Evaluation of a Prototype Media Literacy sMOOC by an Expert Panel

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Abstract. MOOCs are an emerging phenomenon in online education. There has been little investigation into the diversity of typologies within this new mode of teaching. This has grown significantly both in formal and informal educational settings. Despite the increasing number of research studies on teaching through MOOCs, various typologies like sMOOCs have received scant investigation. An sMOOC is a type of online course that operates based on the use of social media or the coordination of multiple social media utilized as a virtual learning environment. In other words, an sMOOC appropriates social media for educational purposes. The research presented in this article is part of a broader Educational Design Research (EDR) study of MOOCs aimed at promoting media literacy, within the social context of networked information disorder commonly referred to as misinformation or fake news. This article presents the establishment of the expert panel for the EDR approach and the evaluation conducted by the panel on the instructional resources of the sMOOC designed for media literacy.

Keywords: Educational Design Research, Expert Panel, sMOOC, Media literacy

1 Introduction

Educational Design Research (EDR), also known as design-based research or design experiments, is a methodology that is conducive to educational research focused on innovation or contemporary issues because it is structured around an interplay between theorization and practice. EDR investigations can be described as applied studies - they intervene either at the theoretical level or in the creation of a prototype (product or program). Research using EDR typically uses this methodology as a strategy for addressing issues related to educational technologies, as it continuously evaluates and revises the effectiveness of strategies through testing phases or cycles of iteration [1] [2].

According to Plomp [3], research in EDR is characterized by being: a) interventionist - the research aims to intervene in real-world problems; b) interactive - the research, as a design, is developed through a cyclical approach of evaluating and revising the artifact; c) process-oriented - the focus is on understanding and improving interventions; d) utilitarian - the effectiveness of the artifact is partly determined by users in

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real-world contexts; e) theoretically oriented - the design is based on theoretical reflection, and testing the artifact is a process that also contributes to theoretical reflection. Thus, EDR research follows phases of iteration to refine the prototype.

The initial assumption of the research was that the development of information and communication technologies has brought a new perspective to online education, which has been relatively understudied in the field of education. This is particularly relevant with the rise of social media and the large-scale provision of online educational platforms independent of formal educational institutions through Massive Open Online Courses (MOOCs). The sMOOC (Social MOOC), developed through the integration of social media (WhatsApp and Instagram), was created based on the concept of non-formal education as a lifelong media literacy offering to address misinformation processes on social networks.

The research was conducted in three phases: Phase 1 (literature review and development of the sMOOC prototype); Phase 2 (validation of the prototype by a panel of experts); and Phase 3 (implementation in a real-world context and refinement of the final prototype). All three phases of the research have been completed. The main objective of this article is to present the results of Phase 2, which aimed to establish indicators to understand what the characteristics of a media literacy sMOOC are, based on the evaluation conducted by a panel of experts. The following questions were developed to address this research objective: Q01 What characteristics should the sMOOC program have to be effective in promoting media literacy? Q02 How should the media literacy sMOOC be designed and managed?

MOOCs are a relatively new form of education, and therefore their subcategories have not been the subject of as much research as they could be. The sMOOC typology, which is even more specific than MOOCs in general, has received limited study. In this case, the design of this typology and the understanding of its dimensions (technological, social, operational, and pedagogical) gain greater reliability by engaging in dialogue with experts in the field of information and communication technology in education [4] [5].

The focus of this investigation was the pedagogical dimensions. The other dimensions are approached considering that the investigative field of education is, par excellence, an interdisciplinary and transdisciplinary field. Therefore, the sMOOC framework can be understood as the confluence of the four dimensions proposed in this study.

The sMOOC was designed for the Brazilian cultural reality, focusing on recent events in which misinformation affected the political and social situation of the country. The age group most interested in the sMOOC modality is 18-30 years old, which supports the sMOOC approach as conducive to lifelong education [6]. The goal of the sMOOC was to promote media literacy in the context of information disorder. Thus, the course was promoted during the height of the debates surrounding the presidential elections in the second half of 2022. This period was characterized by the intense spread of misinformation through social networks. The course materials and curriculum were written in Portuguese; therefore, the pre-selected experts had to understand the Portuguese language and the Brazilian reality

2 Data collection and analysis

The sMOOC evaluation form (https://forms.gle/RWCEBgDJmC5Yre3m7) consisted of three sections and was administered online using Google Forms. The first section was designed to collect general information about the experts (name, affiliated institution, degrees, and role at the affiliated institution). The second section aimed to evaluate the sMOOC prototype in terms of the four dimensions for which it was designed (pedagogical, social, operational, and technical). A Likert scale with six response options ranging from very negative to very positive was used, with a unique code for all questions: 1. MN (strongly disagree); 2. N (disagree); 3. R- (moderately disagree); 4. R+ (moderately agree; 5. P (agree); 6. MP (strongly agree. The dimensions analyzed are pedagogical, social, operational, and technical.

