

EVALUATION CRITERIA OF MASSIVE OPEN ONLINE COURSES

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ABSTRACT

Over the past decades, distance learning has become an increasingly popular way of acquiring knowledge. It resulted into the emergence of Massive Open Online Courses (MOOCs) that has provided a starting point for their active use in the education system. The recent global pandemic caused by the coronavirus disease has accelerated the development of distance learning, leading to an urgent need to evaluate the effectiveness and impact of MOOCs. Therefore, given that MOOCs are already being actively used as a new model of learning, and their importance in future education has only increased, the aim of the study is to identify optimal evaluation criteria for MOOCs in order to critically assess these courses and affect their quality level. In this paper, the author reviews the theoretical research using content analysis and formulates essential criteria for evaluating MOOCs, which can be used in the future for developing a more comprehensive quality assurance protocol. The criteria include curriculum organisation, teaching quality, methodology, technical aspects, motivation and culture, layout, evaluation, and recognition. The author emphasises the importance of MOOC evaluation and suggests that more practical research could help to determine more precise evaluation criteria for specific courses. Overall, this paper highlights the significance of MOOCs in future education and the need for critical evaluation to ensure their effectiveness in providing high-quality learning experiences for participants.

Keywords: *criteria, distance education, evaluation, Massive Open Online Courses, professional development.*

Introduction

The rapid development of information technologies over the past decades has resulted in the emergence of distance learning, which allows one to acquire knowledge from various fields and educational institutions located in any country. Furthermore, due to biological and social factors, such as the global pandemic of the coronavirus infection COVID-19 in December 2019, the distance learning process began to develop more intensively (Li & Lalani, 2020). An unprecedented pandemic crisis had a noticeable impact on the entire society, including the educational system. The relevance of the paper is justified by the fact that a series of recent events has provided a starting point for

the popularisation of Massive Open Online Courses (MOOCs) worldwide, including author's country of origin Latvia. This learning model is a modern and efficient opportunity for teachers to develop professionally.

According to the author's opinion, MOOCs can be a cost-effective and resource-effective supplement to traditional teacher professional development methods. MOOCs provide an affordable and flexible method for learning new skills, advance a career, and deliver high-quality educational experiences at scale. The adoption of open courses and open educational strategies is considered as a priority by the European Union in order to achieve the goal of universal education and professional development, which will promote competitiveness and growth among different specialists (European Commission, 2013).

A large number of MOOCs have been created by the world's top universities, including Harvard, Stanford, and the Massachusetts Institute of Technology, significantly raising the profile of this field. MOOCs are available on several online platforms, including "edX", "Coursera", and "FutureLearn". Massive Open Online Courses have been heralded as the democratisation of education due to the ability of anyone with a computer to participate in courses offered by these universities and many other academic institutions (Hollands & Tirthali, 2014). This has enabled students to gain knowledge from the top educational establishments, which was previously impossible. Furthermore, MOOCs have the potential to be more engaging than traditional lectures. For instance, they can use interactive multimedia, simulations, and games to engage students, thus increasing their motivation and enthusiasm for learning. Moreover, unlike traditional lectures, which are typically delivered to hundreds of students, MOOCs have no such limit and can potentially face the audience of tens of thousands of students. There are an increasing number of reasons for taking such courses, ranging from university-mandated ones to professional development and self-interested courses (Hew & Cheung, 2014).

Being widely recognised as a new form of online education, MOOCs were first introduced in 2008 and developed into a popular method of learning in 2012. In the next two years MOOCs were recommended for professional development in various fields (Vivian et al., 2014) including additional education of teachers (Koutsodimou & Jimoyiannis, 2015). In Latvia, MOOCs started to become popularised only in the last three years (Roze, 2021; Kultūras informācijas sistēmu centrs, 2021). In order to comprehend how successful, high-quality, understandable, and accessible this model of learning is, it is necessary to conduct a critical evaluation of these courses alongside with the rapidly growing interest in MOOC education.

