

AUDIOVISUAL PRODUCTION MOOCS: ANALYSIS OF ORGANIZATIONAL, CONTENT, AND METHODOLOGICAL CRITERIA

Teresa Gouveia^{1*}, Sónia Ferreira², Filomena Sobral³, Salomé Morais⁴

¹Prof. Dr., Politécnico de Viseu, Escola Superior de Educação, PORTUGAL, tgouveia@esev.ipv.pt

²Prof. Dr., Politécnico de Viseu, Escola Superior de Educação, PORTUGAL,
soniaferreira@esev.ipv.pt

³Prof. Dr., Politécnico de Viseu, Escola Superior de Educação, PORTUGAL, filomena@esev.ipv.pt

⁴Prof. Dr., Politécnico de Viseu – Escola Superior de Educação, PORTUGAL, salome@esev.ipv.pt

Abstract

The COVID-19 pandemic has imposed unprecedented changes and challenges to the ways of learning, teaching, and communicating within educational institutions. Prophylactic isolation measures, adopted globally, have discontinued face-to-face teaching and precipitated distance learning. This reality highlighted the importance of online courses as creative initiatives to overcome space and time constraints in a limited pedagogical context.

It was in this scope that the Project "Exploration of online methodologies in the development of competencies in the audiovisual area" emerged, proposing the creation of a Massive Open Online Course (MOOC) in the audiovisual area (from the idea to the final product) and the development of the online platform LOOP for the implementation and availability of this and other courses held afterward.

The project involves three Portuguese higher education institutions and one Spanish one, motivated to develop innovative proposals, both in research and education. Moreover, this network presents a diversity of training in degree courses, master's, and technological specialization programs, which allows us a privileged contact with the students and helps us establish priorities and needs.

This paper focuses on the survey and analysis, at the national and international level, of MOOCs dedicated to the themes of audiovisual production to expose parameters of both organizational and content scope. The methodological approach will be divided into two phases: a) identification of the criteria for analyzing courses through the literature review; b) and selection of the courses to be analyzed. This selection will be conducted through a database search, identifying the keywords in Portuguese, English, and Spanish: audiovisual online course; audiovisual free course; filmmaking course; scriptwriting course; video editing course; and other derivations. It is hoped to present a set of guidelines for developing the course related to the organization and the content.

Keywords: Education, MOOCs, Audiovisual Production, Research Project.

1. INTRODUCTION AND PROJECT PRESENTATION

In autonomous and active learning scenarios, Massive Open Online Courses (MOOCs) have raised great interest because they provide conditions for the creation of networks and virtual communities of open learning where interaction, sharing, and redistribution of knowledge are favored (Pedro & Baeta, 2016). The interest in this type of course seems to have gained special relevance in the pandemic context, which began

in March 2020 due to COVID-19, due to the fact that they are online courses, free and available to a large number of people (Riel & Lawless, 2015), and participants do not need to be enrolled or linked to an institution to attend them (Barrère et al., 2017). led many people to seek this type of training offer. This trend is corroborated by Silva, Accorsi & Munhoz (2020), who recorded a significant increase in the demand for free and online training since the first confinement began.

It is in this context that arises the project "Exploration of online methodologies in the development of skills in the audiovisual area" has as its main objectives to implement and explore active learning methodologies to combat school failure, as well as to promote the quality of training offered by the Polytechnic of Viseu (PV).

This is a funded project involving several Portuguese Higher Education Institutions (it was jointly promoted by the Polytechnics of Viseu, Guarda, and Leiria) and also has an international partner: the University of Salamanca. The team that integrates the project is multidisciplinary, highlighting the experience of the teachers involved in the areas of audiovisual production, design, multimedia, computer science, and programming, as well as the areas of education and pedagogical practice.