The third part of the questionnaire was designed to obtain the coefficient of knowledge of the panel of experts. The questions were mostly binary (yes or no), with examples requested if the answer was positive. At the end of the questionnaire, the experts were asked for final feedback on the sMOOC prototype.

The questionnaire was developed based on the five most common parameters of the Delphi technique for the evaluation and validation of sMOOC courses (selection and composition of the expert panel, number of experts, quality of the panel, iterative process in rounds, criteria to consider for the finalization of the process in terms of consensus and stability) [7] [8].

Before selecting the experts, a screening process was conducted to select potential panel participants. Following the parameters of the Delphi technique [7] [8], the following criteria were outlined to select the experts: I) hold a Ph.D. degree; II) teach at the university level in the areas of communication and education and/or education and technologies; III) have published articles in the last 5 years on one or more of the intersecting topics of this research (media literacy, e-learning, MOOC, misinformation, and information disorder); IV) understand the Portuguese language and Brazilian culture. This last criterion was included because the sMOOC was aimed at Brazilian citizens and all materials were written entirely in Portuguese.

A search was conducted in databases of Brazilian and Portuguese universities to preselect the participating experts based on curriculum and publications, according to the pre-established criteria. In addition, a search was conducted in education and communication journals, as well as research groups and collectives involved in media education actions where researchers/university professors are active. This resulted in 100 potential research participants who met the pre-established criteria.

The coefficient *k* was used after receiving the responses from the experts. The index is denoted by *k* and is calculated as the average of two quantitative indicators:

$$k=½(kc+ka)$$

Kc is a measure of the level of knowledge about the topic under study and Ka is a measure of the sources of argumentation.

Table 1. Indicators and related values of Ka.

Source of argumentation	Low	Half	High
Theoretical analysis carried out by you	0,10	0,20	0,30
Your experience gained from your practical activity	0,20	0,40	0,50
Study of work on the subject (national authors)	0,05	0,05	0,05
Study of work on the subject (foreign authors)	0,05	0,05	0,05
Your own knowledge about the status of the problem abroad	0,05	0,05	0,05
Your intuition on the topic addressed.	0,05	0,05	0,05

A minimum response rate of 10 - 30 was required for the study to be viable, according to the parameters of Delphi technique research [9] [7] [8]. All participants who responded to the questionnaire are university professors from Brazil, Portugal, and Spain, the majority of whom are involved in teaching activities, followed by research and university administration. The values previously established were a) $0.8 < K < 1.0$ as high competence; b) $0.5 < K < 0.8$ as medium competence; and c) $K < 0.5$ as low competence. The experts' Ka had an average score of 0.9 (High competence). The questionnaire was sent to 100 previously selected experts and 10 responses were received. The experts formed a panel with a knowledge coefficient score of 0,875 (high competence).

3 Results: Evaluation of sMOOc by experts

The four dimensions were evaluated, resulting in 18 indicators. 8 indicators from the pedagogical dimension, 4 from the technological dimension, 3 from the operational dimension, and 3 from the social dimension.

Table 2. Dimensions and their indicators

Dimension	Indicator
Pedagogical Dimension	1. The variety of resources as a facilitator of content understanding.
	2. Resources are clear and relevant.
	3. Combining social media with Google Classroom is motivating to learn.
	4. The activities are motivating and innovative.
	Variety of types of activities.
	6. Layout of content is clear and adequate.
	7. The content is appropriate to develop media literacy.
	8. The content is easy to comprehend.
Technological Dimension	9. Easy to use and easy to navigate.
	10. Easy to understand technical features.
	11. Accessibility & Usability.
	12. sMOOC's flexibility
Operational Dimension	13. The sMOOC Global Design.
	14. The sMOOC functionality.
	15. The information for students.

Social Dimension	16. sMOOC to enable student social media interaction. 17. Discuss and develop active citizenship using social media. 18. The sMOOC expands the discussion of media literacy beyond the group of students.

The sMOOC received a positive overall rating based on mean scores and standard deviations.

