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Assessment And Feedback Practices In Moocs: A Systematic Literature Review Of 2023–2025 Studies

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Abstract

This study aims to synthesize the latest empirical evidence regarding assessment and feedback practices in Massive Open Online Courses (MOOCs) through the Systematic Literature Review (SLR) approach that follows the PRISMA guidelines. The identification process was carried out using the Scopus database with keywords related to MOOCs, assessments, and feedback, resulting in 514 initial articles. After going through the stages of screening, feasibility assessment, and selection based on the 2023–2025 publication year range, document type, language, access status, and file availability, as many as 29 articles met all inclusion criteria. Analysis of these articles shows that assessment in MOOCs is evolving towards an automated, adaptive, and data-driven approach, with the use of automated quizzes, adaptive assessments, peer assessments, and learning analytics. On the other hand, feedback mechanisms show significant transformation through the integration of generative artificial intelligence technology and learning analytics that provide fast, relevant, and personalized feedback at massive scale. The results of the synthesis also revealed that good evaluation design consistently increases the motivation, engagement, and learning outcomes of MOOC participants, while a number of challenges such as peer assessment bias, evaluation design complexity, and technological barriers still need to be considered. Overall, this study confirms that assessment and feedback are key components that determine the quality of learning in MOOCs and contribute greatly to the effectiveness of learning processes and outcomes when designed in a systematic, adaptive, and participant-oriented manner.

Keyword: Massive Open Online Courses; assessment and feedback; automated assessment; learning analytics.

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INTRODUCTION

Massive Open Online Courses (MOOCs) have experienced rapid development in the past decade and are becoming one of the most significant innovations in modern digital education, mainly due to their ability to reach learners on a global scale and support equitable access to education (Iniesto et al., 2023). The open, flexible, and massive characteristics of MOOCs make them a strategic medium for professional capacity building and lifelong learning, which is now widely used by higher education institutions and professional organizations (Sriwisathiyakun, 2024). Nonetheless, the effectiveness of MOOCs is substantially determined by the quality of their instructional design, including how assessments and feedback are designed to support the learning evaluation process (Wiese-Posselt et al., 2025).

Assessment in the context of MOOCs faces a number of challenges related to the large number of participants, the heterogeneity of learners' backgrounds, and the limited direct interaction with instructors. Therefore, an evaluation approach that is scalable, efficient, and able to provide an accurate picture of learning outcomes is a major need in MOOCs (Qi et al., 2023). Various forms of assessment have been implemented, ranging from automated quizzes, peer assessments, to personalized adaptive assessments. For example, text-based automated assessments have shown effectiveness in helping participants self-assess (Ulfa et al., 2025), while adaptive technology is able to adjust evaluations based on individual learners' abilities (Zhilmagambetova et al., 2023). In addition to assessment, feedback also plays an important role as a reflection and correction mechanism that supports participants' learning development.

Effective feedback in MOOCs needs to be quick, relevant, and personalized, as participants do not receive direct assistance from the instructor. The emergence of generative artificial intelligence and learning analytics technologies has increased the ability of MOOC systems to provide quality automated feedback at scale (Sappa, 2025) (Morales-Chan et al., 2024). Although research on assessment and feedback in MOOCs is growing rapidly, the findings to date are still fragmented. Several studies have focused on the effectiveness of automated quizzes (Ulfa et al., 2025), the reliability of peer assessments (Mignemi et al., 2025), and the ability of AI models to generate personalized feedback (Morales-Chan et al., 2024). Other studies show how evaluation design can improve participants' motivation, engagement, and learning outcomes, for example through gamification and interactive elements (Nováková & Němejc, 2024) (Selvaraj et al., 2025). This fragmentation of findings confirms the need for a systematic study that brings together these perspectives to gain a comprehensive understanding of assessment and feedback practices in MOOCs.