The pertinence in developing this project is justified for several reasons, among which we can highlight the absence of a platform to support the provision of online courses and free of charge in the PV, as well as the fact of having identified a limited supply, in Portuguese, of online courses in the audiovisual area that integrate content from the creation of the idea to the editing of an audiovisual product. Additionally, it should also be mentioned that this project has an important role in the sense that it seeks to respond to the challenges caused by the COVID-19 pandemic in the teaching/learning perspectives, the reason why it was selected for funding under the special support program of the PV.

Specifically, the objectives that are intended to be achieved are: (i) develop, test, and implement an online platform for the provision of free online courses; (ii) propose a free online training in the audiovisual area; (iii) establish privileged contacts with experts from the business and educational contexts in the area of audiovisual production; (iv) enable the development of skills for the production of an audiovisual project.

The project "Exploration of online methodologies in the development of skills in the audiovisual area" formally started in May 2021, with activities planned until December 2022. In the current phase of development, the tasks performed include the implementation of the LOOP platform, the development of the teaching materials, and the graphic elements for the dissemination of the course (Fig. 1).



Fig. 1. Proposal for LOOP platform logo.

In terms of course organization, four fundamental modules were considered, ranging from course presentation to the use of software for editing audiovisual content, as shown in Fig. 2.

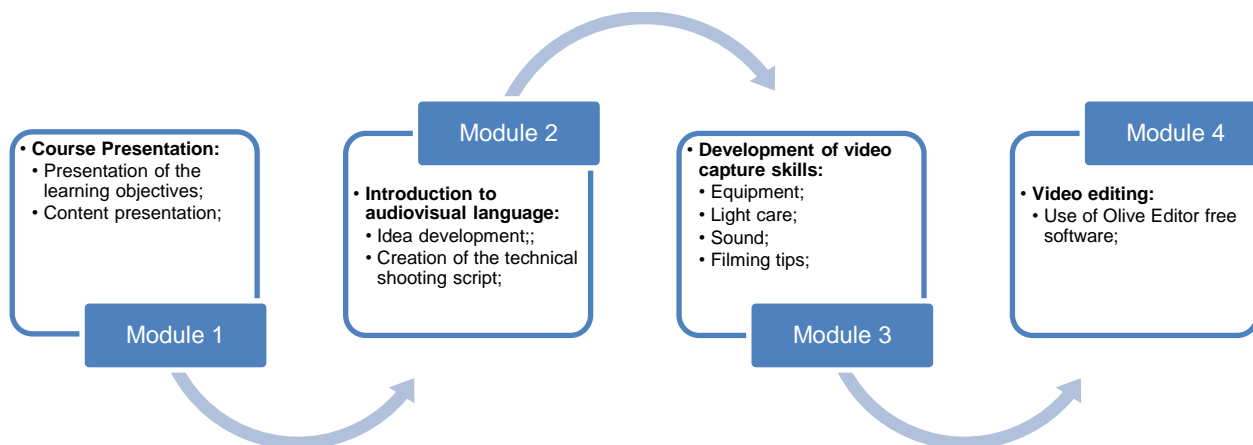


Fig. 2. Modules and course activities.

For the development of the course, it was essential to investigate organizational, content, and methodological aspects in order to base the options taken, so the results of this research will be presented in this article after a brief theoretical approach to MOOC in the next section.

2. BRIEF THEORETICAL APPROACH TO MASSIVE OPEN ONLINE COURSES

In recent times, digital transformation has occurred at an accelerated rate, affecting various sectors of activity, society in general, and the education segment. Faced with a positive connotation or a window of opportunity for learning, distance education has gone through several stages, knowing how to take advantage of technological changes for the benefit of its ability to adapt to the conjunctural context. Therefore, Massive Open Online Courses (MOOCs) emerged as an important online educational facility. They are free online courses accessible to those who want to enrich their knowledge in various areas. This type of online education offers a flexible way to access learning without a significant financial investment. Furthermore, students can learn new skills and approach educational expertise quality. In fact, this open educational provision is mainly associated with prominent academic environments that attract several interests. MOOCs have expanded the online learning landscape and carry enormous potential since they reach a large number of learners from all over the world as long as they dominate the language in which the course is offered. English remains the dominant language in MOOCs provision.