Table 3. Average evaluation and standard deviation made by the experts

Dimensions	M	SD
Pedagogical Dimension	4,83	0,99
Technological Dimension	4,75	1,24
Operational Dimension	4,83	1,02
Social Dimension	4,50	1,38

The global evaluation was positive (>3.0), indicating that it was not necessary to make such profound structural changes to the sMOOC design. However, as a pedagogical tool, improvement is always necessary.

We compared two similar variables from two different dimensions (pedagogical and technological) based on the experts' evaluation. We understand that in terms of the ease of understanding both the content and the technology involved in the operation of the sMOOC, the evaluators realized that both dimensions are easy for students to understand.

The positive assessment is evident not only in the mean values (Table 3) but also in the position of the experts in the scatter plot (see fig. 3, fig. 4). Indicator 9 of the technological dimension received a slightly more positive assessment than indicator 8 of the pedagogical dimension.

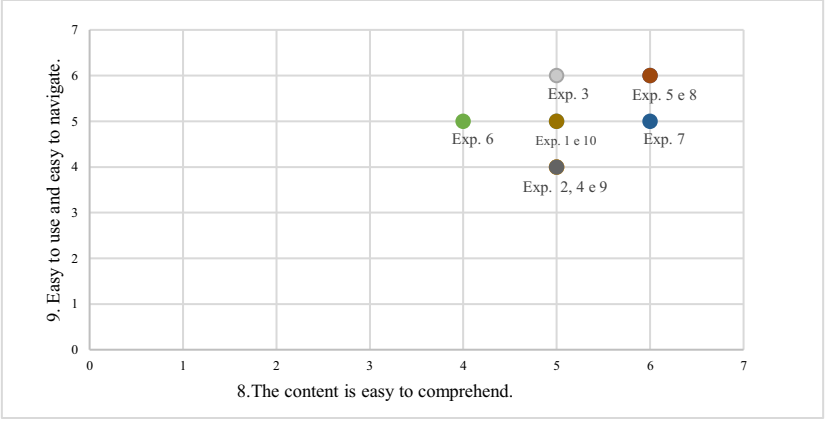

Fig. 1. Easy to understand (pedagogical dimension vs. technological dimension)

All the items evaluated in the technological, operational, and social dimensions were correlated with some items in the pedagogical dimension to make a comparative analysis and to be able to triangulate the data.

The comparative analysis of means and standard deviations showed that the social dimension received the lowest score (M=4.5\ SD=1.38), specifically the item corresponding to indicator 17 (Discuss and develop active citizenship using social media.). Based on this observation, we analyzed that the indicators correlated to indicator 17 also received the worst scores in their respective dimensions.

Table 4. Indicators with the lowest scores

Indicators	Dimensions	M	SD
17	Social	4,10	1,66
3	Pedagogical	4,50	1,18
11	Technological	4,40	1,43
14	Operational	4,70	1,16

The integration of social media with content and the engagement of students with social media is one of the key factors for sMOOCs. The operational dimension reflects how the pedagogical dimension relates to the technological dimension. A comparative analysis was made of indicator 17 (social dimension) with indicators 3 (pedagogical dimension) and 11 (technological dimension).

This comparative analysis shows that the evaluation of indicators 3, 11 and 17 is proportional in both positive and negative ways. In the final opinion, 6 out of 10 experts mentioned the need to "strengthen interaction strategies between participants and instructor, and among participants themselves, considering small group tasks, interaction between groups, and peer feedback processes. Also, consider the possibility of online publication as an open resource for some work, with appropriate supervision by the instructor, and analyze its impact on the target audience". Of the 6 comments, 5 emphasized the quality of the sMOOC and the importance of the initiative. Experts 1, 4, and 9 caught our attention because they fall into the negative aspect of assessing Indicator 17 (social dimension).

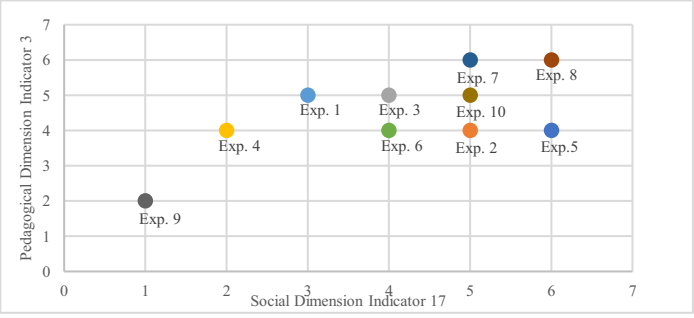

Fig. 2. Social dimension (indicator 17) vs. pedagogical dimension (indicator 3)