Based on these needs, this study uses the Systematic Literature Review (SLR) approach

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to synthesize the latest empirical evidence regarding assessment and feedback practices in MOOCs. The SLR approach allows for structured and transparent analysis to identify patterns, innovations, as well as challenges in MOOC learning evaluation. By referring to the latest studies published in the 2023–2025 range and indexed by Scopus, this study seeks to provide a more in-depth picture of the contribution of technology, pedagogy, and instructional design to the quality of evaluation in large-scale online learning. For this reason, this research is formulated through the main question: "How is assessment and feedback practice applied in the context of Massive Open Online Courses (MOOC), and to what extent is it effective in supporting participants' learning processes and outcomes?".

The formulation of this research question allows the exploration of two important aspects, namely the form and mechanism of assessment and feedback used in MOOCs and the effectiveness of these approaches in improving the quality of learning, including aspects of concept understanding, skills, engagement, satisfaction, and learner performance. Through a systematic analysis of 29 selected articles, this study not only maps the practices that have been carried out, but also identifies future trends, potential technological innovations, and recommendations for the development of more effective and needs-oriented MOOC designs.

METHOD

The research methods used in this study are systematically compiled to ensure that the study process is rigorous, transparent, and replicable. The research approach applied follows the SLR standard by referring to the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) guidelines, so that each stage starting from Identification, Screening and Inclusion is carried out based on clear and measurable criteria. Through this structured procedure, the research ensures that all the sources analyzed have adequate relevance, quality, and contribution in answering research questions regarding assessment and feedback practices in the context of MOOCs.

Types of Research

The type of research used in this study is SLR, which is a research method that aims to systematically identify, evaluate, and synthesize all relevant research that has been published related to a specific topic. In the context of this study, SLR was used to gain a comprehensive understanding of how *assessment* and *feedback practices* are applied in MOOCs and how effective they are in supporting participants' learning processes and outcomes. SLR was chosen because it is able to provide a comprehensive overview of findings patterns, research trends,

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technological innovations, challenges, and opportunities for the development *of assessments* and *feedback* in MOOCs based on empirical evidence that has been published in recent years. This approach allows research to produce robust and in-depth scientific synthesis, while also identifying research areas that still have gaps for further research. As a systematic review-based study, this study follows PRISMA guidelines to ensure that all stages of research are carried out in a transparent, rigorous, structured, and replicable manner. PRISMA provides a standard framework for identifying, selecting, evaluating, and integrating relevant articles through key stages such as *identification, screening, eligibility*, and *inclusion.* Through this approach, the research is able to guarantee that the article selection process is carried out objectively based on clear and consistent criteria, so that the articles analyzed truly represent the quality and relevance needed to answer the research questions.

1. Identification

The article identification process began with a systematic search on the Scopus database on November 25, 2025 using *a* query that had been rigorously compiled to capture all research that discussed *assessment* and *feedback* in the context of MOOCs. *The query* includes three main groups of keywords: terms related to MOOCs, terms related to *assessment*, and terms related to *feedback*. In full, *the queries* used are:

Tabel 1. Search strings used for the systematic review process

Database	Search String
Scopus	(("MOOC" OR "Massive Open Online Course*" OR "xMOOC" OR "cMOOC" OR "open online course*")) AND (("assessment" OR "assessment method*" OR "online assessment" OR "automated assessment" OR "peer assessment" OR "peer review" OR "grading" OR "evaluation" OR "formative assessment" OR "summative assessment" OR "quiz*" OR "test*")) AND (("feedback" OR "automated feedback" OR "adaptive feedback" OR "formative feedback" OR "instant feedback" OR "learning feedback" OR "computer-generated feedback"))

The initial search results yielded 514 articles that matched the keyword. This number shows that research on *assessment* and *feedback* in MOOCs has a wide scope and is growing rapidly. To ensure that the study remains relevant to the latest developments in this area, a restriction on the year of publication is carried out