If we look back at the history of distance education, we realize, according to Liyanagunawardena (2015), that "distance education has a long history" (p. 35). The author states that "it has evolved with technology changes in the world from using postal services [...], through to using each new communication technology: radio, television, video recorders, home computing and the Internet" (Liyanagunawardena, 2015, p. 35). In fact, it is the potential of the internet, and its flexibility of use that "has supported the emergence of a new model dubbed a massive open online course or MOOC(s)" (Liyanagunawardena, 2015, p. 35). In conformity with Coelho, Teixeira, Nicolau, Caeiro, and Rocio (2015) "Massive Open Online Courses (MOOCs) were originated from the success of the now historical "An Introduction to AI" course designed by Sebastian Thrun and Peter Norvig at Stanford University in 2011" (p. 153). Nevertheless, Gaebel (2013) remembers that "MOOCs actually did not emerge in 2012, but have been developing successfully since 2008, with the clear purpose not only to provide more learning opportunities but also to improve the learning experience" (p.3). Indeed, the MOOC movement was started by Siemens and Downes, which resulted, in 2008, in the first MOOC on connectivism theory, but the MOOCs that achieved a greater reach began in the United States of America in 2011 by professors at Stanford University. Paul Kim (2015) talks about the MOOC revolution and refers to this educational opportunity as a catalyst for reimagining education. Though, Gaebel (2013) points out, referring to critic's remarks, that MOOCs aren't really revolutionary because "all their elements already existed beforehand. Even the combination of top research universities providing online courses to a larger number of students is not new" (p,9). However, this online model of learning involves motivation and technology-based teaching as also as a focused student experience.

Kim (2015) emphasizes that the emergence of MOOCs "has been a fast-growing trend over the past few years, receiving both high acclaim and criticism with respect to how it will change the education landscape" (p. vii). However, the focus must be on pedagogy and individual learning rather than on the technological apparatus.

According to the European Commission (2014), a MOOC is "an online course open to anyone without restrictions (free of charge and without a limit to attendance), usually structured around a set of learning goals in an area of study, which often runs over a specific period of time (with a beginning and end date) on an online platform which allows interactive possibilities (between peers or between students and instructors) that facilitate the creation of a learning community. As is the case for any online course, it provides some course materials and (self) assessment tools for independent studying" (p. 2).

Gaebel (2013) exposes that Massive Open Online Courses can be characterized as online courses with no formal entry requirement, no participation limit, free of charge, and do not earn credits. They are real courses with lectures, texts, videos, and exercises with a concrete duration but in full respect for the individual rhythm of availability. Downes (2015) claims that the four success factors for MOOCs are autonomy, diversity, openness, and interactivity. Based on literature review Coelho, Teixeira, Nicolau, Caeiro and Rocio (2015) indicate that there are two main types of MOOCs: connectivist and extended MOOCs. The first one focus "on the learning community and connections between members of the community across the web, rather than on course content or the instructor" (p. 153), and the second one is centered "on giving many students access to an online course within the same platform" (p. 153). The authors also argue that the learning style is different as well. In an extended MOOC, the individual studying is privileged, while in a connectivist MOOC, the focus is on "networked learning across several web tools and services" (p. 153), which means that the

key point of the extended MOOC is knowledge duplication, whereas connectivist MOOC underlines knowledge creation and generation. More recently, it is usually a new trend that stands out, particularly in Europe, that emphasizes the emergence of "hybrid approaches which try to mix the potential of open socially-driven learning with structured learning paths" (Coelho, Teixeira, Nicolau, Caeiro and Rocio, 2015, p. 153).