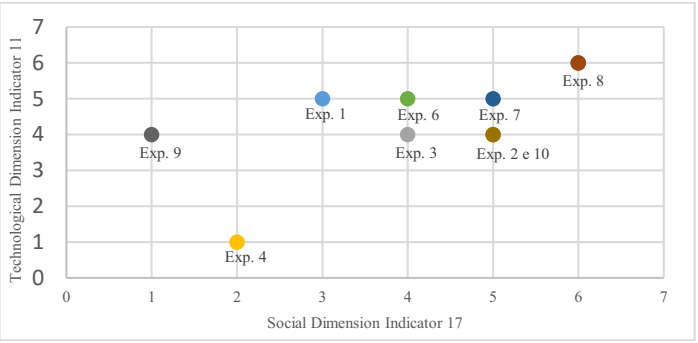

Fig. 3. Social dimension (indicator 17) vs. technological dimension (indicator 11)

Expert 1's evaluation of indicator 17 (social dimension) in comparison with the related indicators 3 and 11 shows a variation of 2 points, with the pedagogical and technological dimensions having the second highest positive evaluation (5 points). Expert 4 rates only indicator 3 (pedagogical dimension) as positive (4 points), while the social and technological dimension indicators have the lowest ratings (2 and 1). Expert 9, on the other hand, has the opposite evaluation to the others, giving a negative evaluation to indicator 3 (pedagogical dimension) (2 points) and a positive evaluation to indicator 11 (technological dimension) (4 points).

These differences gave us a basis for making decisions to change some aspects of the sMOOC prototype. From the analysis of indicator 3, the changes in the pedagogical dimension were related to the articulation of social media and Google Classroom to be more motivating for the student's learning. Also, Instagram Live was replaced by a closed videoconference session for students with one guest per week to discuss the weekly topic (2 journalists, 1 lawyer specialized in social media, and 1 teacher working on a citizenship project using social media).

Table 5. sMOOC's Second Media Literacy Program (After Expert Evaluation)

Media Literacy Levels	Unit	Session	Modality
Level 1 (L1) Accesses and uses	1. The Circulation of Information	1. (Opening) Who are my target internet audience?	Online Conference (Live - Google Meet)
		2. Information, entertainment, and consumption: what are my uses for social media?	Virtual learning environment (VLE) Instagram, WhatsApp, and Google Classroom
Level 2 (L2) Comprehension, Analysis and Assessment	2.The Selection and Analysis of Information	3. Can disinformation be a public health problem? Types of information that circulate on networks.	Online Conference (Live - Google Meet)

		4. What are the processes for checking information?	Virtual learning environment (VLE) Instagram, WhatsApp, and Google Classroom
Level 3 (L3) Participation and Production	3. Freedom of Expression and Democracy in Networks	5. What is the relationship between freedom of expression and internet legislation?	Online Conference (Live - Google Meet)
		6. Do I have citizen communication on social media?	Virtual learning environment (VLE) Instagram, WhatsApp, and Google Classroom
	4. Social networks and the promotion of citizenship	7. The citizenship promotion potential of social networks: how to build a project?	Virtual learning environment (VLE) Instagram, WhatsApp, and Google Classroom
		8. (Closing) What projects do we create? Presentation of projects.	Online Conference (Live - Google Meet)

In the technological dimension (indicator 11), more links and information about technical procedures were added to improve the students' perception of the accessibility and usability of the sMOOC. In the Social dimension (Indicator 17), more interaction activities among the student group and sharing activities with the external community on social networks were added to generate an active citizenship movement on social media.