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2. Screening

The *screening stage* of all articles that passed the initial selection was then screened based on several criteria, namely document type, language, *open access* status, and availability of files for download. The first screening is carried out based on document type to ensure that only original *research articles* are analyzed. After filtering by year, only articles published in the 2023 to 2025 range are retained. There were 129 articles that met this criterion, while 385 articles published before 2023 were excluded because they were considered to no longer reflect the latest developments in technology, pedagogy, and evaluation practices in MOOCs, resulting in 129 articles for further examination through the screening process. Of the 129 articles, a number of documents were found that did not meet the methodological requirements for SLR, namely *conference papers* (57), *book chapters* (6), *conference reviews* (4), *review articles* (3), and *data papers* (1). All these types of non-article documents were issued leaving 58 documents that were eligible to enter the eligibility level. After that, screening is carried out based on the language of the publication. Only English-language articles are retained to maintain consistency of understanding, interpretation, and analysis. Two articles that were not written in English, one in Chinese and one in Spanish, were excluded, bringing the number of articles left to 56 documents. The next stage is filtering based on open access status. Although *open access* often provides wider access opportunities, in this study there are obstacles in opening or downloading articles with certain types of access. Therefore, articles with *Gold Open Access* (27), *Hybrid Gold* (12), and *Green Open Access* (11) statuses should be removed. After this screening, the number of articles left becomes 39. The final stage in the screening process is to ensure that the entire article can be downloaded in full for analysis. There were 10 articles that could not be downloaded due to institutional or technical access constraints from the publishing platform, so they were excluded from the analysis. Thus, after all stages of screening have been passed, there are 29 articles that have successfully met all inclusion criteria and can be analyzed further.

Tabel 2. Inclusion and exclusion criteria

Criterion	Inclusion	Exclusion
Timeline	Between 2023-2025	2022 and earlier
Document Type	Journal (research article)	Conference paper, Book chapter, Conferences Review, Review, Data Paper
Language	English	Non-English
Open Access	All Open Access	Gold, Hybrid Gold, Green
Download Available	Dowloaded	Not Downloaded

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3. Include

The last stage in the PRISMA process is *inclusion*, which is to determine the articles that are really worthy of being the main source in this SLR. After going through a careful and rigorous identification and screening process, only 29 articles met all the inclusion criteria, both in terms of topic relevance, year of publication, document type, language, accessibility, and file availability. These articles are analyzed in depth to answer research questions about how *assessment* and *feedback practices* are applied in MOOCs and how effective they are in supporting participants' learning processes and outcomes. These articles represent *the latest state-of-the-art* research in the period 2023-2025 and provide an empirical basis for thematic synthesis carried out in the results and discussion sections.