Still, despite critics or supporters, as it stands currently, it seems that MOOCs are an advantage since "knowledge has become a commodity in this context, especially within the international labor market" (Liyaganawardena, 2015, p. 38). Furthermore, Admiraal, Huisman, and Pilli (2015) underline that "In recent years, free access has been provided to content which previously had a price" (p. 207). Especially in the higher education context, this open online distance learning has quickly expanded, achieved recognition, and has grown in significant ways. MOOCs have great potential and can provide literacy on various subjects to numerous individuals since there is a wide variety of MOOCs.

As reported by Wahid, Ahmi, and Alam (2020), MOOCs "are an important approach for achieving UNESCO's aim of open and accessible education" (p. 292). The authors recall that education is a human right and emphasize that "massive open online courses (MOOCs) are an important tool whereby digital technology may be used to enhance access to quality education and lifelong learning opportunities for all" (p. 293). Moreover, as mentioned by Wahid, Ahmi, and Alam (2020), these courses "have been a popular research topic—rapidly developing, while inspiring new approaches, innovations, assessments, and discussions" (p. 293). As stated by Siemens (2013), massive open online courses "are a continuation of the trend in innovation, experimentation and the use of technology initiated by distance and online teaching, to offer learning opportunities in a massive way" (p. 5).

As we saw, MOOCs came to be commonly accepted by universities around the world, and higher education institutions must be prepared to promote the quality of education and integrate new models of access to knowledge. Mesquita and Peres (2015) listed several benefits of MOOCs for the institutions involved, such as being consistent with institutional goals, allowing institutional exposure and positioning, serving current students, attracting new students, being ready for learning evolution, and representing opportunities for research. In Mesquita and Peres (2015) opinions, MOOCs capitalize on the strengths of individuals and encourages participation, connection, sharing, and collaboration.

In Portugal, there are several successful experiences with MOOCs in higher education institutions, demonstrating that, as in other countries, there is space and willingness to integrate pedagogical experiences that represent innovation and present potential. Therefore, it is our belief that MOOCs can play an important role as an educational resource in the digital environment as it becomes obvious that we are currently experiencing significant changes in the ways we learn and communicate. We must look into all-new learning possibilities as a constructive knowledge opportunity and educational improvement perspective. Thus, sharing several authors' opinions stating that the best way to know what a MOOC is to make one, this text focuses on the presentation of a pedagogical experience that took the form of a MOOC.

3. METHODOLOGICAL APPROACH

The survey of the parameters related to "organization," "content," and "methodological aspects" to implement in the course *Da Ideia ao Produto Final* required the segmentation of the methodological procedure into two phases: a) literature review to identify the criteria for analysis of courses; and b) the selection of free online courses.

It was used as a basis for the work of literature research on the criteria for the evaluation of courses based on the concepts adopted by Behar et al. (2009), Zancanaro et al. (2016), and Bastos (2016) (Table 1). The parameters related to the organization of the courses allow analyzing if the planning and structure are presented, the existence of a defined and objective pedagogical proposal - that allows the student to get used to the environment and planning, if the schedule is sequential, if there are flexibility of the space and time of realization of the course, clearly defined objectives, understand the roles of users, and if the course has accreditation, allowing access to a certificate upon compliance with requirements. It is of interest here to understand which requirements and if there is a payment associated only with the certificate. Regarding the content of the courses, it is of interest to understand if there is a tendency for them to be conceptual and factual, i.e., presented directly for the transmission of content; attitudinal and procedural - focused on the development of competencies, skills, and abilities; present innovative and creative material considering the references of distance learning; if the material is interactive; and if it integrates various media, i.e., more than two resources and tools. The parameter dedicated to methodological aspects allows studying if the relationship between content and objectives is clear if the didactic sequence is easily perceptible and if it is

possible to understand the evaluation systematics adopted.