The research problem is related to the fact that currently little is known about the methods used to assess MOOCs, in addition, the research data is limited, particularly in the context of Latvia. As the field of MOOCs is still relatively new, there is still much research that needs to be done to develop and validate effective evaluation criteria. Peer review and discussion forums are currently the main techniques that are available to give course participants feedback in the majority of MOOCs. This method involves asking participants in the MOOC to review and comment on the assignments of other students. It is also the most affordable strategy because, unlike mixed models, it does not require

hiring a large group of support instructors (Qian et al., 2017). The author of the paper believes that evaluating MOOCs effectively is vital to ensure the delivery of high-quality courses considering their increasing popularity. However, it is also important to consider their low completion rates, which amount to 7–10% according to the recent studies (Fu et al., 2021).

Answering to the research question, this theoretical study examines what the optimal criteria for evaluating the Massive Open Online Courses for professional development of teachers are. Therefore, the aim of the paper is to analyse the evaluation criteria for Massive Open Online Courses and to present the most important ones that should be considered while designing, implementing, and evaluating MOOCs, which will be helpful for teachers, course developers, and education policymakers. It is achieved using content analysis method of theoretical literature on the topic in order to review available criteria used to assess MOOCs. In the future, it will be possible to use this paper in practical research for development of a MOOC evaluation protocol or creating authentic Massive Open Online Courses.

Methodology

The available theoretical literature on MOOC evaluation criteria was examined using a systematic approach in this study. The research involved a content analysis method, which is widely used for systematic, objective, and quantitative analysis and interpretation of communication messages (Krippendorff, 2013).

The sample used in this study consisted of relevant research articles and reports specifically focused on MOOC evaluation criteria. To ensure a comprehensive analysis, the study utilised multiple databases, including PRIMO, Eurostat, IEEE Xplore, and the Google Scholar search engine. The analysis was restricted to articles published between 2013 and 2022 in English and Latvian languages. The keywords used in the search were “MOOC evaluation criteria”, “MOOC assessment”, “MOOC quality”, and “evaluation of MOOCs”.

To identify and extract relevant information, each article was carefully read multiple times. This process allowed for the collection of definitions of MOOC evaluation criteria, evaluation frameworks, and assessment methods used in evaluating MOOCs. The extracted data provided the foundation for the analysis and identification of the eight basic quality assurance criteria for evaluating the effectiveness of MOOCs.

Evaluation criteria for Massive Open Online Courses

The aim of MOOC assessment is to create effective evaluation criteria that identify performance indicators and course characteristics. The author of the paper contends that to achieve this objective, it is necessary to first understand the purpose of the specific MOOC, which aids in determining which aspects of the course must be evaluated and establishing the criteria for measuring its success. Any training programme, including MOOCs, requires structured evaluation to identify weaknesses, examine performance,

and assess outcomes. The data collected is gradually analysed to identify areas for improvement that can enhance the course quality.

Conducting research on various theoretical sources, mainly including “Massive Open Online Courses (MOOC) Evaluation Methods: Protocol for a Systematic Review” by Foley et al. (2019), “Understanding Learners’ Perception of MOOCs Based on Review Data Analysis Using Deep Learning and Sentiment Analysis” by Xieling et al. (2022), “Learner Engagement, Retention and Success: why Size Matters in Massive Open Online Courses (MOOCs)” by Padilla Rodriguez et al. (2019) and “Challenges and Opportunities for Effective Assessments Within a Quality Assurance Framework for MOOCs” by Xiao et al. (2019) has resulted into the identification of eight basic and prevalent quality assurance criteria that can be applied to evaluate the effectiveness of MOOCs. By using these criteria for MOOC evaluation, institutions can ensure that their courses meet high standards of quality, effectiveness, and impact, and that they provide meaningful learning experiences for their students:

- 1) curriculum organisation;
- 2) quality of teaching;
- 3) methodology;
- 4) technical aspects;
- 5) motivation and culture;
- 6) layout;
- 7) evaluation;
- 8) recognition.