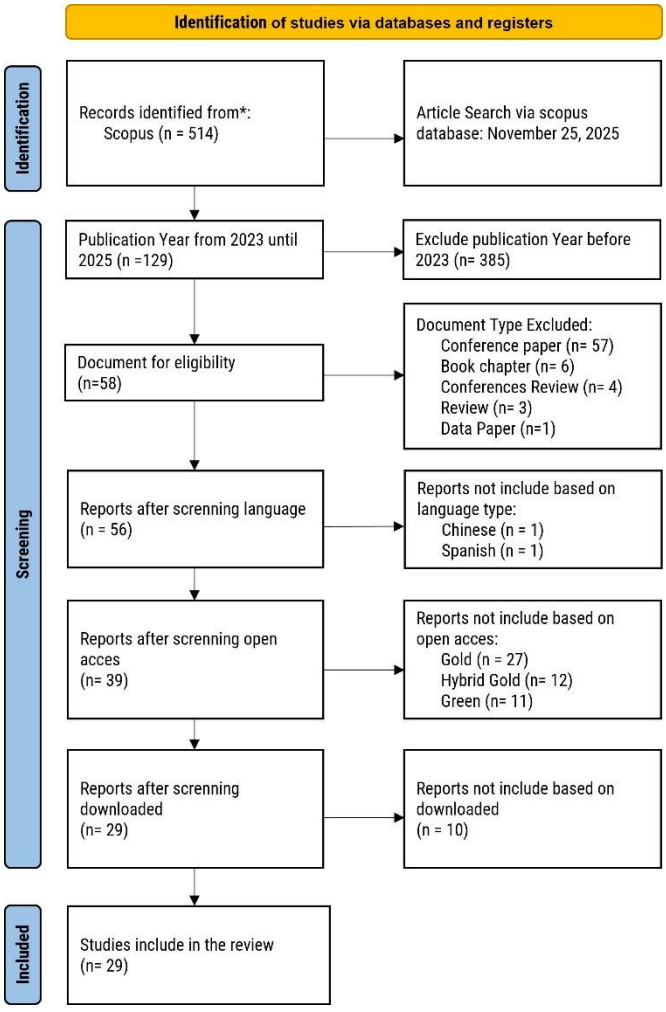


Figure 1. PRISMA Diagram

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RESULTS AND DISCUSSION

Results

This section presents the main results of the SLR process that has been carried out through the stages of identification, screening, feasibility assessment, and final selection based on the PRISMA guidelines. After going through a strict selection process and following the inclusion criteria that have been set, as many as 29 articles were successfully included and analyzed in depth. These articles are Scopus-indexed scientific publications in the range of 2023 to 2025, so they reflect the latest developments related to assessment and feedback practices in MOOCs. The research results presented in this section focus on empirical findings, evaluation methods used, and technological innovations applied in various contexts of MOOC implementation. Each article in the extraction results table was analyzed to identify patterns, differences in approaches, and the contribution of each study to the understanding of the effectiveness of assessment and feedback in a large-scale online learning environment. The findings cover various aspects, ranging from the application of automated assessment, personalization of feedback using artificial intelligence, the effectiveness of adaptive learning methods, to the use of learning analytics to predict participant performance. In addition, the results of the study show how various AI-based evaluation models (artificial intelligence), peer assessment, and formative assessments have different impacts on the engagement, motivation, and learning outcomes of MOOC participants. Not only does it map out the approaches and innovations used, it also outlines the effectiveness of each assessment and feedback strategy based on the empirical evidence reported in each article. Some studies highlight significant improvements in learning outcomes through automated or adaptive feedback, while others reveal certain limitations, such as bias in peer assessment or technical challenges in the implementation of learning platforms.

Tabel 3. Synthesis of Research Results

No.	Penulis	Judul
1.	Francisco Iniesto, Covadonga Rodrigo, dan Garron Hillaire (Iniesto et al., 2023)	A Case Study to Explore a UDL Evaluation Framework Based on MOOCs
2.	Jiajia Jiao dan Bo Chen (Jiao & Chen, 2023)	A GCN- and Deep Biaffine Attention Based Classification Model for Course Review Sentiment
3.	Kanyarat Sriwisathiyakun (Sriwisathiyakun, 2024)	A MOOC-Integrated Design Thinking Model for Hearing-Impaired Learners
4.	Saida Ulfa, Ence Surahman, Agus	An adaptive assessment: Online summary with

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	Wedi, Izzul Fatawi, dan Rex Bringula (Ulfa et al., 2025)	automated feedback as a self-assessment tool in MOOCs environments
5.	Raluca Maria Aileni dan Razvan Ion Radulescu (Aileni & Radulescu, 2025)	A new method for developing interactive courses in smart textiles
6.	Anitha D., Jeyamala C., Thiruvengadam S.J., dan Saravana Perumaal S (Anitha et al., 2023)	An Experimental Journey with Self-Made Online Courses: How does it differ?
7.	Xin Qi, Geng Sun, dan Lin Yue (Qi et al., 2023)	Applying Self-Optimised Feedback to a Learning Management System for Facilitating Personalised Learning Activities on Massive Open Online Courses
8.	Ankita Sappa (Sappa, 2025)	Assessing the Impact of Large Language Models on the Scalability and Efficiency of Automated Feedback Mechanisms in Massive Open Online Courses
9.	Daniela Nováková dan Karel Němejc (Nováková & Němejc, 2024)	Competences for the Future (Future Work 4S) - Green Skills and Environmental Education
10.	Miriam Wiese-Posselt, Selin Saydan, Thiên-Trí Lâm, Alina Rörig, Clara Bergmann, Felicia Becker, Oliver Kurzai, Markus A. Feufel, Petra Gastmeier1 and Sandra Schneider (Wiese-Posselt et al., 2025)	Development and evaluation of a massive open online course (MOOC) to teach medical students the prudent use of antibiotics
11.	Wei Wei, Jia Liu, Xiaoshu Xu, Kimberly Kolletar-Zhu, Yunfeng Zhang (Wei et al., 2023)	Effective interactive engagement strategies for MOOC forum discussion: A self-efficacy perspective
12.	Khin Thandar Aung, Rafiza Abdul Razak, Muhammad Fadli Zulkafley (Aung et al., 2024)	Effectiveness of Massive Open Online Course on Risk Communication Knowledge in Global Health Emergencies Among Nurses
13.	Aurélie Hot, Christian Dagenais, Muriel Kielende, Romane Villemin,	Evaluation of remote learning in knowledge translation through massive open online courses