Courses selection (Table 2) was carried out through searches on already recognized teaching platforms and free Google search identifying the following keywords in Portuguese, English, and Spanish: audiovisual online course; audiovisual free course; filmmaking course; scriptwriting course; video editing course; and other derivations. A total of 27 courses were identified. However, the following were excluded: i) courses with no access during the month of May. Several presented expired access to some elements, namely to tasks or video classes; ii) the paid ones since the analysis required in this article requires access to the course materials and payment would not be feasible; and iii) the courses available in the same platform, i.e., even if the University/Institution/education platform makes available several courses within this area, only one will be analyzed. It was noticed that all of them followed the same organization, dynamics, methodology, and type of content and media. Thus, a set of 7 courses was selected, a number considered sufficient for the purposes of the analysis. This phase of analysis was carried out in May 2022.

Table 1. Criteria for courses analyzing

General items	Items	Authors
Organization	Provides course planning and structure	Behar et al. (2009)
	A pedagogical proposal is defined and objective	Behar et al. (2009)
	The schedule is presented in a sequential manner	Behar et al. (2009)
	Space and time are systematized to allow for flexibility / Allows for the definition of course start and end dates.	Behar et al (2009) e Zancanaro et al. (2016)
	Learning objectives clearly presented	Behar et al. (2009)
	Roles of the subjects presented and defined	Behar et al. (2009)
	Offers the possibility of certification at the end of the course	Zancanaro et al. (2016)
Contents	Conceptual and factual content	Behar et al. (2009); Bastos (2016)
	Attitudinal and procedural content	Behar et al. (2009); Bastos (2016)
	Innovative and creative material	Behar et al. (2009); Bastos (2016)
	Interactive material	Behar et al. (2009); Bastos (2016)
	Integrates various media	Behar et al. (2009); Bastos (2016)
Methodological aspects	A clear relationship between content and objectives	Behar et al. (2009); Bastos (2016)
	Clear didactic sequence	Behar et al. (2009); Bastos (2016)

4. ONLINE COURSES: ORGANIZATIONAL, CONTENT, AND METHODOLOGICAL ASPECTS

As previously mentioned, the analysis of similar courses will allow presenting a set of important recommendations for the development of the course *From Idea to Final Product*, developed within the project *Exploration of online methodologies in the development of skills in the audiovisual area*. Table 2 summarises the study.

Table 2. Courses

Itens/cursos	1	2	3	4	5	6	7
Structure	√	√	√	√	√	√	√
Pedagogical proposal	√	√	√	√	X	√	√
Schedule	√	√	X	√	X	√	√
Place and time	√	√	√	√	√	√	√
Learning objectives	√	√	√	√	X	√	√
Roles of the subjects	√	√	X	√	√	√	√
Certificate	√	√	√	√	√	√	√
Conceptual and factual content	√	√	√	√	√	√	√
Attitudinal and procedural content	√	√	√	√	√	√	√
Innovative and Creative material	X	√	X	X	X	√	√
Interactive material	X	√	X	X	X	√	√
Integrates various media	X	√	X	X	X	√	√
A clear relationship between content and objectives	√	√	√	√	X	√	√
Clear didactic sequence	√	√	√	√	√	√	√
Defined assessment	√	√	√	√	X	√	√

1 – Iniciação à Produção de Vídeo | 2 – Produção e Edição de vídeos | 3 – Linguagem Audiovisual |
4 – Montagem Audiovisual | 5 – Cinema Audiovisual | 6 – Comunicação Audiovisual desde tu smarphone
7 – Introducción a la Producción Audiovisual