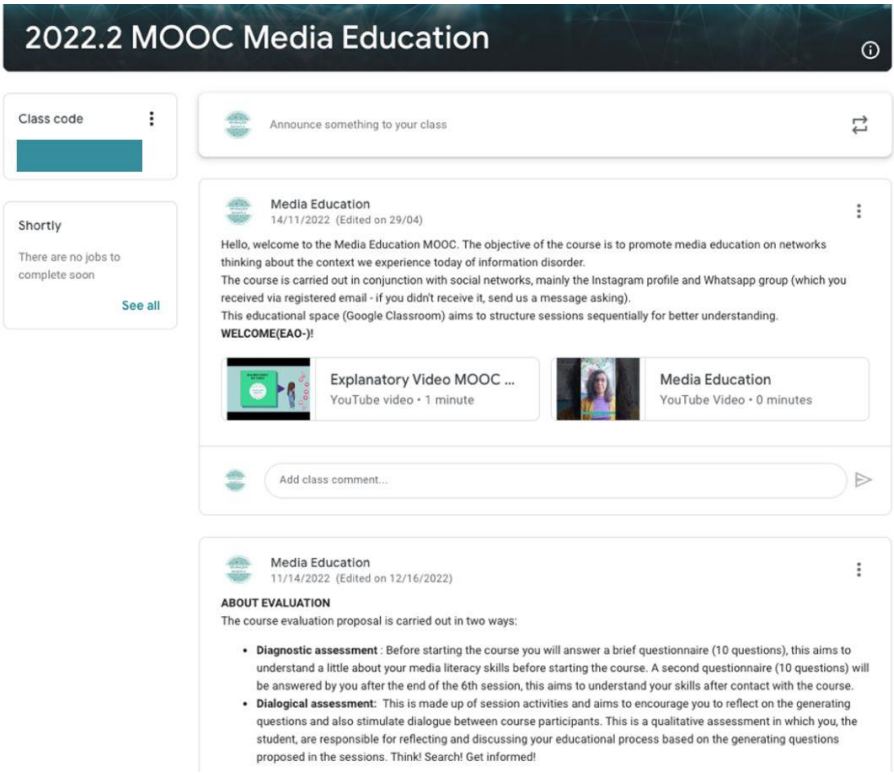

Fig. 4. The sMOOC page in Google Classroom.

In terms of technological and operational dimensions, Google Classroom was used as a centralizer of content, and WhatsApp as a mobilizer to engage students, allowing faster and more direct contact between them and the tutor. Instagram was used as a mediator between the course, its students, and society. An instructional video was also created to explain the integration of social media into the course and the use of Instagram.

4 Final consideration

The planning of the EDR phases included a contingency plan (step 5) in which the prototype would be re-evaluated if the average score was below 3.0. Thus, if the level of agreement was not reached, the prototype would be reformulated and re-evaluated.

With this research, it was possible to understand the processes of EDR when it is necessary to form a panel of experts to contribute to future research using this methodology.

The formation of the panel of evaluators made it possible to understand the characteristics of the sMOOC in a systematized way and how best to manage it through the

articulation of social media to promote active citizenship movements with media literacy learning.

It should be noted that after the sMOOC was evaluated by the panel of experts, it was tested in a real educational situation where it underwent a new evaluation by the students and a final reformulation.

RDE uses a variety of methods to formulate a systematic design process. Thus, the data processed here are evidence to understand how and why the design formulation process took place in research where design formulation is the means and the end of the research, in a context that involves collaboration and dialogue with researchers in the same field.

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References

1. Campbell, A.: Design-based research principles for successful peer tutoring on social media, International Journal of Mathematical Education in Science and Technology, **50**(7), 1024-1036 (2019).
2. Tinoca, L., Piedade, J., Santos, S., Pedro, A., Gomes, S.: Design-Based Research in the Educational Field: A Systematic Literature Review. Educ. Sci, **22**(12), 410-420 (2022).
3. Plomp, T. Educational Design Research: An Introduction In: Akker, J. van den, Bannan, B., Kelly, A.E., Nieveen, N., & Plomp, T. (eds.), Educational Design Research – Part A: Introduction. pp.22 – 42. SLO, Netherlands (2013).
4. Calvo, S., Lyon, F., Morales, A. Wade, J.: Educating at Scale for Sustainable Development and Social Enterprise Growth: The Impact of Online Learning and a Massive Open Online Course (MOOC). Sustainability, **12**(1), 3247 (2020).
5. Carmo, H., Carmo, T.: Value of Massive Open Online Course (MOOC) in Citizenship Education. Inclusão Social, **10**(1), 33-48 (2016).
6. Simões, D., Barbosa, B., Pinto, C.: Perfil e percepções dos potenciais participantes num MOOC. Arquivos Analíticos de Políticas Educativas, **25**(32), 25-30 (2017).
7. Gómez, L. E.: El método Delphi en la investigación actual en educación: una revisión teórica y metodológica. Educación XX1, **21**(1), 17-40 (2018).

8. Marques, J., Freits, D.: The delphi method: characterization and potentialities for educational research. Pro-Posições **29**(2), 389-415 (2018).
9. Bond, M., Marín, V. I., Bedenlier, S.: International Collaboration in the Field of Educational Research: A Delphi Study. Journal of New Approaches in Educational Research, **10**(2), 190-213 (2021).