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	Valéry Ridde (Hot et al., 2025)	in the DRC
14.	Beth Coad, Katherine Joekes, Alicja Rudnicka, Amy Frost, Mark Robert Openshaw, Katrina Tatton-Brown, Katie Snape (Coad et al., 2023)	Evaluation of two Massive Open Online Courses (MOOCs) in genomic variant interpretation for the NHS workforce
15.	Rajalakshmi Selvaraj, Venumadhav Kuthadi, Dr. S. Baskar, Roberto Acevedo (Selvaraj et al., 2025)	Exploring Motivation and Learning Factors in Digital Media Through the Lens of Activity Theory and Behavioural Influences
16.	Kenzo Nera, Mariane Frenay, Magali Paquot (Nera et al., 2025)	Improving argumentation quality on MOOC discussion forums: does learning to identify components of arguments help?
17.	Jhon Mercado, Carlos Mendoza-Cardenas, Luis Fletscher, Natalia Gaviria-Gomez (Mercado et al., 2025)	Learning Analytics in a Non-Linear Virtual Course
18.	Xieling Chen, Haoran Xie, Xiaohui Tao, Fu Lee Wang, Jie Cao (Chen et al., 2024)	Leveraging text mining and analytic hierarchy process for the automatic evaluation of online courses
19.	Miguel Morales-Chan, Hector R. Amado-Salvatierra, José Amelio Medina, Roberto Barchino, Rocael Hernández-Rizzardini, António Moreira Teixeira (Morales-Chan et al., 2024)	Personalized Feedback in Massive Open Online Courses: Harnessing the Power of LangChain and OpenAI API
20.	Aixiang Mi, Harwati Hashim, Supyan Hussin (Mi et al., 2025)	Small Private Online Courses Integrated with Blended Learning: Effect on English Speaking Skills in Chinese Higher Education
21.	Joanne V. Glinsky, Jocemar Ilha, Yuan Xiong, Guillermo Gomez, Stephan Rostagnor, Soraya Martín-Manjarrés ,Keira Tranter, Stephen Muldoon, Eric Weerts and Lisa A. Harvey (Glinsky et al., 2023)	The 2022 Massive Open Online Course (MOOC) to train physiotherapists in the management of people with spinal cord injuries: a qualitative and quantitative analysis of learners' experiences and its impact

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22,	Priyanka Jarial, Himanshu Aggarwal, & Bhim Sain Singla (Jarial et al., 2025)	The effectiveness of MOOCs in Technical Education: an Indian perspective
23.	Napat Jitpaisarnwattana (Jitpaisarnwattana, 2025)	The effects of a personalized learning plan in a language MOOC on learners' oral presentation skills
24.	Raushan Zhilmagambetova, Zhanat Kopeyev, Akhan Mubarakov, & Ainagul Alimagambetova (Zhilmagambetova et al., 2023)	The Role of Adaptive Personalized Technologies in the Learning Process: Stepik as a Tool for Teaching Mathematics
25.	Soundes Oumaima Boufaida, Abdelmadjid Benmachiche, Makhlouf Derdour, Majda Maatallah, Moustafa Sadek Kahil, & Mohamed Chahine Ghanem (Boufaida et al., 2025)	TSA-GRU: A Novel Hybrid Deep Learning Module for Learner Behavior Analytics in MOOCs
26.	Giuseppe Mignemi, Yunxiao Chen, & Irini Moustaki (Mignemi et al., 2025)	Unfolding the Network of Peer Grades: A Latent Variable Approach
27.	Mauro Coccoli, Ilaria Torre, & Ilenia Galluccio (Coccoli et al., 2024)	User experience evaluation of Edurell interface for video augmentation
28.	Erli Sarilita, Anggun Rafisa, Priya Desai, & Peter A. Mossey (Sarilita et al., 2024)	Utilising massive open online courses to enhance global learning dissemination in cleft lip and palate: a case report of penta helix collaboration
29.	Yan Wang, Lijun Nie, & Huawu Jian (Wang et al., 2023)	Valuation and Analysis of Online Teaching Platforms in Post-pandemic Era