The course *Iniciação à Produção e Vídeo* is provided by WR Educational - Education of Excellence (<https://www.wreducacional.com.br/curso-de-introducao-de-como-fazer-um-video>), free, online and with a certificate valid in Brazil. Before registering and logging in, the user has access to the course description, an informative summary that presents the relevance of video production in communication and marketing, the teaching methodology, advantages, objectives, programmatic content, a list of study material, and information on access to the certificate. It should be noted that the list of study materials only gives access to the title of the materials; it does not reveal which media will be used, that is, the form of presentation of the contents. At the moment of matriculation, it is possible to choose the workload between 10, 20, or 30 hours, with the programmatic content being adapted. The content is conceptual, factual, attitudinal, and procedural. It is based on the use of reference authors but does not present innovative and creative material; there is no collective interaction or communication, and the only resource used is text. There is a clear relationship between the content and objectives and a perceptible sequence of these. Assessment is by means of a 10-question multiple-choice test, with a pass in 6 questions being required to issue a certificate. This has an associated cost.

Produção e Edição de Vídeos (<https://www.udemy.com/course/producao-e-edicao-de-videos-voce-editor-profissional/>) is a course administered on the Udemy platform whose objectives, schedule, structure, requirements, pedagogical proposal, and evaluation are presented clearly and objectively right on the access page. The course is optimized so that it can be taken through mobile devices or on television and the total access is lifelong, with an associated cost. Regarding content and methodology, it presents 25 thematic sections, divided into 60 lessons organized in a sequential but flexible and perceptible manner, with 9.5 hours of video and five downloadable resources. Eight classes are dedicated to practical activities - final project, with monitoring and interaction with the instructor. The student also has access to the certificate of

conclusion upon completion of the final project.

The organization of the *Linguagem Audiovisual* course, provided by the Brazilian Association of Online Education - ABILENE (<https://www.cursosabeline.com.br/curso/gratis/linguagem-audiovisual>), presents a clearly defined structure, objectives, and pedagogical proposal. The schedule is visible from the sequence of contents, not explicitly, and the student can navigate freely through the course modules and with flexibility/freedom of time. The course is accredited, and access to the certificate is only possible after a 60% pass on the test and the payment of a fee. The certificate of completion can be used to "complete hours in extra-curricular activities required in colleges, count as activities in public competitions or simply appear in your CV" (ABELINE, 2022, online).

The programmatic content is organized into seven modules, the last of which is dedicated to bibliographical references to support the study. They are conceptual and factual and focused on the development of competencies in the area. However, they are not presented in a creative and innovative way, do not allow interaction, and are not in the form of various media, only textual. The contents are coherent with the objectives proposed by the course and are presented sequentially. The assessment to obtain the certificate is made in the form of multiple-choice questions and may be repeated.

The course *Montagem Audiovisual* (<https://www.pensarcursos.com.br/curso/montagem-audiovisual>) is offered by the Pensar Cursos platform (member of the Brazilian Association of Distance Education), presents in its organization the existence of a clear structure, specified objectives, and a defined pedagogical proposal. In addition, it clarifies the target audience and the inexistence of prerequisites. The student can access and study autonomously and at any time from a computer or mobile phone. The certificate is valid in Brazil for activities such as company assessments, master's and doctoral selections, and public competitions, among others. If you do not achieve the percentage, you can repeat the assessment. The certificate has a cost associated with the administrative fee. The contents are organized into ten modules, which the student can choose from without having to follow an inflexible sequence. A progress timeline is visible where the student interacts with a completed class rating button. The contents are presented in text form only. In case of doubt, the student can send any questions via the form. The assessment for obtaining the certificate assumes that all modules have been read - evidence through marking on the progress schedule and that the student answers a set of 10 multiple-choice questions, with a minimum mark of 60%.

Cinema Audiovisual is a free online course managed by ESCON Online Courses School (<https://cursosesccon.com.br/curso/654>). Before enrolling in the course, the platform provides information on the area of application - Arts, workload - from 8 to 280 hours, according to the student's choice, brief contextualization of the course, content, and access to the certificate. There is no explicit schedule nor presentation of the general or specific objectives. Looking at the course after enrolment, the study materials are available divided into four modules (choosing the 280 hours at the time of enrolment), in text format only. The contents are of conceptual, factual, attitudinal, and procedural nature. The platform provides a set of online video lectures and seminars, but outside the course page, not necessarily related to the chosen course. If necessary, the student can request help by online chat on the page, telephone, email, or WhatsApp. It is not explicit whether the type of help is related to the course/content or about the platform.