Each of the eight basic quality assurance criteria for MOOC evaluation has several subsections that provide additional specificity and detail to help with the evaluation process. These subsections, in author’s opinion, may differ depending on the specific MOOC being evaluated. All of them will be described further below.

Curriculum organisation

MOOC course content organisation can include points such as relevance of materials to the course subject, topicality, provision of different ways of work organisation, and usefulness of courses.

In order to determine the relevance of the curriculum to the course topic, the course vision must be clearly defined. For example, if the objective of the course is to improve teachers’ digital skills, this should be stated so that it is possible to assess whether the MOOC is working towards this vision or not.

MOOC content should be updated to reflect the most recent research findings on the topic. Particularly in the context of today’s changing educational conditions, such as the implementation of teaching reform in schools, the pandemic crisis, and teacher shortages, which all lead to gradual or even rapid changes in the educational process. Checking whether a MOOC course has been accredited by a leading expert, for example, can ensure that the information in it is up to date (Xiao et al., 2019).

In this case, the course's usefulness is defined as an opportunity for MOOC participants to not only broaden their knowledge, but also to apply it in practise in their daily work, thereby facilitating their work routine and keeping up with innovations.

Other sub-points that are important to consider regarding MOOC content are:

- correct description of the MOOC's goals and tasks;
- MOOC week/total student workload;
- clear explanation of the results to be achieved;
- compliance of MOOC learning results with the requirements of the European Qualifications Framework (EQF)/Latvian Qualifications Framework (LQF) and employer's needs;
- determination of the evaluation system: tools, description, evaluation criteria, and scale (Yousef et al., 2014).

In addition to the points mentioned above, the language and style of the MOOC course content should be considered. The language used should be clear, concise, and simple enough for the target audience to understand. It is also critical to ensure that the course content is presented in an engaging and interactive manner in order to keep the learners' interest and attention throughout the course. It is also critical to ensure that all learners, including those with disabilities or learning difficulties, can access the course content. This can be accomplished through the use of captions for videos, accessible fonts and colour schemes, and alternative text for images and other visual elements (Xieling, 2022).

Author of the paper advises considering time frames for tasks and MOOCs in total when organising the course curriculum. The appropriate duration of a full MOOC is a complex issue that depends on a variety of course design and content factors. Depending on the course's objectives and learning outcomes, the length of a MOOC can range from a few hours to several weeks or months. Moreover, Massive Open Online Courses are well-known for adaptability, which allows to accommodate learners' varying schedules and time constraints. The majority of MOOCs offer modules for self-paced learning, enabling learners to finish the course within a flexible timeframe that is most suitable for their individual needs (Breslow et al., 2013).

Several studies have been conducted to determine the optimal length of MOOCs. The most appropriate length of a MOOC according to one of the research projects is approximately three weeks with an average of two to three teaching hours per week (Padilla Rodriguez et al., 2020). According to the study, MOOCs that are too short may not provide enough depth of content, whereas courses that are too long may result in learner fatigue and high dropout rates. Another study published in the *International Review of Research in Open and Distributed Learning* discovered that shorter MOOCs are more likely to be completed by learners (Liyaganunawardena et al., 2013). According to the results of the research, MOOCs that are three weeks in length are more likely to result in higher completion rates.

In general, the appropriate length of a MOOC course is a multifaceted issue that does not have a single, definitive answer. Nonetheless, based on research, it appears that

MOOCs that last for around three weeks and require two to three hours of learning time per week may lead to greater rates of both engagement and completion. However, it is crucial to recognise that this recommendation may differ depending on the unique needs and preferences of individual learners and the subject matter being taught.

Finally, in order to meet nowadays' requirements, MOOC learning content should be modern, meaningful, well-structured and have optimal length. Therefore, curriculum organisation is one of the aspects that is directly related to the formation of teaching quality.