DISCUSSION

The practice of assessment in MOOCs shows a significant development from mere traditional automated quizzes towards adaptive assessment, peer assessment, and AI-based evaluation mechanisms. Studies have shown that the use of automated grading systems not only improves efficiency, but is also capable of providing individualized feedback that supports self-paced learning. For example, the use of cosine similarity-based automatic summaries can

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significantly improve learning outcomes while getting positive evaluations from users (Ulfa et al., 2025). In the context of mathematics education, Stepik-based adaptive learning has also been proven to help students achieve higher competence than traditional methods because the material and evaluation are tailored to the needs of the user (Zhilmagambetova et al., 2023). In addition, research in the context of technical e-learning design shows that the use of interactive quizzes and asynchronous learning formats on smart textile materials (Aileni & Radulescu, 2025) as well as institutional-made courses (Anitha et al., 2023) make a positive contribution to learning satisfaction and success, especially when assessments are aligned with the context of practical learning. Other studies have even shown that the UDL framework can be used to evaluate the accessibility quality of MOOC assessments, although its complexity is still a challenge for non-expert evaluators (Iniesto et al., 2023). Personalized feedback is a key element in the effectiveness of MOOCs, especially when supported by machine learning or natural language processing models. Several studies have shown that personalizing feedback provides a better learning experience and increases participant satisfaction. For example, personalised feedback (PF) significantly improves learning satisfaction compared to natural feedback (Qi et al., 2023). The integration of generative AI technologies such as GPT-3.5, GPT-4, and LangChain has also been proven to produce rich, fast, and high-quality feedback, with a very positive acceptance rate from MOOC participants (Sappa, 2025) (Morales-Chan et al., 2024).

Research using text mining and hierarchical analysis shows that the feedback aspect is one of the most important dimensions of course evaluation for learners, especially in the fields of science and engineering (Chen et al., 2024). Meanwhile, research on digital learning motivation found that personalized feedback, when combined with gamification and peer collaboration, is able to significantly increase knowledge retention and engagement (Selvaraj et al., 2025). This shows that the quality, relevance, and timeliness of feedback play an important role in maintaining the motivation and engagement of MOOC participants. In addition to automated feedback, peer assessment remains an important component of MOOCs. Nonetheless, research shows that peer assessment is not always reliable due to bias between assessors. A new approach using Bayesian latent variable models has been shown to improve the accuracy of value aggregation and take into account evaluator bias (Mignemi et al., 2025). Studies on the quality of arguments in MOOC forums found that quality improvement is not always influenced by instructions on the structure of arguments, but rather is more influenced by the design of discussion-provoking questions (Nera et al., 2025). Several other studies have also shown that peer feedback interactions in discussion forums do not necessarily correlate with improved performance; low-achieving learners rely more on feedback from content and

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instructors, rather than from peers (Wei et al., 2023). In addition, the use of participant review behavior and text data, including sentiment classification using the GCN-Biaffine Attention model (Jiao & Chen, 2023), can help detect user perceptions of the quality of assessments and feedback, thus becoming an additional evaluation tool to improve the reliability and design of assessments going forward.