The course *Comunicación audiovisual Desde tu smartphone*, promoted by the Pontificia Universidad Javerinana and Google via the edX platform (<https://www.classcentral.com/course/comunicacion-audiovisual>), presents the structure, pedagogical proposal, objectives, information about the certificate and space and time - estimated four weeks, 2 or 3 hours per week, from the moment of enrolment, clearly on the page.

After enrolling, the student has access to the course contents, divided into ten modules, presented in an innovative, creative, and visually very attractive way, in the form of various media - text, video, and video with interactivity, and which allow interactivity on the part of the student. The content is conceptual and factual and focuses on the development of skills and competencies. At the beginning of each module, the objectives are presented. There is a clear didactic sequence presented at the beginning of the course and before enrolment. The platform also provides a set of tabs for monitoring student progress, dates, discussion forum, navigation guide, and timeline. Each module features an assessment task for access to the certificate of completion, but the student only has access upon payment. In addition, this payment also gives full access to the content and materials after the completion date.

Analyzing the course *Introducción a la Producción Audiovisual*, administered by the Universidad Nacional Autónoma de México via Coursera (<https://www.classcentral.com/course/intro-produccion-audiovisual-9357>), it can be seen that the platform provides tabs with information about the objectives, instructors, syllabus,

evaluations carried out by students about the course, enrolment options and a set of FAQ. In addition, it clarifies that it takes place 100% online, the deadlines are flexible - according to the student's availability, it needs approximately 23 hours to complete the study, it is administered in Spanish, for beginner's level and with access to a certificate after completion, although it is not clear how to access it. After registering, the student has access to the course materials, organized by five weeks and with information on the objectives of each module, an estimate of the time required to read and watch the videos, the number of tasks, and the test. When viewing the video, the student has access to its content also in text.

This course is unique from the ones analyzed in this article, which presents a peer evaluation space where colleagues can evaluate the tasks shared by the students. The accreditation of the course and access to the certificate is possible by meeting the criteria established in each module, being in the form of tests, tasks, and peer evaluation activities.

5. FINAL CONSIDERATIONS

Recovering the initial objective of this study, to present a set of guidelines for the development of the course *From Idea to Final Product*, the analysis of the organization, content, and methodological aspects of the courses within the same area allows us to conclude that there is a clear tendency for all items related to the organization and methodological approach to be clearly presented. Regarding content, the results suggest an obvious tendency for them to be of a conceptual and factual, attitudinal and procedural nature. However, the same is not true with regard to the study material, which is mostly presented only in text format and does not allow interactivity. Three platforms integrate more than two different media, and only one presents interactive material.

Considering the analysis, it is left as recommendations for the development of the course *From Idea to Final Product*:

- i) Clarify the organization, specifying the structure, the pedagogical proposal, the schedule, space and time approaching dedication to the study, general objectives of the course and of each module, roles of the intervenient, and access and accreditation of the certificate;
- ii) Present contents/study materials of conceptual and factual nature that promote the development of competencies, capacities, and skills. Despite the results and since this is a course in the audiovisual area, it is our intention that the modules of the course *From Idea to Final Product* also include video study material;
- iii) Methodologically, to present an explicit relation between contents and objectives, to make the didactic sequence and the evaluation process evident.

It is important to mention that the application of these recommendations will be conditioned on the platform implementation software, which is also under development within the scope of the same project.

6. ACKNOWLEDGEMENT

This work is funded by Polytechnic of Viseu – Special call 2: Projects that aim to implement active learning methodologies. Furthermore, we would like to thank the Centre for Studies in Education and Innovation (CI&DEI) and School of Education for their support.

