning, with the example of the Multimedia Technologies for eLearning curricular unit from the Multimedia Engineering bachelor's degree in Instituto Superior de Tecnologias Avançadas (Lisbon, Portugal).

II. Open Educational Resources

Open Educational Resources (OER) is a relatively recent coined concept originally used in a conference hosted by UNESCO in 2002, where participants of the event defined it as “The open provision of educational resources, enabled by information and communication technologies, for consultation, use and adaptation by a community of users for non-commercial purposes” [4].

It was in fact one year before (2001) that MIT created the OpenCourseWare initiative, which aimed at creating new learning opportunities both for learners and educators. This initiative counts with a wide collection of Open Educational Resources (including complete courses) from thousands of MIT courses and motivated other universities to create their own OER repositories. OER Commons (2022, para. 3) [5] provides another definition for this concept driven by the notion that everyone should have access to high-quality educational resources., they add that “OER are educational materials (...) that save students and teachers money because they are free

to use, customize, and share.”, they can be “everything from a single lesson plan to an entire textbook” and offered through open licenses, making them easy to be personalized or refreshed with new and relevant content.

Although the OER definition is being refined through the years, the word “open” offers some doubts to various researchers like Sir John Daniels, Ed Walker and Stephen Downes (2005 and 2006 as cited in Downes, 2006) [6], although it appears to be free and shareable resources, sometimes it requires some sort of cost to the user (e.g. subscription fees, user registration) or although open to redistribute it may require attribution to the author when shared, to be non-commercial or to use the same creative commons license as the original resource, meaning that it might have no cost but it won't be entirely “without restrictions” [7].

Independently of these misunderstandings regarding the “open” concept, OER are indeed educational resources that are accessible, shareable and available for use and adaptation and that can be digital or not, although in this paper we opt to use the concept mainly for digital resources.

As mentioned before educational organizations have been working on this OER movement, by developing and sharing their educational resources to their students and educators but also outside their academic community. Some authors seek to identify relationships between the growth of OER and Massive Open Online Courses (MOOC). Dave Cormier created the term "MOOC" in 2008 to describe the connectivism and connective knowledge course (CCK08) taught by George Siemens and Stephen Downes, and since then several MOOC and related initiatives have been developed. Some of the most known platforms are usually supported by universities through agreements such as Coursera.org, Edx.org or FutureLearn.com, others are offered on their own like Stanford Online or Khan Academy. Both concepts (OER and MOOC) convey a notion of open learning and open knowledge through the development of open and shareable educational resources.

Also, taking in consideration the Portuguese legislation mentioned before, HEI are challenged

to create their own virtual campus, a technological system and infrastructure with pedagogical interaction functionalities, permanently accessible to all participants in the educational process, especially teachers and students, and complying with information security requirements [2].

In the same way, in Instituto Superior de Tecnologias Avançadas, we are working on the conception of a Virtual Campus through the development of Open Educational Resources.

III. Teaching in the 21st century

Teaching and learning in the 21st century requires new ways of motivation and specific strategies on the part of those involved in education. One of the challenges in education is the definition of technology solutions at the production and management of information and communication, which could enhance the learning experience.

The digital learning space has several inherent factors, resulting in the analysis and studies of user experience, as well as the creation of an algorithm that allows the user or the profile to be adapted along the learning process.

In the digital culture scenario, cyberspace stands as an environment that promotes distributed networks, multiple connections and collective intelligence, in addition to acting as a mediator between research, studies, socialization, leisure and consumption. Faced with the new social and cultural configurations exerted by digital technologies, it becomes urgent to analyze and promote new challenges concerning education. The researchers Li Yuan, Stephen Powell and Bill Olivier (2013) say that “the key opportunity for institutions is to take the concepts developed by the digital education experiment to date and use them to improve the quality of their face-to-face and online provision, and to open up access to higher education. Most importantly, the understanding gained should be used to inform diversification strategies including the development of new business models and pedagogic approaches that take full advantage of digital technologies” [8].

The high number of students requires, on the part of the teachers, a structuring and planning of programs at the level of the instructional design

that until then was not an important condition. Nathan Harden (2013) clarifies: “Technology will also bring future students an array of new choices about how to build and customize their educations. Power is shifting away from selective university admissions officers into the hands of educational consumers, who will soon have their choice of attending virtually any university in the world online”[9]. It is important to understand how to utilize information and communication technology wisely, which entails understanding the context in which contemporary technologies are embedded in addition to learning how to use a computer to search, assess, and exchange information (e.g. cybersecurity and intellectual property issues on the web).

Today, a fundamental prerequisite for teaching is to have gone through a long path of studies that goes from university, to specific training for a particular model of teaching, such as distance learning. Teacher preparation is fundamental to guarantee students a better level of schooling/learning, allowing them to be more effective. In other words, the teachers' post-initial training is extremely important. Advanced level educational activities must be well organized and planned in order to be successful. We just can't imagine improvising a class! Before "entering" the lesson, the teacher needs to organize it so that he or she is clear on what he or she intends to do and can make the most of the time available.

Branco & Brandão (2020) [10] add that the online classroom offers numerous opportunities for students and teachers, such as web-based learning environments. And enumerate seven benefits of this model:

Accessibility: online lessons can be accessed using a web browser from any computer or mobile device, without worrying about the type of platform.

Exposure: The online classroom provides access to a web-based learning programme for students. Online classroom presentation can help students go for other executive structure learning used in advanced education.

Paperless: teachers and students will not need to rearrange large amounts of paper as the online classroom is paperless. The moment teachers

transfer assignments and assessments to the classroom, students can finish assignments and assessments directly in the classroom and even keep the work to review later.