Instructional design perspectives, good assessments and feedback are very decisive for the success of MOOCs in various fields. Courses designed with comprehensive evaluation mechanisms, including self-assessments, interactive quizzes, and application exercises, are able to improve learning outcomes and participants' confidence. For example, medical MOOCs on antibiotic use significantly increase participants' test scores and increase their confidence in clinical practice (Wiese-Posselt et al., 2025). Similarly, professional training such as MOOCs on spinal injury management shows a 25% increase in knowledge and gets very positive ratings from participants (Glinsky et al., 2023). The same can be seen in MOOCs for nurses, physiotherapists, health workers, and deaf students, all of which show improved learning outcomes through well-designed evaluations (Sriwisathiyakun, 2024) (Aung et al., 2024). Even in specialist MOOCs such as genomics, significant increases in confidence and genomic classification ability are achieved through structured evaluation mechanisms (Coad et al., 2023). In the context of blended learning, the use of SPOCs to improve English speaking skills has also shown significant success sustained by layered evaluation designs (Mi et al., 2025). Meanwhile, global dissemination programs such as cleft lip MOOCs have also shown high graduation rates and success through structured assessments (Sarilita et al., 2024), confirming that assessment design plays an important role in the sustainability of cross-context MOOCs. In the context of participant engagement, interactive assessments, gamification, and quick feedback have been proven to increase motivation and retention. Courses with interactive elements such as badges, challenges, and short quizzes have a positive influence on motivation, especially in MOOCs themed around the environment and professional education (Nováková & Němejc, 2024). Meanwhile, the use of visual media such as dynamic concept graphics in learning videos helps participants navigate content more effectively and supports deeper understanding, although it still requires interface improvements (Coccoli et al., 2024). In addition, research in the context of medical and technical learning shows that the interaction between the assessment components and digital media determines the effectiveness of the overall learning model (Jarial et al., 2025). In the context of areas with limited infrastructure, routine mentoring has been proven to help participants still complete assessment-based assignments (Hot et al., 2025) emphasizing that social support affects the effectiveness of feedback and tasks in MOOCs.

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The effectiveness of assessment and feedback in improving participant learning outcomes can also be seen in the use of learning analytics. Methods of predicting and monitoring learning behavior, such as TSA-GRU or non-linear adaptive features, help identify participants' evaluation and performance patterns early on (Boufaida et al., 2025) (Mercado et al., 2025). This behavioral analysis provides the basis for adaptive feedback and personalized interventions, especially to detect the risk of performance degradation. In addition, an understanding of online platform preferences, for example, the difference in feedback preferences between literary and engineering disciplines (Wang et al., 2023) helps MOOC researchers and developers optimize how feedback is delivered to suit user needs. Overall, these studies show that assessment and feedback practices in MOOCs are evolving towards a more automated, adaptive, personalized, and data-driven approach. These innovations have been shown to improve learning outcomes, participant satisfaction, motivation, and teaching effectiveness, although challenges such as peer assessment bias, evaluation design complexity, and technological barriers still need to be addressed. Thus, it can be concluded that assessment and feedback play a critical role in the quality and effectiveness of MOOCs, and when designed appropriately, they contribute significantly to learner outcomes and participants' experiences

CONCLUSION

This study reveals that assessment practices are not only shifting towards automated, adaptive, and data-driven approaches, but also evolving into evaluation systems that are sustainable and responsive to the needs of participants on a massive scale. The integration of automated assessment, adaptive learning technologies, and learning analytics has consistently been proven to improve evaluation accuracy, enable real-time performance monitoring, and strengthen participant learning path personalization. The feedback mechanism shows a significant transformation through increased speed, depth, and personalization. The implementation of generative artificial intelligence-based feedback such as GPT-4 and LangChain not only increases participants' motivation, satisfaction, and engagement, but is also able to provide more contextual and scalable learning support than conventional approaches. While peer assessment remains a commonly used evaluative component, studies have highlighted that its reliability is still influenced by evaluator bias, so advanced statistical models such as Bayesian latent variable models are needed to improve the accuracy and consistency of assessments. Overall, it emphasizes that an integrated assessment and feedback approach plays an important role in improving learning processes and outcomes, strengthening participants' interaction with the material, and facilitating independent learning in a MOOC environment. However, strategic

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challenges such as assessment bias, reliance on technology, barriers to access in certain regions, and the need for more inclusive and adaptive instructional designs still need to be addressed in further research and implementation

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