REFERENCE LIST

- ABELINE. (2022). Sobre a Abeline. Retrieved from <https://www.cursosabeline.com.br/pagina/sobre-a-abeline>
- Admiraal, W., Huisman, B. & Pilli, O. (2015). Assessment in Massive Open Online Courses. *The Electronic Journal of e-Learning*, Vol. 13 Issue 4, 207-216.
- Barrère, E., Coelho, J., & Camponez, L. (2017). Methodological aspects and of gamification in a MOOC about digital technologies to the mathematics teaching. *Educação Matemática Debate*, 1(2), 173-196. DOI: <https://doi.org/10.24116/emd25266136v1n22017a04>
- Coelho, J., Teixeira, A., Nicolau, P., Caeiro, S. & Rocio, V. (2015). iMOOC on Climate Change: Evaluation of a Massive Open Online Learning Pilot Experience. *International Review of Research in Open and*

Distributed Learning, 16(6), 152–173. <https://doi.org/10.19173/irrodl.v16i6.2160>

- Downes, S. (2015). The quality of Massive Open Online Courses. In Badrul H. Khan, Mohamed Ally (eds.), *International Handbook of E-Learning Volume 1: Theoretical Perspectives and Research*. New York: Routledge, 65-78.
- European Commission (2014). *Report on Web Skills Survey: Support Services to Foster Web Talent in Europe by Encouraging the use of MOOCs Focused on web Talent—First Interim Report*. <https://docplayer.net/16172204-Report-on-web-skills-survey.html>
- Gaebel, M. (2013). *MOOCs – Massive Open Online Courses*. Occasional papers. Brussels: European University Association, 1-17.
- Kim, P. (ed.) (2015). *Massive Open Online Courses*. New York: Routledge.
- Liyanagunawardena, T. R. (2015). Massive Open Online Courses. *Humanities*, 4, 35-41. <https://doi.org/10.3390/h4010035>
- Mesquita, A. & Peres, P. (eds.) (2015). *Furthering Higher Education Possibilities through Massive Open Online Courses*. Hershey, PA: IGI Global.
- Pedro, N. & Baeta, P. (2016). MOOC desenvolvidos no ensino superior português: um estudo descritivo em torno de modelos pedagógicos, estratégias de funcionamento, mecanismos de avaliação e taxas de sucesso. *Indagatio Didactica*, vol. 8 (5), dezembro 2016. ISSN: 1647-3582
- Riel, J. & Lawless, K. (2015). Massive Open Online Courses (MOOCs) and the Technologies That Support Learning with Them. *Encyclopedia of Information Science and Technology*, 3, 7529-1537. DOI: 10.4018/978-1-4666-5888-2.ch741
- Siemens, G. (2013). Massive Open Online Courses: Innovation in Education? In R. McGreal, R. Kinuthia, W. Marshall, S., & McNamara, T. (Eds.), *Open Educational Resources: Innovation, Research and Practice* (pp. 5-15). Athabasca, Canada: Athabasca University Press. <http://oasis.col.org/handle/11599/486>
- Silva, J., Accorsi, M. & Munhoz, E. (2020). O impacto do distanciamento social nos cursos abertos e massivos sob a perspectiva da procura e oferta. In *Atas do XVII Congresso Brasileiro de Ensino Superior a Distância (ESUD 2020) e VI Congresso Internacional de Educação Superior a Distância (CIESUD 2020)*, Online (9 a 13 de novembro), 1-12. <https://esud2020.ciar.ufg.br/wp-content/anais-esud/210262.pdf>
- Wahid, R., Ahmi, A. & Alam, A. (2020). Growth and Collaboration in Massive Open Online Courses: A Bibliometric Analysis. *International Review of Research in Open and Distributed Learning*, 21(4), 292–322. <https://doi.org/10.19173/irrodl.v21i4.4693>