Time monetisation: as it is an online classroom, it is available either on mobile, computer or other devices, teachers and students can participate at any time and by any means, without having to leave their location, unlike the classic model that they would have to spend time travelling to the face-to-face classroom.

Communication: teachers and students can send messages, post on the web, send private comments on tasks and make a contribution to the work. Teachers are responsible for students' observations and publications.

Collaborative work: the online classroom offers students various approaches to cooperate. Teachers can foster online conversations within the classroom between students and create group work. In addition, students can meet on various online platforms, and analyse together the materials provided by the teacher.

Differentiation: teachers can undoubtedly recognise the most appropriate type of guidance for the whole class, however individual students or groups may need different guidance, with digital platforms it is very easy to provide specialised support in these situations.

IV. Content development for the Virtual Campus model

The creation of a concept for the development of content within a virtual campus emerges as a need to respond to the current challenges of higher education. Universities are facing new challenges: on one hand, the construction of this type of courses allows a greater disclosure and internationalization of the institution, on the other hand, the use of audio-scripto-visual elements is not a common practice in academies. The high number of students enrolled requires, from the teachers, a structuring and planning of the programs that was not a sine qua non situation until now.

In this sense, this model obeys a conceptualization of the reconfiguration of teaching from an "open education" perspective. However, and despite this need, the main goal of this case study is to

highlight the strategic options that in this context seem to better favor student-centered learning, as well as to share with the community the main findings and constraints. It should be understood as strategic options the approaches at the level of audio-script-visual resources, the formats and layouts adopted in the construction of a OER: the video elements that, abandoning the "talking heads" configuration, adopting closer shots and higher resolutions, necessarily gain more preponderance and effectiveness in the relationship with the audience; or for example, the layering of complementary resources that support and assist the learner who intends to broaden and deepen his knowledge.

In an attempt to parameterize these initiatives, guidelines were published by several institutions, including most of the distribution platforms of this type of courses, such as Coursera, university institutions present in these platforms, and even other non-governmental organizations that support research in education, such as EDUCAUSE. Such guidelines or recommendations were the main methodological foundation for the work developed.

V. Audio-scripto-visual role

Online video consumption is increasing in the late years, being this media one the most powerful and persuasive tool nowadays (we see that on social networks like Instagram, TikTok and Youtube). In two studies we found that viewers use tools like youtube for learning, Google (2017) [11] says 7 out of 10 users say they use the site to find solutions to issues related to their professions, academics, or hobbies, and Oxford Economics (2021) [12] reports that 93% of viewers say they frequently use Youtube to learn new things.

From early on, it was realized that video occupied a relevant space in computer-mediated distance learning. With the generalization of broadband Internet access, the number of users consuming videos from platforms such as YouTube has increased considerably. In OER video is substantially used with the intention of bringing the Teacher and the Student closer together. This motivational need is very clear to authors such as Lombard and Ditton (1997) [13], or by Dron and

Anderson (2007) [14], who tell us about establishing a sense of "presence" at a distance, indicating that the more ties between people involved, the higher the level of "presence" and involvement in the learning activity.

As researchers, we believe that video can establish the aforementioned link of "presence" by giving considerable "weight" to the figure of the teacher, without, however, neglecting to highlight the most significant concepts, expressions or words for the consolidation of learning. With the video a content-only area appears, as text (short phrases, expressions or words) of special relevance about what is being said and observed in the video.

Figure 1 shows an example of a so-called "curtain" that enters the video space to show concepts as they are verbalized.



Figure 1. Image taken from a video of the initiative in class.

We also consider that there are technical notes of special relevance, so we use high definition (HD) videos to better meet the highest standards. Moreover, as Vázquez (2013) [15] states, we must consider image quality (up to 1920 x 1080 pixels) and audio quality (AAC encoding with two 44.1 kHz channels).

Experience also places significant importance on other events and videographic configurations, such as the need to use 1 to 2 video cameras to distinguish moments of proximity and instill a greater scenic dynamic. We also consider it relevant to share the screen with other infographic elements of context, whether static or animated.

With this experience we intend to develop relevant contents in the scope of the educational instrumentalization of the videographic object as educational open content.

Also, the duration of the videos should be as long as a regular classroom, the content should be divided into smaller concepts, being each video no more than 8/10 minutes (with some exceptions if the video is a live streaming/conference, for example). And the language can be more informal and proximate, without being too colloquial.

It should be noted that the initiative under analysis is still in the development phase, however, with this initial action, it is expected to conceptualize a model that can support the development of future initiatives in this area, specifically, it will seek to assess the suitability of various strategies in the design of OER.

The goal will not be just to offer videos, but knowledge of interconnection, research and transfer of results between classes and where the audiovisual, ubiquitous and mobile format will be a priority.

VI. Conclusion

In this article we have tried to give a brief approach to an experiment of a higher education institution that we hope has given, besides testimony, contributions to a design of proximity between Professors and Students. When we address the issue of presence, the same term is also essential at the educational level.

Garrison, Anderson and Archer (2000) [16] argue that the results of deep and meaningful learning depend on three forms of presence: the "cognitive presence", which ensures a certain level of depth in the educational process; the "social presence", and, in a formal educational setting, the "teacher presence".

In the long term this project can broaden its formal and non-formal links with various partners and stakeholders in Higher Education. The goal will be to make the process of accessing educational resources open to young people, primarily to ensure fair and affordable access for the entire school community.

In this sense, the expected pedagogical, scientific, societal, technological, political and economic

impacts at local, regional and national levels would consist of meeting the needs of our target group and changing behavior in society (including changing educational policies on Higher Education).

With the development and respective success of the project we may develop an integrated project of sectoral knowledge and competences through the exchange of the methodologies and good practices of this initiative to foster and amplify the impact of the creation and application of open educational resources in Higher Education.

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