Quality of teaching

Massive Open Online Courses often lack traditional and regular interactions between teachers and students, making the quality of teaching especially important. The quality of teaching in MOOCs encompasses several factors, including teaching competence, theoretical and practical knowledge, learning experience, and communication skills.

To ensure the quality of the material presented, MOOC instructors should be qualified and experienced in the field. Factors such as the instructor's level of education, degree, number of publications, teaching and online education experience, as well as personal qualities that are relevant to teaching MOOCs, for instance, good presentation skills, proficiency in English, and articulation required for video lectures, are all important considerations (Xiao et al., 2019; Yepes-Baldó et al., 2016).

Recent research has emphasised the importance of incorporating social learning and collaboration opportunities into MOOCs in order to improve the learning experience (Padilla Rodriguez et al., 2020). Collaborative activities such as group projects, online discussions, and peer-to-peer assessments can help to foster a sense of community and provide opportunities for learners to share knowledge and feedback with their peers.

Furthermore, latest studies have emphasised the significance of personalised learning in MOOCs (Kizilcec et al., 2017). Personalised learning involves adapting the course content and delivery to individual learners' needs and preferences. This can be achieved by implementing adaptive learning technologies, personalised feedback, and personalised learning paths.

In addition to having the necessary qualifications and experience, a skilled MOOC instructor must be capable of selecting or developing the most appropriate MOOC methodology. This requires a thorough understanding of the course content, as well as the ability to deliver it in a way that engages and motivates learners. In author's opinion, a well-designed MOOC methodology is a significant aspect to improve learning outcomes and ensure that students have a positive learning experience.

Methodology

In the development of Massive Open Online Courses, the methods used are heavily influenced by the target audience, necessitating prior research into the needs, expectations, and age range of potential course participants. The involvement of a diverse group

of individuals with knowledge and experience from various fields, including academics, practitioners, and policymakers, is considered advantageous in the creation of MOOCs (Costello et al., 2018).

A student-centred approach is deemed the most appropriate teaching method in MOOCs, as highlighted by Yepes-Baldó et al. (2016). In addition to that author of the paper highly recommends the integration of social presence. According to Arbaugh and Benbunan-Fich (2007), the sense of a real human presence in digital interactions involves the degree to which individuals in a virtual environment feel connected to each other. The use of such strategies as icebreakers, introductions, and online discussions, can enhance the social presence of students in the course, leading to increased engagement and satisfaction (Nasir, 2020).

When implementing a student-centred approach in MOOCs, it is important to consider several key aspects. These include respecting the diversity of student needs by providing appropriate learning methods, utilizing different ways of implementing the programme, using diverse pedagogical methods according to the circumstances, supporting students and encouraging their independence, ensuring mutual respect between the course participants and the instructor, and establishing an opportunity for students to submit their questions and feedback (ESF project, 2017). Author of the paper believes that the use of online tools can easily facilitate the last aspect, making it crucial for MOOCs to have good technical support.

Technical aspects

In the context of MOOCs, the technical aspect is a critical factor for course success. It encompasses several components, including the user interface, video content, learning and social tools, technical performance, platform connectivity, and accessibility. To ensure the highest quality of learning curriculum, it is essential to only use licensed materials, and if necessary, obtain permission from the author to publish the materials (Miao et al., 2019).

In designing a MOOC, the user interface must be simple, intuitive, and appealing to potential course participants. The interface should be easily accessible from both the web and mobile app. Videos are a particularly effective medium for reflective learning, and their professional creation is recommended. To enhance learner engagement and retention, videos should be short, concise, and unique, with a recommended duration of 5–10 minutes (Yepes-Baldó et al., 2016).

Communication is a vital component of MOOCs, and the use of social media tools or a communication platform is necessary. Social media networks are also useful for MOOC promotion and updates. MOOCs must be compatible with a broad range of operating systems, including Android, Linux, Apple iOS, Microsoft Windows, and other smart devices, such as desktops, tablets, and smartphones. The course should also be accessible both online and offline to ensure all students have equal opportunity for participation (Foley et al., 2019).

In author's opinion, in order to provide high-quality MOOCs, the technical aspects should be carefully considered and regularly updated. While technical performance and connectivity are critical, course providers should also strive to make the courses accessible to all learners. According to Foley et al. (2019), this includes making the platform compatible with assistive technologies for individuals with disabilities and ensuring that the course is available in multiple languages to accommodate learners from diverse linguistic backgrounds.

Prior to release, a MOOC must undergo thorough testing to ensure the technical component is functioning as expected. The course material must be error-free and function without issue, as technical difficulties may lead to reduced motivation to continue learning in the course.

Motivation and culture

In the context of MOOCs, creating a motivating and inclusive learning environment is crucial for encouraging course participation and success. This can involve implementing reward systems, presenting engaging and enjoyable content, and avoiding discrimination based on factors such as origin, race, gender, religion, or beliefs. Additionally, personal or social circumstances should not pose restrictions on MOOC participation. While a lack of prior knowledge or formal education should not be considered a barrier to entry, it is important to note that some MOOCs, such as those designed for teacher professional development, may require certain levels of education or experience (Yepes-Baldó et al., 2016).

In addition, personalised learning has been shown to have a positive effect on learners' motivation and engagement in MOOCs, according to research conducted by Kizilcec et al. (2017). In particular, MOOCs that offer personalised learning paths and adaptive assessments have been found to improve learners' motivation, satisfaction, and achievement.

Collaborative learning, which involves the use of discussion forums, group projects, and other social interaction tools to facilitate learner engagement and knowledge sharing, is another important aspect of motivation. MOOCs that incorporate social interaction, peer assessment, and team-based projects have been shown in studies of Pursel et al. (2016). The results presented higher levels of learning, completion rates, and learner satisfaction. Collaborative learning also allows students to form social networks and gain support from their peers, which is especially beneficial for students who are studying independently.

Finally, to attract and retain potential MOOC participants, it is significant to ensure that the course is presented in an interesting and engaging manner, with an individualised style and easy-to-understand materials. Thus, the evaluation criteria for a MOOC should include these factors as well.

Layout

This criterion includes the course's visual design, effective presentation, a modern course manual, and an individual style. Author of the paper contends that a well-designed layout can help learners navigate the course materials more easily, find relevant information quickly, and enhance their overall learning experience. While developing a layout for the MOOC, the use of clear and consistent headings and subheadings, the organisation of course materials into logical and digestible chunks, and the use of visual aids, such as images, videos, and diagrams, must be considered. A promotional video for the course may be created in order to heighten the interest of potential course participants. Before beginning the course, it is necessary to conduct a survey of the participants to determine their preferences and adjust the MOOC content to the students' needs.

After completing the MOOC, it is critical to solicit feedback from participants in order to determine what can be improved in the future. It is recommended that a feedback form be created for this purpose, which should include:

- overall MOOC impression and satisfaction;
- feedback on teaching practice;
- feedback on types of work;
- feedback on the technical implementation of MOOCs (Yepes-Baldó et al., 2016; Yousef et al., 2014).

Course participants, on the other hand, should be given the opportunity to evaluate not only the MOOC after completion, but also their progress and level of mastery of the material after each course module and after completing the entire course.

Evaluation

In the evaluation of MOOCs, assessing learning progress is a crucial criterion that can be achieved through various online assessment methods, such as peer assessment, self-assessment, and examination. Studies suggest that the use of multiple evaluation methods in MOOCs can enhance the learning experience by making it more engaging and effective for students (Xiao et al., 2019). For instance, peer assessment can promote students' critical thinking and evaluation skills as they provide feedback on their peers' work. Similarly, self-assessment can enhance students' self-awareness and metacognitive skills as they reflect on their learning progress and identify areas for improvement. A self-assessment form can be designed to rate participants' knowledge for each learning objective on a scale of 1 to 10, with "1" indicating poor knowledge and "10" indicating expert-level knowledge. Alternatively, participants can enter "N/S" (Not Stated) if they perceive the learning objective as irrelevant to their field of work (Yepes-Baldó et al., 2016).

Several MOOCs also incorporate benchmarking exercises to evaluate student performance, which may occur at different stages of the course. Benchmarking can be achieved through automated online tutors, feedback from other course participants, automatic scoring, test-type tasks, written comments, verbal comments, or emoticons (Xiao et al., 2019; Yepes-Baldó et al., 2016).

Overall, to ensure the reliability and validity of these assessment methods, the author of the paper recommends establishing clear and specific evaluation criteria and providing adequate training for both students and instructors. By doing so, the evaluation process can be more objective and accurate, and students can receive meaningful feedback to help them improve their learning outcomes.

In conclusion, meeting the above evaluation criteria to a significant extent will impact the recognition and popularisation of MOOCs.

Recognition

Various factors contribute to the success and recognition of MOOCs. As mentioned earlier, accessibility, up-to-date content, and relevance are important criteria. In addition, positive feedback from previous course participants can significantly impact the success of MOOCs, as well as the involvement of prestigious professors (Hew & Cheung, 2014).

Marketing and advertisement are also crucial in the success of MOOCs. A well-designed and targeted advertisement can attract a wide range of potential participants and increase the visibility of the course. In terms of distribution, numerous MOOCs allow users to download course materials and use them offline, which can increase accessibility and convenience for participants (Yousef et al., 2014).

In conclusion, meeting the established criteria for high-quality and effective MOOCs can significantly impact their recognition and success. Factors such as accessibility, up-to-date content, positive feedback, involvement of prestigious professors, effective marketing and advertisement, and convenient distribution methods can contribute to the success of MOOCs in the field of education.

Results

Based on the conducted research on evaluation criteria of Massive Open Online Courses, the main results are:

- A set of evaluation criteria for MOOCs was developed through an extensive literature review. The criteria are divided into eight main categories: curriculum organisation, quality of teaching, methodology, technical aspects, motivation and culture, layout, evaluation, and recognition.
- Overall, the evaluation criteria can be used to provide a comprehensive assessment of MOOC quality, helping institutions and learners make informed decisions about which MOOCs to take and where to invest their time and resources.
- The study also highlights the need for more standardised evaluation criteria across the MOOC industry to improve the comparability of courses, and for institutions to take a more active role in evaluating and improving the quality of the courses they offer.

Conclusions

This review does not provide standardised evaluation criteria, but there are considerations that should be taken into account in each assessment. The author of this paper believes that more practical research could help determine more precise evaluation criteria for specific MOOCs. In general, the author recommends using the following most important criteria in evaluating MOOCs: curriculum organisation, teaching quality, methodology, technical aspects, motivation and culture, layout, evaluation, and recognition. These criteria are discussed in greater depth in the main body of the work.

Given that the study's problem is a limited research data and knowledge about assessing MOOCs, one possible solution could be to conduct more empirical research to develop and test specific evaluation criteria for MOOCs, which could also be adapted to the Latvian context. Another solution is to encourage more collaboration and data sharing among MOOC providers, educators, and researchers in order to improve the quality and consistency of study on MOOCs. Additionally, educators and course designers could be trained and supported to create high-quality MOOCs that meet the diverse needs and preferences of learners.

According to the paper's author, MOOCs have the potential to revolutionise education by making high-quality learning resources accessible to a global audience. However, in order to realise this potential, MOOC providers must focus on delivering high-quality courses that meet the diverse needs and preferences of their learners. High-quality MOOCs require a careful balance of factors, including skilled instructors, effective teaching methodologies, robust technical infrastructure, and an inclusive and motivating learning environment.

This paper also suggests future research directions. One approach would be to investigate how these criteria are related and influence one another. For example, how different assessment approaches affect the methods used in MOOC course development. The author believes that the presented paper can serve as a foundation for a more comprehensive MOOC course quality assurance protocol across multiple platforms.

Author Note

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